Protective Factors and the Development of Resilience among Boys from Low-Income Families

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The purpose of the study was to advance our understanding of resilience by studying multiple protective factors associated with positive adjustment among an ethnically diverse sample of 226 low-income boys followed prospectively from ages 1.5 to 12, using trajectories of neighborhood quality from ages 1.5-10 to define risk status. The results indicated that child IQ, nurturant parenting, parent-child relationship quality, and marital quality measured in early childhood were all significantly associated with a composite measure tapping low levels of antisocial behavior and high levels of social skills at ages 11 and 12. However, these results were qualified by the fact that marital quality was only significantly related to positive social adjustment in the context of low levels of risk. Results suggest that with the exception of marital quality, these protective factors operate in a comparable manner with respect to positive social adjustment for this predominantly low-income urban sample of boys.

Keywords: resilience, neighborhood risk, protective factors

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Introduction

As the developmental psychopathology perspective has gained prominence over the past several decades, researchers have become increasingly interested in delineating the mechanisms and processes through which psychopathology develops (Cummings, Davies, & Campbell, 2000). One approach to identifying children at risk is to examine factors that are associated with maladjustment. However, even in contexts of extreme risk, not all children experience negative outcomes. As such, important knowledge can be gained from focusing on factors associated with child positive adjustment, particularly in the context of risk. The study of resilience provides information on conditions under which established risk factors are not associated with negative outcomes (Masten, 2001). In combination with research on vulnerability, such research can help to inform theories of psychopathology and guide public policy and intervention efforts to improve the lives of children at risk for maladaptive outcomes (Masten, 2001; Masten & Curtis, 2000).

Defining Resilience

Broadly defined, resilience refers to the process through which positive outcomes are achieved in the context of adversity (Luthar, Cicchetti, & Becker, 2000a). Thus, it is essential to focus on high-risk samples, because resilience is not positive adjustment per se but rather positive adjustment in the context of high levels of adversity. In addition to establishing the presence of risk, researchers must determine that the child demonstrates a “good” or “positive” outcome (Masten, 2001). Whether a good outcome is operationalized as merely the absence of a negative outcome (e.g., conduct disorder, adult psychopathology) versus the presence of positive adjustment (e.g., academic or social competence) is a matter of controversy and largely depends on the researcher’s theoretical orientation.
Defining Risk

Although resilience requires risk, there have been relatively few studies of resiliency conducted on children living in poverty, arguably the most prevalent and pervasive risk factor (Gorman-Smith, Tolan, & Henry, 1999; Owens & Shaw, 2003, Seidman, 1991); instead most studies have utilized European American, middle-class samples (e.g., Criss, Pettit, Bates, Dodge, & Lapp, 2002; Masten et al., 1999). The inner-city poor contend with a substantial number of stressors and adversities, including community violence, crowding, poor quality schools, and inadequate housing (McLoyd, 1998; Sampson, Morenoff, & Earls, 1999). The chronicity and severity of poverty also appears to be particularly important. Although poverty is typically conceptualized as a dichotomous and static variable, children living in extreme or chronic poverty tend to have worse outcomes than children exposed to less severe or intermittent poverty (Duncan, Broooks-Dunn, & Klebanov, 1994; Guo, 1998; Korenman, Miller, & Sjaastad, 1995). Arguably, children growing up in chronic poverty are exposed to a wide array of risks that are both qualitatively and quantitatively more adverse than those experienced by most children living in middle-class environments.

Low income by itself does not always accurately represent environmental conditions; however, because housing and financial support may actually be adequate because of other sources of support, such as extended family (Campbell, Shaw, & Gilliom, 2000). For example, a single mother may have a very small personal income, but if she lives with her parents and receives the benefits associated with their income she may not experience many of the hardships typically associated with low income (e.g., living in a dangerous environment, decreased access to resources). Conversely, living in a poor, dangerous neighborhood virtually guarantees exposure to risk factors outside the home that affect child development (Campbell et al., 2000).
Although critics point out that neighborhood risk is often confounded with demographic and family risk (Plotnick & Hoffman, 1999; Rowe & Rodgers, 1997), studies that have accounted for such factors have shown that neighborhood quality contributes independent variance in relation to child outcomes after accounting for these socioeconomic and family factors (see Leventhal & Brooks-Gunn, 2003, for a review). Thus, neighborhood risk provides a strong measure of environmental risk.

**Protective Factors**

Protective factors are defined as characteristics of the child, family, and wider environment that reduce the negative effect of adversity on child outcome (Masten & Reed, 2002). A number of factors, including child IQ, emotion regulation, temperament, parenting, low parental discord, advantaged SES, effective schools, and safe neighborhoods, have been found to contribute to positive outcomes in the context of high risk (see Masten & Reed, 2002, for a review). Similar to issues surrounding resilience, defining protective factors also has been controversial. Early researchers defined protective factors as those variables that interacted with risk status to predict outcome (Garmezy, Masten, & Tellegen, 1984; Rutter, 1987); that is, only variables that were more strongly associated with positive outcomes in the context of high risk, as opposed to low risk, were considered to be protective. However, in more recent years, this term has been used to refer to all factors associated with positive outcomes in high-risk groups, regardless of whether relationships are stronger for children living in high-risk contexts (Luthar & Zelazo, 2003). Luthar and colleagues (2000b) argue that while interaction effects provide useful knowledge on the processes that function specifically under conditions of risk, main effects can also be informative. For example, in designing interventions for at-risk children, addressing any and all factors that moderate the effects of risk are likely to be beneficial.
**Protective Factors and Resilience**

**Child Characteristics**

Many child characteristics, including IQ, facets of temperament such as effortful control and negative emotionality, self esteem, and internal locus of control, have been investigated as potential protective factors (Masten & Reed, 2002). Perhaps two of the most important child characteristics are IQ and emotion regulation (Masten & Coatsworth, 1998).

**Child IQ.** IQ is one of the most widely researched and validated protective factors in the child domain (Masten & Coatsworth, 1998). Children with high IQs may be more likely to possess effective information-processing and problem-solving skills, which enable them to contend with the stresses and challenges they encounter. Indeed, one of the initial purposes of IQ tests was to aid in the selection of officers and the placement of soldiers in different types of military service (Kaufman, 1990). Children with higher intellectual skills should also perform better at school; increased academic success is associated with the adoption of social norms and integration into prosocial peer groups (Masten & Coatsworth, 1998). For children living in high-risk contexts, IQ may be particularly important because of the depth and breadth of adversity they face (e.g., dangerous neighborhoods, exposure to deviant peers, overcrowded schools). In lower risk contexts, positive adjustment may be less dependent on IQ because such children face fewer obstacles in fewer contexts (e.g., school, neighborhood), and therefore may need a smaller number of resources to achieve positive socioemotional outcomes. Across risk status, child IQ has consistently been found to predict a range of positive outcomes, including academic achievement, prosocial behavior, and peer social competence (Masten et al., 1988; Masten et al., 1999), as well as the absence of antisocial behavior (Kandel et al., 1988; Kolvin, Miller, Fleeting, & Kolvin, 1988; White, Moffit, & Silva, 1989) and other types of psychopathology (Radke-Yarrow & Brown, 1993; Tiet et al., 2001; Werner & Smith, 1982, 1992). Although
significant interaction effects are relatively rare in the resilience literature, evidence suggests that IQ may be particularly important in protecting against maladaptive outcomes associated with a range of risk factors, including maternal psychopathology (Tiet et al., 2001), paternal criminal behavior (Kandel et al., 1988; Kolvin et al., 1988), and negative life events (Masten et al., 1988; Masten et al., 1999).

Emotion Regulation. Emotion regulation has been studied less frequently as a protective factor than IQ, but there is ample research to suggest that it is an important component of successful adaptation (Masten & Coatsworth, 1998). Emotion regulation has been referred to as processes that monitor, evaluate, and/or modify the intensity and duration of emotional reactions to accomplish one’s goals (Eisenberg et al., 1997a; Thompson & Calkins, 1996). It has historical roots in the concepts of ego control and ego resiliency (Masten & Coatsworth, 1998). Children who are adept at managing their emotions may be better able to proactively cope with stressors (Buckner, Mezzacappa, & Beardslee, 2003) and thereby decrease the associated negative effects. For example, a child in a frustrating situation who is able to direct her attention to a nearby toy might be better able to decrease her negative reactivity than a child who fixates on the frustrating situation. Across contexts of risk, such children should function better in school and social relationships because they are able to modulate negativity and emotional expression. However, emotion regulation skills might play an even more salient role in high-risk contexts where stressors would be more frequent and more pervasive than in lower-risk contexts. A lack of control over emotion has been consistently associated with problem behaviors in children (Calkins & Fox, 2002; Eisenberg et al., 1996), while the ability to manage one’s emotional expression has predicted more positive social functioning in middle childhood both contemporaneously and longitudinally (Buckner et al., 2003; Eisenberg et al., 1997a; Eisenberg...
et al., 1997b). Furthermore, studies of resilience have found that factors associated with emotion regulation (e.g., self-help skills, ego control, and ego resiliency) are related to positive adjustment across risk status, and that such factors appear to be especially important in the context of adversity (Cicchetti et al., 1993; Cicchetti & Rogosch, 1997; Werner & Smith, 1982, 1992).

*Family Characteristics*

Research on protective factors within the family has generally focused on the parental and marital systems.

*Parenting Strategies.* A wide variety of specific parenting practices have been shown to be associated with children’s positive social adjustment, including warmth, consistent discipline, responsiveness, structure, and monitoring (Masten & Reed, 2002). Parents are regarded as the primary forces in socializing children, teaching their children the skills they need to succeed in later developmental tasks, setting guidelines for acceptable behavior, and providing opportunities for cognitive and social stimulation (Masten & Coatsworth, 1998). One of the factors most consistently associated with positive outcomes is nurturant, responsive parenting. Across risk status, various aspects of nurturant or responsive parenting have been associated with lower levels of externalizing and internalizing behavior (Kim-Cohen, Moffitt, Caspi, & Taylor, 2004; Masten et al., 1988; 1999; Werner & Smith, 1982, 1992) and delinquency (Kolvin et al., 1988), as well as higher levels of peer social competence (Masten et al., 1999; Wyman et al., 1999) and school achievement (Masten et al., 1999). Few studies have examined the interaction of parenting with risk status, but there is some evidence that parenting may be more strongly associated with child outcomes in the context of high risk (Masten et al., 1999).
Parent-Child Relationship Quality. In addition to specific parenting practices, the quality of the parent-child relationship has also been examined in relation to positive child outcomes. Theoretically, having a good relationship with a parent prepares the child to engage in healthy productive relationships with other people in the social environment. In support of this idea, Ingoldsby and colleagues (Ingoldsby, Shaw, & Garcia, 2001) found that having a good relationship with at least one parent was associated with less conflictual relationships with siblings, teachers, and peers. Researchers have found that the quality and closeness of the parent-child relationship relates to child outcomes across risk status (Emery & Forehand, 1996; Radke-Yarrow & Brown, 1993; Stouthamer-Loeber, Loeber, Wei, Farrington, & Wikström, 2002), and that it appears to be particularly important for children experiencing higher levels of risk (e.g., poverty; Owens & Shaw, 2003; Werner & Smith, 1982).

Marital Quality. As family therapists have long noted, the quality of the marital relationship may have important implications for child outcomes (Nichols & Schwartz, 1998). Researchers have posited a combination of direct and indirect mechanisms to explain this relationship (e.g., Emery, 1982). Much research has focused on how the quality of the marriage may affect parenting and the parent-child relationship, for example, by increasing the parent’s psychosocial resources and ability to consistently deal with child behavior (e.g., Belsky, Youngblade, Rovine, & Volling, 1991; Cox, Owen, Lewis, & Henderson, 1989; Kerig, Cowan, & Cowan, 1993). Direct associations between marital quality and various child outcomes also have been demonstrated (Cummings, Goeke-Morey, & Papp, 2004; Miller, Cowan, Cowan, Hetherington, & Clingempeel, 1993; Shek, 2000). For example, a positive marital relationship may increase children’s emotional security, which in turn can affect their ability to cope with daily stressors (Davies & Cummings, 1994). Conversely, marital relationships characterized by
low conflict or the use of constructive tactics to resolve conflict have been associated with low levels of child adjustment problems (Belsky et al., 1991; Cummings et al., 2004; McHale, Freitag, Crouter, & Bartko, 1991). Marital quality also has been positively associated with attachment security (Belsky, 1996; Goldberg & Easterbrooks, 1984; Howes & Markman, 1989), the attainment of cognitive and motoric milestones (Porter, Wouden-Miller, Silva, & Porter, 2003), and positive affect and high task orientation (Goldberg & Easterbrooks, 1984). Indeed, studies of children at high risk have found low discord between parents to serve as a key protective factor (Emery & Forehand, 1996; Masten & Garmezy, 1985). For example, in a study of preterm infants, high marital quality at 12 months was one of the only predictors of low behavior problems at age 4 (Benzies, Harrison, & Magill-Evans, 1998).

**Study Aims**

Despite growing interest in the area of resilience, the majority of studies have relied on cross-sectional methodologies investigating predominantly European American, middle-class samples (e.g., Criss et al., 2002; Masten et al., 1999), rather than more ethnically and socioeconomically diverse, low-income samples. In addition, there is a need for research examining multiple aspects of risk, protective factors, and positive adjustment (Masten et al., 1999), as well as for research on the effect of protective factors in early childhood on subsequent functioning (Yates et al., 2003). The current study aims to increase our understanding of resilience by using a prospective, longitudinal design employing observational and questionnaire measures from multiple informants to track the effects of protective factors measured in early childhood as they relate to outcomes among a sample of predominantly low-income male youth in early adolescence. Family adversity was defined by neighborhood quality measured longitudinally from age 1.5- to 10 years-old, and resilient adaptation was defined by low levels
of externalizing problems and above-average levels of social skills as rated by multiple informants. It was hypothesized that specific child and family characteristics, including child IQ, emotion regulation skills, nurturant parenting, the quality of the parent-child relationship, and marital quality, would be associated with positive social adjustment in early adolescence. Furthermore, in line with the theoretical definition of a protective factor (e.g., Garmezy, Masten, & Tellegen, 1984), child and family factors were expected to be more strongly related to child positive social adjustment in the context of persistently high versus persistently low or descending neighborhood risk.

Method

Participants

Participants in this study were part of the Pitt Mother and Child Project (PMCP), a longitudinal study of child vulnerability and resiliency in low-income families. In 1991 and 1992, 310 infant boys and their mothers were recruited from Allegheny County Women, Infant, and Children (WIC) Nutrition Supplement Clinics when the boys were between 6 and 17 months old. At the time of recruitment, 53% of the target children in the sample were European American, 36% were African American, 5% were biracial, and 6% were of other races (e.g., Hispanic American or Asian American). Two-thirds of mothers in the sample had 12 years of education or less. The mean per capita income was $241 per month ($2,892 per year), and the mean Hollingshead SES score was 24.5, indicative of a working class sample. Thus, a large proportion of the families in this study could be considered high risk due to their low socioeconomic status.

Retention rates have generally been high at each of ten time points from age 1.5- to 12-years old, with 90-94% of the initial 310 participants completing visits at ages 5 and 6. Some
data are available on 89% or 275 participants at ages 10, 11, or 12. When compared with those who dropped out at earlier time points, participants who remained in the study at ages 11 and 12 showed no difference on the CBCL Externalizing factor at ages 2, 3.5 or 5 (all \( p \) values > .50). In fact, similar comparisons using the narrow-band CBCL Aggression factor show that retained participants had significantly higher scores at ages 2 (\( F = 7.42, p < .01 \)) and 3.5 (\( F = 7.42, p < .01 \)) than those participants who no longer participated at ages 11 or 12. These results suggest that children of families who dropped out of the study were not more likely to exhibit conduct problems than children of families who continued to participate.

**Procedures**

Target children and their mothers were seen in the home and/or the lab for two- to three-hour visits at ages 1.5, 2, 3.5, 5, 5.5, 6, 8, 10, 11, and 12 years old. During these visits, mothers completed questionnaires regarding socio-demographic characteristics, family issues (e.g., parenting, family member’s relationship quality, maternal well being), and child behavior. At these visits, mothers and other family members (siblings, alternative caregivers) were also videotaped interacting with each other and/or the target child in age-appropriate tasks, including mother-son clean-up tasks in early childhood and sibling play or discussion tasks during preschool and school-age periods. Children were interviewed regarding their own adjustment starting at age 5.5. Beginning at age 6 and continuing through age 12, children’s teachers were asked to complete several questionnaires on the child’s adjustment, including the Social Skills Rating System. The visits with the child and mother at ages 1.5, 3.5, 5, and 11 were conducted in the lab, and the age 2 assessment was a joint home/lab visit; all other visits were conducted in the participants’ home. Participants were reimbursed for their time at the end of each visit.

**Measures**
To form more generalizable constructs, efforts were made to aggregate across time and/or informants whenever possible (Patterson, Reid, & Dishion, 1992). In cases in which data for a composited measure were missing at one of two time points (e.g., youth report of antisocial behavior at ages 11 and 12) or for one of two informants, data from the one data point were used to minimize missing data. All measures are summarized in Table 1.

**Risk Factors**

**Neighborhood Risk.** Neighborhood risk was ascertained using data from early to middle childhood (i.e., ages 1.5, 2, 3.5, 5, 5.5, 6, 8, and 10 years old) by geocoding addresses according to U.S. census data at the block group level, the smallest unit for which all census data are available. Addresses were collected from 1991-2003, so both 1990 and 2000 census data were used. For data from assessments collected between 1990 and 1995, the 1990 census data were used; for data from assessments collected between 1996 and 2003, the 2000 census data were used. Based on methods devised by Wikström and Loeber (2000) and adapted by Winslow (2001) and Schonberg et al. (2005), a composite variable of neighborhood poverty was generated using the following census block group level variables: 1) median family income, 2) percent families below poverty level, 3) percent households on public assistance, 4) percent unemployed, 5) percent single-mother households, 6) percent African American, 7) percent Bachelor degree and higher. These individual variables were standardized, summed, and then averaged (after reverse scoring median family income and percent Bachelor’s degree) to create an overall neighborhood risk score for each block group. Past research demonstrates that these variables correlate highly and are supported by factor analyses (Ingoldsbys, Shaw, Schonberg, & Flanagan, 2003; Wikström & Loeber, 2000).
In the current study, risk status was determined by both the persistence and severity of neighborhood risk using groups identified based on Nagin’s (2005) semiparametric, group-based approach for analyzing trajectories (TRAJ). This method determines the number of trajectories within a given population and then estimates the proportion of individuals following each trajectory. Consequently, children can be assigned to groups based on their exposure to persistent high versus persistent low versus ascending or descending neighborhood risk from age 1.5 to 10.

**Protective Factors**

*Child IQ.* Child intelligence was assessed at age 5.5 (the earliest assessment at which IQ was measured) using a four-subtest short form of the Wechsler Preschool and Primary Scale of Intelligence-Revised (WPPSI-R, Wechsler, 1989), a commonly used measure of children’s cognitive abilities. The Block Design, Geometric Design, Information, and Vocabulary subtests were selected because of the magnitude of their individual factor loadings, split-half reliability coefficients (BD: $r = .85$; GD: $r = .79$; I: $r = .84$; V: $r = .84$), and the high reliability and validity coefficients of this set of subtests (.92 and .91, respectively; Sattler, 1990). Full Scale IQ (FSIQ) scores were derived according to prorating procedures described by Tellegen and Briggs (1967, cited in Sattler, 1990).

*Emotion Regulation.* During the age 3.5 visit, mothers and sons engaged in a waiting task, in which the child was required to wait for a cookie for 3 minutes (Marvin, 1977). This task was designed to measure children’s coping strategies and ability to regulate affect in a delay-of-gratification context. During the 3 minutes, children had to wait for the cookie with little stimulation to occupy their time. All toys and activities were removed from the room, and the mother was instructed to complete questionnaires. Mothers were also told not to allow the child
to have the cookie until the end of the waiting period. At the end of 3 minutes, the examiner signaled to the mother to give the cookie to the child.

The primary objective in using this measure was to represent child emotion regulation strategies that presumably will be associated with positive outcomes in later childhood, including sustained regulation of negative emotions and the ability to distract oneself. Thus, the following previously-coded ratings of strategy and affect were used to generate an emotion regulation variable that focuses on children who show high levels of active distraction and infrequent displays of anger during the waiting task.

Specifically, strategies were coded based on a system created by Grolnick, Bridges, and Connell (1996) and adapted by Gilliom, Shaw, Beck, Schonberg, and Lukon (2002). The presence or absence of child active distraction was scored in 10-second intervals. Active distraction was defined as purposeful behaviors in which the focus of attention was shifted from the delay object or task, including fantasy play, exploration of the room, singing, talking with mother, turning lights on and off. At age 3.5, percent agreement with a master coder was 92.5% and kappa was .72. Displays of child anger were also coded from videotape using procedures adapted by Cole, Zahn-Waxler, and Smith (1994) that identify basic emotions through facial action and vocal quality cues. Intensity of anger was rated in seconds on a scale of 0-3, with 0 indicating “none,” 1 indicating “mild,” 2 indicating “moderate,” and 3 indicating “high”. The number of seconds that the child demonstrated mild to high anger was summed to arrive at the total amount of time that the child exhibited some form of anger. Agreement with a master coder was 88% and kappa was .76. There was no coder membership overlap between the active distraction and affect coding teams. Coders were unaware of the study hypotheses. To generate a composite factor that accounted for both strategy use and regulation of anger, for purposes of the
present study the standardized anger expression score (total time) was subtracted from the standardized active distraction score to generate an emotion regulation variable ($r = -0.39$, $p < .01$).

**Nurturant Parenting.** Maternal levels of nurturant, responsive parenting were assessed via observation at age 2 using the Home Observation for Measurement of the Environment (HOME; Caldwell & Bradley, 1984). This commonly used measure combines the use of observational ratings and data gathered from an interview with the parent to generate indices of maternal behavior and quality of the home environment. Each item of the HOME is rated as ‘0’ or ‘1’ based on the item’s absence or presence, respectively. Two of the six subscales were aggregated in the present study to create a single measure of Nurturant Parenting. The Acceptance subscale is comprised of eight items assessing maternal response to child misbehavior or distress (e.g., “Parent does not shout at child,” “Parent neither slaps nor spanks child during visit”). Two items regarding the family home (i.e., “At least ten books are present and visible,” “Family has a pet”) were omitted from the scale in the current study because they do not reflect parent-child interactions about misbehavior, rendering this a 6–item scale. The 11-item Emotional/Verbal Responsivity subscale rates communicative and affective parent-child interactions (e.g., “Parent caresses or kisses child at least once during visit,” “Parent responds verbally to child’s verbalizations”). Past research has demonstrated inter-observer agreement of .80 and above, as well as internal consistency of subscales in the moderate range (Bradley, 1993). To generate a scale of Maternal Nurturance, items from the 6-item Acceptance and 11-item Emotional/Responsivity scales will be summed. Internal consistency for the Nurturance variable was found to be adequate in the present sample ($\alpha = .74$).
Parent-Child Relationship Quality. Parent-child relationship quality was measured at ages 5 and 6 (the earliest assessment of this construct) using the Adult-Child Relationship Scale, an adaptation of the Student-Teacher Relationship Scale (Pianta, Steinberg, & Rollins, 1995). The original questionnaire, which focused on teacher-child relationship quality, was modified to assess maternal perception of openness and conflict in the relationship with their child. The Openness scale consists of 5 items such as “this child likes telling me about himself” and “it’s easy to be in tune with what this child is feeling;” whereas the Conflict scale consists of 10 items, including “this child and I always seem to be struggling with each other” and “this child feels I am unfair to him.” A composite of these two scales was used to assess parent-child relationship quality ($r = - .45, p < .001$). An average of the openness and conflict scores from ages 5 and 6 was used to create an overall score for each scale; then the conflict score was subtracted from the openness score to obtain the final score for parent-child relationship quality.

Marital Quality. Maternal perception of the level of satisfaction in her marital or significant-other relationship was assessed at the age 1.5-, 2-, and 3.5-year-old visits using the short form of the Marital Adjustment Test (MAT; Locke & Wallace, 1959). Prior research demonstrates that this measure differentiates between harmonious and disturbed marriages (Hershorn & Rosenbaum, 1985; Locke & Wallace, 1959; Rosenbaum & O’Leary, 1981) and also predicts child behavior problems (Emery & O’Leary, 1982). In situations in which mothers were recently separated, they were asked to report on that period of the past year when they were still living with their partner. In cases where mothers were not married, they were instructed to complete the scale on their most intimate adult relationship, including their live-in boyfriend, girlfriend, relative, or current dating partner. The word “relationship” or “close relationship” was substituted for “marriage,” and for relationships that were non-sexual in nature, the single item
concerning sex relations was omitted. This strategy is sensitive to the fact that 35% of the mothers in the study were single, and allowed for the inclusion of important information on a close relationship considered by the mothers to have primacy. An average of the scores from the 1.5, 2, and 3.5 year visits was used to create an overall score for each participant.

Child Positive Social Adjustment

To generate a measure of child positive social adjustment, measures of both antisocial behavior and social skills in early adolescence ($r = -.29, p < .001$) were combined to ensure that positive social adjustment was not based solely on the absence of disruptive behavior or the presence of social skills. Youth report was utilized to assess antisocial behavior at ages 11 and 12 because of the increasing covert nature of antisocial activities during latter school-age and early adolescence, and because maternal reports tend to become increasingly unreliable as children near adolescence (Loeber & Schmaling, 1985).

Due to the relatively high degree of observability of social skills compared to many antisocial activities during this age period, both parent report at age 11 and teacher report at ages 11 and 12 were used to evaluate boys’ social skills ($r = .26, p < .01$). To be included in the final analyses, participants needed to have data on both externalizing behavior and social skills; participants without data on one or both measures were excluded.

Adolescent Antisocial Behavior. At ages 11 and 12, children completed an adapted version of the Self-Report of Antisocial Behavior questionnaire (SRA; Elliott, Huizinga, & Ageton, 1985), a semi-structured interview assessing the frequency of delinquent behavior, alcohol and drug use, and related offenses. Because the current participants were at the lower end of the age range for this questionnaire (ages 11-17), several items regarding substance use (e.g., intravenous drug use) were removed due to the low base rates at these ages, leaving 10 items for
the present version (e.g., “Have you hit other students or gotten into a fight with them?” “Have you taken something from a store without paying for it?”). Previous research utilizing the current sample found adequate internal consistency at ages 10 and 11 ($\alpha = .71$; Shaw, Criss, Schonberg, & Beck, 2004). A composite of the average problem scores at ages 11 and 12 was used in the present analyses. As noted above, when only one score was available, the age-11 or age-12 report was used as the SRA score.

**Child Social Skills.** Mothers completed the Social Skills Rating System (SSRS; Gresham & Elliott, 1990) at child age 11, and teachers completed the SSRS at child ages 11 and 12. The SSRS is a questionnaire measuring child cooperation, assertiveness, and self-control with peers and adults (e.g., “attends to instructions,” “appropriately tells you when he or she thinks you have treated him or her unfairly,” “controls temper in conflict situations with peers”). The SSRS parent and teacher versions have four-week test-retest reliability ranging from .75 to .88, and internal consistencies of .87 and .94, respectively (Gresham & Elliot, 1990). Additionally, both versions of the SSRS demonstrate adequate content and criterion-related validity (Gresham & Elliot, 1990). At age 11, the standardized total social skills scores from mother-report and teacher-report were averaged and then aggregated with the teacher-reported standardized total social skills at age 12.

To create a continuous variable of positive adjustment, children’s scores on the SRA were converted to $z$ scores at ages 11 and 12, respectively, then summed and averaged across age, and finally subtracted from the aggregated standardized score on the SSRS.

**Results**

Prior to presenting results for each of the study’s four main hypotheses, descriptive statistics and intercorrelations will be described for the independent and dependent variables.
This will be followed by discussing the process of how trajectories of neighborhood risk were selected. Next, direct associations between child and family protective factors and child positive social adjustment will be examined, followed by an examination of interactions between individual child and family protective factors and neighborhood risk in relation to child positive social adjustment.

Descriptive Statistics and Bivariate Correlations

Descriptive statistics for all study variables appear in Table 1. Many of the measures used in the present study were either constructed for the purpose of this study or modified from their original format, making direct comparisons with other samples difficult. However, whenever possible such comparisons will be discussed. For example, the mean IQ for boys in the present study ($M = 93.81$, $SD = 12.76$) was approximately half a standard deviation lower than that reported in normative samples ($M = 100$, $SD = 15$; Wechsler, 1989). Maternal ratings of marital quality ($M = 101.66$, $SD = 25.85$) were similar to the original standardization sample mean ratings ($M = 100$, $SD = n/a$; Locke & Wallace, 1959). The mean raw score for teacher ratings of social skills at ages 11 and 12 was 36.54 ($SD = 9.57$), which is slightly lower than the normative mean scores for boys in grades 6 and 7 ($M = 39.7$, $SD = 11.2$; $M = 36.2$, $SD = 9.5$, respectively; Gresham & Elliott, 1990). Similarly, mother-rated scores for social skills at age 11 ($M = 51.73$, $SD = 10.28$) were slightly below the normative mean for boys in grade 6 ($M = 53.1$, $SD = 7.4$). Table 2 includes descriptive statistics from the 1990 and 2000 censuses for the neighborhood risk census variables for the present sample and for all residents in Allegheny County, PA, from which the present sample was drawn. As can be seen, the sample is consistently at higher levels of risk on all of the variables.
There were positive significant relationships between child IQ and maternal nurturance ($r = .32, p < .001$); and between parent-child relationship (PCRQ) and child emotion regulation (ER; $r = .27, p < .001$), maternal nurturance ($r = .27, p < .001$), and marital quality ($r = .26, p < .001$).

**Estimated Trajectories of Neighborhood Risk**

A semi-parametric mixture model for censored data was used to estimate trajectories of neighborhood risk based on block-group level census information (Nagin, 2005). Several decision criteria are employed to determine the best-fitting model: 1) the statistical significance of the trajectory parameter estimates for each group, which determines the appropriate shape of the individual trajectories; 2) the Bayesian Information Criteria (BIC), which informs the selection of the optimal number of trajectories; and 3) the posterior probability of membership in each group for each individual based on their actual data sequence. Statistical significance of the trajectory parameter estimates provides information on the model fit of each trajectory group, including indices for intercept, linear, quadratic, and cubic models. BIC scores emphasize parsimony, thus they include a penalty for adding additional trajectory groups (taking into account sample size). Finally, posterior probabilities offer another indicator of the precision of model fit by delineating the likelihood that an individual person would be assigned to each estimated trajectory group based on their observed data. The more accurately the trajectory group reflects the individual’s observed data, the higher the posterior probability that the individual would be assigned to that particular trajectory. The individual posterior probabilities for each individual within a trajectory group can be averaged to reveal how well that particular trajectory represents the observed data of the individual group members. Generally, a group average posterior probability over .70 is considered adequate (Nagin, 2005).
To account for the fact that data from both the 1990 and 2000 censuses were used to estimate neighborhood risk, census year was added as a covariate so that the estimated models would more accurately represent the observed data. The BIC scores for three, four, five, and six group models were compared. Although the BIC was highest for the six group model, the five group model was ultimately selected, as the six group model split the three lower-risk trajectories from the five group model into four low-risk trajectories, one of which contained only six participants. Because the primary goal of this study was to compare low-risk and high-risk neighborhood trajectories, the distinction among these lower risk trajectories was not deemed important. For the five group model, the trajectory coefficients representing linear trends were significant for the two highest risk trajectories (high descending risk group: \( n = 22 \); chronic high risk group: \( n = 34 \)); thus the other three groups could be represented by an intercept-only trajectory (i.e., the trajectories were flat; lowest risk group: \( n = 81 \); low risk group: \( n = 107 \); moderate risk group: \( n = 62 \)). Model selection was corroborated by examining posterior probabilities, which were uniformly high, ranging from .89 to .98.

**Direct Effects of Child and Family Factors**

To examine the hypotheses that child and family factors assessed in early childhood would be directly associated with later positive child outcomes, a series of Pearson correlations were computed to assess individual associations between child (i.e., child IQ, emotion regulation) and family (i.e., maternal nurturance, parent-child relationship quality, marital quality) factors and a continuous measure of child positive social adjustment (SSRS score – SRA score). As expected, all of the child and family factors were significantly associated with later positive social adjustment, with the exception of emotion regulation, which was a nonsignificant trend (Table 3).
Interactions between Child and Family Factors and Neighborhood Risk

To examine the hypothesis that child and family factors would be more strongly related to positive social adjustment in the context of more adverse trajectories of neighborhood risk, a series of hierarchical multiple regressions were conducted. Independent variables were centered prior to creating the interaction terms. When significant interactions were identified, they were examined using the procedure described by Aiken and West (1991), in which the relation between the protective factor and positive outcome is examined separately within each neighborhood trajectory group (e.g., low risk, high risk). Because neighborhood risk is a categorical variable, each trajectory received a dummy code, with either the chronic risk or the high descending risk group serving as the reference group; hence, two separate regressions were computed for each protective factor. Contrary to study hypotheses, none of the interactions between the child protective factors and neighborhood risk were significant, using either the chronic risk or high descending risk trajectories as the reference group (Table 4). With chronic risk as the reference group, the interaction between parent-child relationship quality (PCRQ) and the two lowest risk trajectories approached significance (Lowest risk: $B = .56, p < .10$; Low risk: $B = .59, p < .10$; Table 5). Follow-up analyses using the Aiken and West method (1991) described above revealed that contrary to hypotheses, there was a positive relationship between PCRQ and child social adjustment only in the context of low or moderate neighborhood risk (Lowest risk: $B = .623, p < .01$; Low risk: $B = .01, p < .01$; Moderate risk: $B = .348, p < .05$). This relationship was nonsignificant at higher levels of risk, such that children at high descending or chronic risk who had high levels of PCRQ were not more likely to have positive outcomes in the context of high parent-child relationship quality.
Using descending risk as the reference group, there were significant interactions between marital quality and the lowest risk trajectory \((B = .03, p < .05)\), as well as the second lowest risk trajectory \((B = .04, p < .01)\). The interaction between marital quality and the moderate risk trajectory approached significance \((B = .03, p < .10; \text{Table 6})\). Follow-up analyses revealed that there was a significant positive relationship between marital quality and child social adjustment only at the second lowest level of risk \((B = .019, p < .01; \text{Figure 2})\). Thus, for children at the lowest level of risk or at the moderate, high descending, or chronic levels of risk there was no relationship between high levels of parental marital quality and child positive social adjustment. No other significant interactions between the family factors and neighborhood risk were found.

**Discussion**

The purpose of the present study was to examine relations among multiple child and family protective factors, neighborhood risk, and positive social adjustment in a sample of urban, low SES boys followed from infancy to early adolescence. In line with hypotheses, individual child and family protective factors were found to be associated with positive social adjustment in early adolescence, albeit emotion regulation only approached statistical significance. Contrary to hypotheses, when interactions between individual protective factors and neighborhood risk trajectories were investigated to test whether associations varied according to risk, only marital quality was found to interact with neighborhood risk. High levels of marital quality were significantly related to positive outcomes only for boys in neighborhoods characterized by relatively low risk (i.e., second lowest risk group).

**Direct Associations Between Protective Factors and Positive Social Adjustment**

The finding that high levels of child and family protective factors were associated with positive social adjustment corroborates other literature on protective factors (e.g., Masten et al.,
Indeed, child IQ and parenting variables are among the most consistently found factors associated with prosocial outcomes for children (Yates et al., 2003). Researchers have posited that high levels of intelligence can help children contend with the stressors that they encounter in their everyday lives (Masten & Coatsworth, 1998). Similarly, nurturant, supportive parenting and a positive, close relationship with a parent may help children to navigate a stressful environment by providing them with valuable interpersonal and social resources (Masten & Coatsworth, 1998), as well as foster internal working models of trust in relationships with peers and adults outside of the family (Thompson, 1998).

Interactions Between Protective Factors and Neighborhood Risk Trajectories

Marital quality was the only protective factor in which the direct association with positive social adjustment was qualified by a significant interaction with neighborhood risk. In contrast with expectations, this suggests that child IQ, emotion regulation, nurturant parenting, and parent-child relationship quality assessed in early childhood are comparably associated with positive social adjustment in early adolescence across levels of neighborhood risk. Conversely, high levels of marital quality were only associated with positive outcomes for those children in the second lowest neighborhood risk trajectory.

These findings are important for two reasons. First, we did not find support for the notion that selected child and family protective factors appear to be more salient in contexts of greater versus lesser neighborhood adversity. In fact, three of the five protective factors explored in this study were associated with youth positive outcome regardless of the level of neighborhood risk. These findings differ from other studies which found that both parenting (Masten et al., 1999) and intellectual functioning (e.g., Masten et al., 1988, 1999; Werner & Smith, 1982) were more
strongly associated with positive outcomes in the context of risk factors, including negative life events and high cumulative risk across child and family domains, respectively. However, it should be noted that the current sample could be classified as entirely high risk due to low SES, while other studies tended to be comprised of predominantly middle class or normative samples (Masten et al., 1988, 1999; Werner & Smith, 1982). Thus it is possible that the children in the “lower” risk groups of the current study were exposed to a higher level of risk than even the highest risk groups of other studies that did find interactions (e.g., Masten et al., 1988, 1999; Werner & Smith, 1982). Consequently, it is possible that more interactions with neighborhood risk may have been identified in the current study had the range of SES been less restricted.

In addition, the finding that high levels of marital quality were associated with positive social adjustment for children only in the second lowest neighborhood risk trajectory suggests the possibility of a threshold effect and/or a ceiling effect. More specifically, high levels of marital quality were not associated with positive outcomes for children at either the lowest level of risk or at the two highest levels of risk. Previous research has found that marital quality is associated with low levels of child emotional and behavioral problems (e.g., Belsky et al., 1991; Cummings et al., 2004), but there is a dearth of information on whether this relation is moderated by the level of risk. For children at the lowest level of neighborhood risk, marital quality may be less salient because these children face fewer obstacles and may need a smaller number of resources to achieve a positive outcome. However, for children at high levels of neighborhood risk, marital quality may be less critical to their adjustment relative to other stressors in their daily lives (e.g., exposure and/or threat of violence in the neighborhood and school). The finding that protective factors in the home may not have much effect at high levels of risk is corroborated by research by Tolan and colleagues (2003), who found that the relationship
between parenting and antisocial behavior in the most impoverished Chicago neighborhoods was fully mediated by external environmental forces. Similarly, Shaw and colleagues (2004) found that while high family hierarchical structure (i.e., setting firm limits) served a protective function in relation to adolescent antisocial behavior among European American youth living in average to moderate levels of neighborhood adversity, this protective effect was not found for African American youth living in the highest risk neighborhoods (i.e., projects).

**Limitations**

There were a number of limitations to the present study that should be noted. First, participants were low-income, urban boys and it is unclear whether these results would generalize to girls or to boys and girls living in rural or suburban areas. Indeed, research suggests that pathways to externalizing behavior may be somewhat different for girls (Pepler & Craig, 2005). Similarly, protective factors associated with positive outcomes and resilience processes may also differ by child gender and geographic context. Second, due to low SES, the majority of the families in the study could be conceptualized as high-risk, thus it is not possible to say whether the direct relations between the protective factors and positive social adjustment hold for less economically-deprived groups, or whether different or more robust interactions would have been identified within a sample covering a broader range of SES. However, as Seidman and Pedersen (2003) have pointed out, high-risk samples such as the current one allow within-group heterogeneity to be examined more closely, which can further explicate resilience processes and highlight variability in trajectories for at-risk children. Third, sample sizes within the highest two trajectory groups were considerably smaller than the other groups, which limited power and the possibility of finding interactions between protective factors and neighborhood risk.
Fourth, as previously noted, single mothers were allowed to complete the marital quality questionnaire on another significant adult relationship, such as their boyfriend, girlfriend, or relative that shared household responsibilities. This was sensitive to the fact that 35% of the mothers in our study were single and allowed for the collection of important information on the mothers’ satisfaction in their closest relationship. However, due to differences in measurement from other studies, the generalizability of the current findings regarding marital quality may be somewhat questionable. It is also possible that the trajectory group differences in the relation between marital quality and positive social adjustment were driven by trajectory group differences in the presence of a romantic partner. For example, mothers in the lower risk trajectories may have been more likely to be in romantic relationships than mothers in the higher risk trajectories. However, when a chi square test was performed to see whether the probability of completing the questionnaire on a romantic partner differed by trajectory group, although there was an expected significant difference between mothers in lower and higher risk trajectory groups, the percentages of mothers in the lowest three trajectory groups with a romantic partner did not differ. This suggests that the presence of a romantic partner did not entirely account for the interaction, as if this were the case one would expect the associations between marital quality and positive social adjustment in the lowest risk trajectories to be similar, which they were not.

Summary and Clinical Implications

This study provides important information on the relations among child and protective factors, neighborhood risk, and positive social adjustment in urban, low-SES boys. These findings highlight the importance of examining both main effects and interactions, even if they are unexpected, as both provide important information for prevention and intervention efforts. It
is critical to know which groups may benefit from a given intervention, whether it be all groups or specific subsets.

Consistent with prior research, the current findings emphasize the importance of child IQ and the family environment in promoting children’s positive social adjustment, but contrary to other studies do not suggest that such factors are more important for children living in high-risk contexts. The results suggest that prevention programs focusing on providing children with cognitively stimulating and nurturing environments would seem to hold promise for promoting positive outcomes for children from low-income contexts across a range of adversity. It remains unclear, however, whether modifying one protective factor is sufficient to improve outcome, particularly in the context of high risk; interventions targeting multiple domains may prove more successful at counteracting the multiple risks associated with neighborhood adversity (Henggeler, 1999; Shaw, Dishion, Supplee, Gardner, & Arnds, 2006). Future research on the relations between multiple domains of protective factors, neighborhood risk, and positive adjustment is needed, particularly in girls, and in boys and girls from rural and suburban contexts. Only through continued research on the conditions under which at-risk children achieve positive outcomes can resilience processes be fully understood and incorporated into prevention and intervention programs.
References


poverty and prosperity. Poster presented as the biennial meeting of the Society for Research on Child Development, Atlanta, GA.


**Table 1**

Descriptive Statistics for Independent and Dependent Variables

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Independent Variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WPPSI-R(^1) (short form)</td>
<td>234</td>
<td>93.81</td>
<td>12.76</td>
</tr>
<tr>
<td>Observed Emotion Regulation</td>
<td>247</td>
<td>.05</td>
<td>1.56</td>
</tr>
<tr>
<td>HOME(^2): Acceptance and Emotional/Verbal Responsivity</td>
<td>291</td>
<td>13.54</td>
<td>3.15</td>
</tr>
<tr>
<td>Adult-Child Relationship Scale</td>
<td>289</td>
<td>2.00</td>
<td>1.05</td>
</tr>
<tr>
<td>Marital Adjustment Test</td>
<td>311</td>
<td>101.66</td>
<td>25.84</td>
</tr>
<tr>
<td>Neighborhood Risk Score</td>
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<td>.94</td>
</tr>
<tr>
<td><strong>Dependent Variables</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Social Skills Rating System - Teacher report</td>
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<td>36.54</td>
<td>9.57</td>
</tr>
<tr>
<td>Social Skills Rating System – Mother report</td>
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<td>51.73</td>
<td>10.28</td>
</tr>
<tr>
<td>Self-Report of Antisocial Behavior</td>
<td>262</td>
<td>.18</td>
<td>.19</td>
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</tbody>
</table>

\(^1\) Wechsler Preschool and Primary Scale of Intelligence – Revised  
\(^2\) Home Observation for Measurement of the Environment
### Table 2

Descriptive Statistics for Neighborhood Risk Census Variables: Sample vs. Allegheny County

<table>
<thead>
<tr>
<th>1990 Census Variables</th>
<th>Sample Mean</th>
<th>Sample SD</th>
<th>Allegheny County Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. % African American</td>
<td>25.38</td>
<td>33.88</td>
<td>11.20</td>
</tr>
<tr>
<td>2. % single mother households</td>
<td>9.69</td>
<td>10.79</td>
<td>5.52</td>
</tr>
<tr>
<td>3. % Bachelors degree or higher</td>
<td>13.96</td>
<td>13.04</td>
<td>22.6</td>
</tr>
<tr>
<td>4. % unemployed</td>
<td>10.46</td>
<td>10.01</td>
<td>10.06</td>
</tr>
<tr>
<td>5. % households on public assistance</td>
<td>14.09</td>
<td>13.70</td>
<td>7.98</td>
</tr>
<tr>
<td>6. Median family income</td>
<td>$28,316.75</td>
<td>$12,827.10</td>
<td>$35,338.00</td>
</tr>
<tr>
<td>7. % families below poverty</td>
<td>16.65</td>
<td>17.48</td>
<td>8.71</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2000 Census Variables</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. % African American</td>
<td>26.21</td>
<td>31.85</td>
<td>12.33</td>
</tr>
<tr>
<td>2. % single mother households</td>
<td>10.79</td>
<td>9.59</td>
<td>6.38</td>
</tr>
<tr>
<td>3. % Bachelors degree or higher</td>
<td>17.70</td>
<td>13.58</td>
<td>28.34</td>
</tr>
<tr>
<td>4. % unemployed</td>
<td>4.61</td>
<td>3.60</td>
<td>3.72</td>
</tr>
<tr>
<td>5. % households on public assistance</td>
<td>5.55</td>
<td>6.09</td>
<td>3.09</td>
</tr>
<tr>
<td>6. Median family income</td>
<td>$39,008.97</td>
<td>$16,100.49</td>
<td>$49,815.00</td>
</tr>
<tr>
<td>7. % families below poverty</td>
<td>14.95</td>
<td>13.97</td>
<td>7.94</td>
</tr>
</tbody>
</table>
Table 3

Correlations Between Child and Family Protective Factors and Positive Youth Adjustment

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Positive Youth Adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Child IQ</td>
<td>.28***</td>
</tr>
<tr>
<td>2. Child Emotion Regulation</td>
<td>.13&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>3. Maternal Nurturance</td>
<td>.35***</td>
</tr>
<tr>
<td>4. Parent-child relationship quality</td>
<td>.36***</td>
</tr>
<tr>
<td>5. Marital Quality</td>
<td>.16*</td>
</tr>
</tbody>
</table>

<sup>a</sup> p < .10  * p < .05; **p < .01; *** p < .001
Table 4
Summary of Hierarchical Regression Analyses Predicting Youth Positive Adjustment from Child Factors with Neighborhood Risk as a Moderator

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Chronic risk vs. other neighborhood groups</th>
<th>High desc. risk vs. other neighborhood groups</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE</td>
</tr>
<tr>
<td>Child IQ</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child IQ</td>
<td>.04</td>
<td>.02</td>
</tr>
<tr>
<td>Lowest risk</td>
<td>.56</td>
<td>.38</td>
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<tr>
<td>Low risk</td>
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<td>.36</td>
</tr>
<tr>
<td>Moderate risk</td>
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<td>.39</td>
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<td>High desc. risk</td>
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<td>.48</td>
</tr>
<tr>
<td>IQ x lowest risk</td>
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<td>.03</td>
</tr>
<tr>
<td>IQ x low risk</td>
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<td>.03</td>
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<tr>
<td>IQ x moderate risk</td>
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<td>.03</td>
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<tr>
<td>IQ x high desc. risk</td>
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<td>.03</td>
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<tr>
<td>Child Emotion Regulation (ER)</td>
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<tr>
<td>Child ER</td>
<td>.33</td>
<td>.22</td>
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<td>.37</td>
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<tr>
<td>Low risk</td>
<td>1.32</td>
<td>.36</td>
</tr>
<tr>
<td>Moderate risk</td>
<td>.38</td>
<td>.38</td>
</tr>
<tr>
<td>High desc. risk</td>
<td>.38</td>
<td>.48</td>
</tr>
<tr>
<td>ER x lowest risk</td>
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<td>.26</td>
</tr>
<tr>
<td>ER x low risk</td>
<td>-.35</td>
<td>.25</td>
</tr>
<tr>
<td>ER x moderate risk</td>
<td>-.17</td>
<td>.26</td>
</tr>
<tr>
<td>ER x high desc. risk</td>
<td>-.52</td>
<td>.42</td>
</tr>
</tbody>
</table>

*p < .10; *p < .05; **p < .01; ***p < .001
Table 5
Summary of Hierarchical Regression Analyses Predicting Youth Positive Adjustment from Parenting Factors with Neighborhood Risk as a Moderator

<table>
<thead>
<tr>
<th></th>
<th>Chronic risk vs. other neighborhood groups</th>
<th>High desc. risk vs. other neighborhood groups</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE</td>
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<tr>
<td>Maternal Nurturance (Nurt)</td>
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<tr>
<td>Nurt</td>
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<td>.08</td>
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<td>Lowest risk</td>
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<tr>
<td>Low risk</td>
<td>.97</td>
<td>.34</td>
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<tr>
<td>Moderate risk</td>
<td>.42</td>
<td>.36</td>
</tr>
<tr>
<td>High desc. risk</td>
<td>.49</td>
<td>.48</td>
</tr>
<tr>
<td>Nurt x lowest risk</td>
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</tr>
<tr>
<td>Nurt x low risk</td>
<td>.12</td>
<td>.12</td>
</tr>
<tr>
<td>Nurt x moderate risk</td>
<td>.04</td>
<td>.11</td>
</tr>
<tr>
<td>Nurt x high desc. risk</td>
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<td>.13</td>
</tr>
<tr>
<td>Parent-Child Relationship Quality (PCRQ)</td>
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<td>PCRQ</td>
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<tr>
<td>Moderate risk</td>
<td>.42</td>
<td>.33</td>
</tr>
<tr>
<td>High desc. risk</td>
<td>.42</td>
<td>.42</td>
</tr>
<tr>
<td>PCRQ x lowest risk</td>
<td>.56</td>
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<td>PCRQ x low risk</td>
<td>.59</td>
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<tr>
<td>PCRQ x moderate risk</td>
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<td>.30</td>
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<tr>
<td>PCRQ x high desc. risk</td>
<td>.36</td>
<td>.38</td>
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</table>

a p < .10; * p < .05; ** p < .01; *** p < .001
Table 6
Summary of Hierarchical Regression Analyses Predicting Youth Positive Adjustment from Marital Quality with Neighborhood Risk as a Moderator

<table>
<thead>
<tr>
<th></th>
<th>Chronic risk vs. other neighborhood groups</th>
<th>High desc. risk vs. other neighborhood groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent Variables</td>
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<td>$SE$</td>
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<td>Marital Quality (MQ)</td>
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<td>.01</td>
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<tr>
<td>Lowest risk</td>
<td>1.42</td>
<td>.33</td>
</tr>
<tr>
<td>Low risk</td>
<td>1.12</td>
<td>.32</td>
</tr>
<tr>
<td>Moderate risk</td>
<td>.35</td>
<td>.35</td>
</tr>
<tr>
<td>High desc. risk</td>
<td>.14</td>
<td>.43</td>
</tr>
<tr>
<td>MQ x lowest risk</td>
<td>.01</td>
<td>.01</td>
</tr>
<tr>
<td>MQ x low risk</td>
<td>.02</td>
<td>.01</td>
</tr>
<tr>
<td>MQ x moderate risk</td>
<td>.01</td>
<td>.01</td>
</tr>
<tr>
<td>MQ x high desc. risk</td>
<td>-.02</td>
<td>.02</td>
</tr>
</tbody>
</table>

* $p < .05$; ** $p < .01$; *** $p < .001$
Figure 1

Trajectories of Neighborhood Risk

-1
-0.5
-0.5
-0.5
-0.5
-1
0
0.5
1
1.5
2
2.5
3
1.5 2 3.5 5('90) 5('00) 5.5('90) 5.5('00) 6 8 10
Child Age

Figure 2

Relation Between Marital Quality and Positive Adjustment at Three Levels of Neighborhood Risk

\[ B = .019, \ p < .01 \]