

Neighborhood Disadvantage, Stressful Life Events, and Adjustment in Urban Elementary-School Children

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Assessed the occurrence of three types of stressful life events among African-American and Hispanic children living in urban neighborhoods, and examined the concurrent and prospective relations between stressful life events and adjustment. Younger children and children living in the most disadvantaged neighborhoods experienced more stressful life events. Stressful life events were significantly related to higher concurrent levels of aggression and predicted increases in aggression 1 year later. Life transitions and exposure to violence predicted concurrent aggression, but circumscribed events served as the strongest predictor of aggression 1 year later. Total number of stressful events and exposure to violence significantly interacted with neighborhood disadvantage, such that effects were only apparent under conditions of high neighborhood disadvantage.

Over the past two decades there has been much interest in the relation between exposure to stress and emotional and behavioral maladjustment in children and youth. In general, cumulative exposure to stressors is predictive of a range of adjustment problems, although the relations are somewhat modest in size (for reviews, see Compas, 1987; Johnson, 1986). Many of the studies of the stress–adjustment relation can be classified into one of two groups: (a) those focusing on the role of chronic stressors and (b) those examining the impact of discrete stressful life events.

Chronic stressors are ongoing and persistent. One type of chronic stress that has been investigated in relation to children's development is *neighborhood disadvantage* (ND), as determined by the presence of a number of community-level stressors such as poverty, unemployment or underemployment, limited resources, substandard housing, and high crime rates. Such stress is chronic, and affects all individuals in a given setting. For example, a person who earns above the national median income but lives in a disadvantaged neighborhood would experience ND effects (limited community resources, fear of crime, etc.) even though he or she would not be considered economically disadvantaged according to individual-level data. In the United States at this time, many urban communities are

characterized by high ND levels (Wilson, 1987). This type of chronic environmental stress also disproportionately affects members of ethnic minority groups, because they are overrepresented in urban communities.

Studies focusing primarily on the relation between ND within an urban context and psychological adjustment have found that children who face these high levels of hazardous environmental conditions are more likely than children growing up under more favorable circumstances to evidence a variety of behavioral and emotional difficulties (McLoyd, 1990; Wyman, Cowan, Work, & Parker, 1991). In the most extreme cases, it has been suggested that these environmental conditions contribute to psychological symptomatology, specifically posttraumatic stress disorder (Garbarino, Kostelny, & DuBrow, 1991).

In contrast to chronic stressors such as ND, discrete stressful life events occur at the level of an individual's immediate interpersonal context and include both *negative life events* and *daily hassles*. Negative life events can be differentiated further according to the type of readjustment they require. For example, Felner, Farber, and Primavera (1983) and Tolan, Miller, and Thomas (1988) have distinguished *circumscribed* or *discrete traumatic events* (e.g., death of a relative) from stressors associated with the onset of a *life transition* (e.g., parental divorce). Daily hassles are described as ongoing, daily frustrations and demands found in everyday situations (e.g., feeling pressured by friends, arguments with parents, or school demands). In studies examining the relative weightings of these different

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types of stressors, circumscribed events and life transitions are rated as more stressful than daily hassles (e.g., Tolan et al., 1988).

Experiencing several of major negative life events has been linked with a range of adjustment problems, including social withdrawal (Rutter, 1983), school adjustment problems (Pryor-Brown & Cohen, 1989), self-reported delinquency (Tolan, 1988; Vaux & Ruggiero, 1983), and psychological distress, including depression and anxiety (Compas, Howell, Phares, Williams, & Giunta, 1989; Dubois, Felner, Brand, Adan, & Evans, 1992; Wagner, Compas, & Howell, 1988). Similarly, several studies have found support for a relation between daily hassles and adjustment problems, even when the degree to which these hassles co-occur with negative life events is controlled (Rowlison & Felner, 1988).

In addition, research has pointed to the effects of multiple stressors on children's coping and adjustment. Studies have consistently found that the presence of one stressor is not sufficient to lead to pronounced maladjustment; rather, exposure to a combination of stressors is necessary for a child to develop serious emotional or behavioral problems (Forehand, Middleton, & Long, 1987; Garnezy, 1987; Rutter, 1989; Seifer & Sameroff, 1987). Furthermore, the effect is not additive, but multiplicative. As Garnezy (1987) pointed out, "Two risk factors . . . provided a four-fold increase in the likelihood of a psychiatric disorder; four factors increased the risk ten-fold" (p. 165).

If the effects of stressors are indeed multiplicative, then living under conditions of heightened ND should increase risk for all children, and particularly for children who also experience more stressful life events. As DuBois et al. (1992) noted, "Youth faced with these kinds of contextual conditions may well exhibit greater vulnerability to stressful events that occur in their lives than do youth in more resource-enriched environments" (p. 553). Yet, most investigations of the stress-adjustment relation have not disentangled the relations between chronic environmental stressors such as ND and stressful life events within a single study. It is therefore difficult to determine whether the effects of stressful life events on behavior vary in relation to differing ND levels.

The first aim of our research was to examine the occurrence of three types of negative life events among African-American and Hispanic elementary-school-age boys and girls living in urban communities characterized by varying levels of ND (high vs. moderate). In addition to circumscribed events and life transitions, children's observation of violent events was also of interest; thus, *exposure to violence* was identified as an additional category of stressful negative life events. It was expected that children in the high-environmental-stress condition would report experiencing more life transitions and circumscribed events and would report

witnessing more violence than children in the moderate-stress condition.

The second aim of this study was to examine the concurrent relations between ND level, negative life events, and two indices of psychological adjustment—aggression and depression/anxiety. It was predicted that there would be a positive relation between total number of stressful events and both aggression and depression/anxiety, and that this relation would be stronger under high-ND conditions. In addition, the relations between the three types of negative life events (transitions, circumscribed events, witnessing violence) on each measure of adjustment were of interest. Despite our current understanding of the impact of various stressful life events on adjustment, most studies generally have not examined the differential effects of specific types of stressful events vis-à-vis specific behavioral and emotional outcomes. In addition, many of the stress-adjustment studies have focused on depression/anxiety and have relied primarily on self-report measures of both stress and depression, raising concerns over common-method variance.

Related to the second aim, the study also sought to explore whether the stress-adjustment relation was moderated by sex, grade, and ethnicity. For instance, a child's behavioral response to stressful events may reflect an amplification of sex-stereotypic behaviors, whereby girls may be more likely to respond to stress with increased depression and anxiety and boys may be more likely to respond with increased aggression. Previous studies have, in fact, found sex differences in the types of behaviors coinciding with or follow the occurrence of stressful events. For example, following parental divorce, boys tend to exhibit more aggressive and acting-out behaviors than do girls (Hetherington, 1989). Generally, however, studies have not tested a link between age and ethnicity and the stress-adjustment relation.

Finally, the third aim of this study was to examine the relation of stress to subsequent aggression and school achievement. With some exceptions (e.g., Dubow, Tisak, Causey, Hryshko, & Reid, 1991), there have been few prospective studies of the relation between stress and behavioral adjustment in elementary-school children. Most prospective studies have sampled adolescents and have focused on depression/anxiety as an index of psychological adjustment, although school achievement has frequently been assessed. In general, long-term effects of stressors on these variables have been reported. For example, DuBois et al. (1992) found that major negative life events contributed significantly to the prediction of a subsequent decline in grade-point average and an increase in depression/anxiety among adolescents, even after controlling for initial levels of these variables. Little is known, however, about the longitudinal relations between stressful life events and aggression in

children, and even less about this relation in the context of varying ND levels.

Method

Participants

The initial (Time 1) participants were 384 first-, second-, and fourth-grade African-American ($n = 220$) and Hispanic ($n = 164$; predominantly of Mexican descent) children from six schools in a large midwestern city. Because the stress-adjustment relation among ethnic minority children was of primary interest, and because there were relatively few nonminority children (approximately 12%), these nonminority children were not included in the present study. Participants were all African-American and Hispanic children from these grades in the six schools from classrooms where teachers had agreed to participate and for whom parental permission had been obtained (86%). As shown in Table 1, the sample was approximately equally divided between boys and girls, and approximately equally distributed across grade levels. All public schools in this particular city were considered as located in communities that were at least moderate in ND by virtue of citywide statistics on crime, income level, housing, and employment. For example, average city violent-crime rates were 10 times higher than for surrounding communities, and were the fourth highest in the United States (Federal Bureau of Investigation, 1990). Additionally, 25% of city residents receive some form of public aid (Illinois Department of Public Aid, 1992). Of the initial (Time 1) sample of 384 children, 1-year follow-up (Time 2) achievement data were available for 243 children (63% of original sample) and aggression data were available for 196 children (51% of original sample). Of the subjects who dropped out of the study between Time 1 and Time 2, approximately 20% had left their school and could not be located; data on the other subjects were unavailable due to teacher noncompliance in completing behavioral checklists and lack of comparable norms for the Spanish language achievement tests. According to t tests, subjects for whom achievement and aggression

data were available at both Time 1 and Time 2 did not differ significantly on initial levels of aggression from subjects who had dropped out after Time 1, although subjects who had dropped out were rated as significantly less anxious/depressed and reported fewer stressful life events at Time 1.

Measures and Assessment Procedures

Time 1 assessments were collected in the spring of 1991 and included self-report data on stressful life events, peer ratings of aggression, teacher ratings of aggression and depression/anxiety, and archival (academic achievement) data. The self-report and peer-nominated assessments were administered individually for first graders and in the child's regular classroom for second and fourth graders. Individual administration was conducted by one investigator, and classroom administration was conducted by one investigator and two monitors. All investigators and monitors were trained extensively in the assessment of children in urban settings. In both individual and group administrations, the investigator read each question aloud. For children who spoke only Spanish, all measures were translated and back-translated, and were administered by investigators who were native Spanish speakers. No difficulties in understanding the self-report or peer-nomination measures were noted. One year later (Time 2), in the spring of 1992, teacher ratings of aggression and archival (academic achievement) data were again collected.

Community data on indicators of chronic environmental stress were gathered from available school, census, and demographic records. There was initial concern that ethnicity and environmental stress would be confounded, with African-American children over-represented in the highly disadvantaged communities (Wilson, 1987). However, because all schools were drawn from urban neighborhoods with a high concentration of lower-class and lower-middle-class minority families, the correlation between ethnicity and ND level was only moderate. Therefore, ethnicity was retained as a separate variable, although it is clear that ethnicity and community are not independent.

ND. Because almost all students in all schools lived in the adjacent neighborhoods, environmental stress was initially assessed from school data. A school was considered located in a *high-ND* setting if approximately two thirds of the children in the school received free lunch, and a school was considered located in a *moderate-ND* setting if fewer than one third of the students received free lunch. This procedure resulted in three schools being classified as high ND and three schools being classified as moderate ND.

ND level was confirmed with data on median family income, percentage of residents receiving public aid,

Table 1. Demographic Distribution of Sample

Race and Grade	Girls	Boys
African American		
First Grade	35	32
Second Grade	31	35
Fourth Grade	39	48
Hispanic		
First Grade	28	19
Second Grade	30	32
Fourth Grade	33	22

type of housing (public housing vs. rentals and other private dwellings), number of abandoned buildings, and violent crime rates. According to these data, the three schools rated as high ND were located in neighborhoods with median family incomes ranging from \$8,900 to \$15,000 (Donnelly Marketing Information Services [DMIS], 1991). An average of 41% of the residents of these communities received some form of public aid (Illinois Department of Public Aid, 1992). Housing in these neighborhoods included high-rise and low-rise public housing developments and/or between 100 and 200 abandoned buildings (Chandler & Herrmann, 1992). These schools were also located in police districts where violent crime rates were at least 50% higher than citywide figures (Chicago Police Index [CPI], 1991).

The three schools considered to be moderate ND were located in neighborhoods with median family incomes at or above \$25,000 (DMIS, 1991), with approximately 6% of residents receiving public aid. Housing in these neighborhoods typically consisted of rental apartments, condominiums, and two- and three-story single-family dwellings. There were fewer than 100 abandoned buildings in these neighborhoods (Chandler & Herrmann, 1992). These three schools were also located in police districts where the violent crime rate was at least 50% lower than the citywide average (CPI, 1991).

Stressful life events. The occurrence of such events was measured by the Stress Index, a 16-item self-report scale consisting of three subscales: Circumscribed Events (4 items), Life Transitions (6 items), and Exposure to Violence (6 items). Items for the circumscribed events and life transitions subscales were taken from the corresponding scales of the Social Stress Measure developed by Tolan et al. (1988). Items were selected from the two original scales of the Social Stress Measure if they had been rated by at least 85% of children as having a "negative" impact, did not describe an event which could possibly be confounded with child maladjustment (e.g., suspended from school), and were considered appropriate for urban, minority, elementary-school children. Exposure to Violence items were developed for the present study and included types of violent events most likely to be witnessed or experienced by school-age children. To reassess the classification of items into these three subscales, two independent raters categorized all items according to specified operational definitions, and 100% agreement was obtained. Children completed the index by indicating whether or not they had experienced each of the stressful events during the past year. The 16-item scale is presented in Table 2.

Peer-nominations of aggression. The Peer-Nominated Aggression Scale (Eron, Walder, & Lefkowitz,

Table 2. *Stress Index Items (and Subscale)*

During the last year:

1. Did your family move to a new home or apartment? (T)
2. Did your family's property get wrecked or damaged due to fire, burglary, or other disaster? (C)
3. Has anyone in your family gotten married? (T)
4. Has your family had a new baby come into the family? (T)
5. Has anyone moved out of your home? (T)
6. Did a family member die? (C)
7. Did another close relative or friend die? (C)
8. Has a family member become seriously ill, injured badly, and/or had to stay at the hospital? (C)
9. Has a family member been robbed or attacked? (V)
10. Has someone else you know, other than a member of your family, gotten beaten, attacked, or really hurt by others? (V)
11. Have you seen anyone beaten, shot, or really hurt by someone? (V)
12. Did you change where you went to school? (T)
13. Have you seen or been around people shooting guns? (V)
14. Did you have to go live in a foster home? (T)
15. Have you been afraid to go outside and play, or have your parents made you stay inside because of gangs or drugs in your neighborhood? (V)
16. Have you had to hide someplace because of shootings in your neighborhood? (V)

Note: T = Life Transitions; C = Circumscribed Events; V = Exposure to Violence.

1972) was used as a measure of children's aggression. This 10-item scale has been used for over 30 years with demonstrated reliability and validity for children of different socioeconomic and ethnic groups (Eron et al., 1972; Huesmann & Eron, 1986). In this procedure, each child is presented with a series of printed pages, each listing of all children in his or her classroom, with the names grouped by sex. The child is asked to circle every name that fits the question at the top of the page (e.g., "Who pushes and shoves other children?"). The investigator reads each question aloud and paces the child (children) so that exactly the same amount of time is spent on each question. A child's score is derived by taking the number of times the child is nominated by other children and dividing by the total number of times the child could have been nominated. Scores thus range from 0 to 1.

Teacher ratings of depression/anxiety and aggression. During the first wave of data collection (Time 1), teachers rated all permission children on the complete Child Behavior Checklist-Teacher Report Form (CBCL-TRF; Achenbach & Edelbrock, 1986). This reliable and well-validated measure contains a list of 118 behavior-problem items that the teacher rates on a 3-point scale ranging from *not true* (0) to *very true* (2). For the purposes of the current study, only the 17-item Depression scale, the 25-item Anxiety scale, and the 23-item Aggression scale were of interest. Because of the high intercorrelation between the Depression and Anxiety scales ($r = .87$), these two scales

were averaged to form a Depression/Anxiety scale. Because peer nominations of aggression were also available at Time 1, they were used for analyses of Time 1 data in lieu of the teacher ratings in order to maximize the independence of ratings on the variables of interest. During the second wave of data collection, teacher ratings were obtained on the Aggression scale only. Due to unavailability of peer ratings of aggression at Time 2, both Time 1 and Time 2 teacher ratings were used in the prospective analyses.

Academic achievement. The Reading and Math scales of the Iowa Test of Basic Skills were used to measure academic achievement. Children's percentile scores on these two scales were averaged to yield a total achievement score.

Results

The results of this study are presented in three major sections. First, mean levels of stressors are reported by ND, sex, ethnicity, and grade. Next, cross-sectional relations among stressors and both peer-rated aggression and teacher-rated depression/anxiety are reported. Finally, the longitudinal relations between stressors and subsequent teacher-rated aggression and academic achievement are reported.

Exposure to Stressors

Means and standard deviations for total stress (all 16 items) and for the three subscales of the Stress Index are reported in Table 3. For each of the four dependent stress measures, a 2 (ND) \times 2 (Sex) \times 2 (Ethnicity) \times 3 (Grade) analysis of variance was performed. Subse-

quent to a significant main effect or interaction, post hoc comparisons were performed using a Bonferroni comparison test.

For total stress, significant main effects were revealed for ND, $F(1, 369) = 23.98, p < .001$, and grade, $F(2, 369) = 7.39, p < .001$. Children from schools in high-ND areas reported more stressors than children from schools in moderate-ND neighborhoods. Post hoc comparisons indicated that first graders reported significantly more total stress than did second graders ($p < .05$) and fourth graders ($p < .001$), and that second and fourth graders did not differ from each other. A significant Sex \times Ethnicity interaction also was revealed, $F(1, 369) = 4.05, p < .05$. Post hoc comparisons indicated that African-American girls reported significantly more stressors ($M = 7.0$) than did any other group ($p < .05$), and the other groups did not differ significantly.

For the Life Transitions subscale, a significant ND \times Grade interaction was revealed, $F(2, 369) = 3.11, p < .05$. Post hoc comparisons showed that among children attending schools in high-ND settings, first graders reported significantly more transitions than fourth graders ($p < .01$), and first and second graders did not differ in their exposure to transitions. Among children at schools in moderate-ND settings, there were no grade differences in the number of transitions experienced.

For the Circumscribed Events subscale, a main effect was revealed for ND, $F(1, 369) = 10.18, p < .01$. Children from schools in high-ND settings reported more circumscribed events than did children from schools in moderate-ND areas. No significant interactions were revealed.

For the Exposure to Violence subscale, a significant Sex \times Grade interaction, $F(2, 369) = 3.18, p < .05$, and a Sex \times ND interaction, $F(1, 369) = 3.90, p < .05$, were revealed. Post hoc comparisons for the Sex \times Grade interaction indicated that first- and second-grade girls

Table 3. Means and Standard Deviations for Children's Stress Exposure

Group	Total Stress		Life Transitions		Circumscribed Events		Exposure to Violence	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
All Children	5.6	3.2	2.0	1.4	1.4	1.1	2.2	1.6
Neighborhood Disadvantage								
High ND	6.6	3.2	2.3	1.4	1.7	1.1	2.6	1.6
Moderate ND	4.3	2.6	1.7	1.2	1.1	1.0	1.6	1.4
Sex								
Girls	5.9	3.1	2.1	1.3	1.5	1.1	2.3	1.6
Boys	5.3	3.2	2.0	1.4	1.3	1.1	2.0	1.6
Ethnicity								
African Americans	6.5	3.2	2.2	1.4	1.7	1.1	2.6	1.6
Hispanics	4.5	2.7	1.8	1.3	1.1	1.0	1.6	1.4
Grade								
First	6.7	3.0	2.5	1.3	1.7	1.1	2.5	1.6
Second	5.4	3.4	2.0	1.4	1.3	1.1	2.1	1.6
Fourth	5.1	2.9	1.8	1.3	1.4	1.1	1.9	1.5

Note: Scores ranged from 0 to 16 for total stress, 0 to 6 for Life Transitions, 0 to 4 for Circumscribed Events, and 0 to 6 for Exposure to Violence.

reported significantly more exposure to violence than did fourth-grade boys ($p < .05$), with no other significant differences. Post hoc comparisons for the Sex \times ND interaction indicated that boys in schools located in moderate-ND settings reported less exposure to violence than did girls in moderate-ND schools ($p < .05$) and children in high-ND areas ($p < .001$), whereas the other groups did not differ.

Cross-Sectional Relations Among Stressors and Adjustment

Prior to analyzing the relations between stressful life events and behavioral outcomes, the dependent variables were tested for normality. As expected for measures of behavior problems, the distribution of outcome variables was skewed. Thus, square-root transformations were applied to the dependent measures to provide a more normal distribution.

Intercorrelations were calculated among aggression, depression/anxiety, total stress, and the three stress subscales. Results are presented in Table 4. As expected, the Circumscribed Events, Transitions, and Exposure to Violence subscales of the Stress Index showed significant positive intercorrelations. In addition, total stress, Life Transitions, and Exposure to Violence were significantly positively correlated with aggression. None of the stress indices correlated with depression/anxiety, although depression/anxiety correlated significantly with aggression.

Next, multivariate linear models were used to determine the relations between stressful life events and both aggression and depression/anxiety. Four separate multivariate models were used, for total stress, Life Transitions, Circumscribed Events, and Exposure to Violence. For each analysis, the main effects of the stressor variable, sex, grade, ethnicity, and ND, and the separate interactions of stress with sex, grade, ethnicity, and ND were entered into the equation, with aggression and depression/anxiety as criterion variables. As the main effects for the stress scales and the interactions between stress and the demographic variables were the

primary interest of this study, only these results are reported.

The multivariate analyses were significant for: total stress, $F(2, 348) = 6.42, p < .01$; Life Transitions, $F(2, 348) = 7.40, p < .01$; and Exposure to Violence, $F(2, 348) = 7.09, p < .001$. Multivariate analyses also revealed significant interactions between total stress and ethnicity, $F(2, 348) = 3.49, p < .05$, and between total stress and ND, $F(2, 348) = 4.63, p < .01$. Similarly, there were significant interactions between Life Transitions and ethnicity, $F(2, 348) = 3.75, p < .05$, and between Life Transitions and ND, $F(2, 348) = 3.39, p < .05$. Finally, a significant interaction was revealed between Exposure to Violence and ND, $F(2, 348) = 4.32, p < .01$.

F values for univariate analyses are reported in Table 5. For aggression, significant main effects were revealed for total stress, Life Transitions, and Exposure to Violence. The regression weights showed that stress and aggression were positively related. There were also significant interactions between ND and both total stress and Exposure to Violence. Interactions were interpreted by performing separate Pearson product-moment correlations between the stress subscales and aggression for each group, followed by Bonferroni corrections to demonstrate significance. Results revealed that the relation between total stress and aggression was significant only for children living in high-ND communities ($r = .35, p < .001$). Similarly, for Exposure to Violence, Bonferroni-adjusted correlations indicated that this relation was significant only for children living in high-ND areas ($r = .32, p < .001$).

For depression/anxiety, no significant main effects were revealed, although there were significant interactions between ND and both total stress and Life Transitions, and between ethnicity and total stress and Life Transitions. However, interpretation of these interactions by Bonferroni-adjusted Pearson correlations revealed that the relations between total stress, Life Transitions, and depression/anxiety did not reach significance for children from either moderate- or high-ND communities or for African-American or Hispanic children.

Table 4. Intercorrelations Among Stress and Adjustment Variables at Time 1

	2	3	4	5	6
Stress					
1. Total Stress	.76**	.74**	.83**	.24**	.04
2. Life Transitions		.38**	.39**	.18*	.03
3. Circumscribed Events			.46**	.15	.00
4. Exposure to Violence				.22**	.05
Adjustment					
5. Peer-Rated Aggression					.23**
6. Teacher-Rated Depression/Anxiety					

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

Table 5. *F Values of Univariate Analyses Examining the Relations Between Stress and Adjustment at Time 1*

Main Effects and Interaction Terms	Peer-Rated Aggression	Teacher-Rated Depression/Anxiety
Total Stress	12.32***	2.07
Total Stress × Sex	0.05	3.83
Total Stress × Grade	1.32	2.65
Total Stress × Ethnicity	1.60	6.41*
Total Stress × ND ^a	6.16*	4.97*
Life Transitions	7.40**	0.64
Transitions × Sex	0.94	2.51
Transitions × Grade	2.33	0.47
Transitions × Ethnicity	0.06	7.37**
Transitions × ND	1.19	6.46**
Circumscribed Events	3.73	0.10
Events × Sex	1.08	1.24
Events × Grade	2.05	2.35
Events × Ethnicity	0.05	1.01
Events × ND	2.12	1.86
Exposure to Violence	12.87***	3.45
Violence × Sex	0.86	2.73
Violence × Grade	0.69	1.58
Violence × Ethnicity	3.74	3.54
Violence × ND	8.19**	1.53

^aND = Neighborhood Disadvantage.

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

Table 6. *Hierarchical Multiple-Regression Analyses to Predict Subsequent (Time 2) Aggression*

Step	Independent Variable Entered	Beta	Increase in R^2
1	Time 1 Aggression	.39***	
2	Total Stress Controlling for Time 1 Aggression	.13*	.013
3	Transitions Controlling for Time 1 Aggression	-.01	.000
4	Circumscribed Events Controlling for Time 1 Aggression	.28**	.037
5	Exposure to Violence Controlling for Time 1 Aggression	.14*	.014

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

Prospective Relations Between Stress and Subsequent Aggression and Academic Achievement

Next, the relations of stress and teacher-rated aggression and academic achievement measured 1 year later were examined.

First, a set of separate hierarchical regression analyses were performed for total stress and each of the stress subscales in the prediction of Time 2 aggression. For each analysis, initial (Time 1) teacher-rated aggression,

Time 1 stress, and the interaction term were entered in order to determine the effect of stress on subsequent aggression while controlling for initial levels of the behavior.

As presented in Table 6, total stress, Circumscribed Events, and Exposure to Violence predicted subsequent aggression. After controlling for the effects of Time 1 aggression, total stress accounted for an additional 1.3% of the variance, Circumscribed Events accounted for an additional 3.7%, and Exposure to Violence accounted for an additional 1.4% of the variance in Time 2 aggression ratings.

An identical set of analyses were conducted to predict Time 2 academic achievement. As shown in Table 7, regression analyses predicting Time 2 academic achievement from Time 1 stress did not reach significance for total stress or for any of the three stress subscales.

Discussion

Stress Exposure in Urban Minority Children

This study examined the occurrence of stressful life events in African-American and Hispanic elementary school children living in areas of high and moderate ND. Children living in high-ND communities reported experiencing significantly more stressors during the preceding year than did children living in more moderate-ND communities, but even children in the moderate group reported experiencing a relatively high number of stressful events when compared to what had been documented in previous studies.

For example, in a study of predominantly Caucasian, middle-class, elementary-school children, Dubow et al. (1991) found that over a 1-year period, children experienced, on average, slightly more than 2 stressors (of

Table 7. *Hierarchical Multiple-Regression Analyses to Predict Subsequent (Time 2) Academic Achievement*

Step	Independent Variable Entered	Beta	Increase in R^2
1	Time 1 Achievement	.78*	
2	Total Stress Controlling for Time 1 Achievement	-.05	.000
3	Transitions Controlling for Time 1 Achievement	-.06	.000
4	Circumscribed Events Controlling for Time 1 Achievement	-.03	.000
5	Exposure to Violence Controlling for Time 1 Achievement	-.02	.000

* $p < .001$.

32 possible events listed). Yet, in our study, children in moderate ND communities reported experiencing more than 4 stressful life events of 16 possible choices, and children in high ND communities had experienced close to 7 of these stressors during the previous year. This finding is striking given the fact that prior studies, using measures with similar items, have found that children experience comparable numbers of stressors over their entire lifetimes (Work, Cowen, Parker, & Wyman, 1990).

Compared to these studies, these findings demonstrate that urban minority children are acutely exposed to a multitude of stressful life events, and that these stressors also increase with corresponding increases in chronic stressors such as ND. Each of the three types of stressful life events were more frequent in the high-ND communities, although in some cases only for younger children (life transitions). Of course, with respect to exposure to violence, it is not surprising that children in high-ND communities reported observing more violence, because ND is, in part, defined by higher communitywide crime rates. Still, this finding confirms that children are observing such violent behavior firsthand in their neighborhoods. With regard to life transitions and circumscribed events, it may be the case that limited community resources, weakened social supports, and high crime rates in the most distressed neighborhoods may additionally destabilize families, particularly families with young children. Thus, the fragile quality of life under highly stressful community conditions seems to portend more negative life events.

Stress and Adjustment

The relations between stressful life events and three indices of adjustment (aggression, depression/anxiety, and academic achievement) were measured both concurrently and prospectively. The differential effects on adjustment of three types of stressful life events—life transitions, circumscribed events, and observation of violence were also explored. Furthermore, we sought to determine whether the hypothesized relations obtained under varying ND levels. Drawing on research indicating that the effects of stressors are multiplicative, it was expected that children in high-ND communities would be more adversely affected by stressful events and would evidence corresponding decreases in adjustment.

Findings indicate that stressful life events in urban settings contribute significantly to children's aggressive behavior. Stressful life events were concurrently related to children's peer-nominated aggression and predicted increases in teacher-rated aggression 1 year later. Looking at the differential effects of different types of stressful life events, exposure to violence pre-

dicted both concurrent and prospective aggressive behavior. Interestingly, life transitions were related to concurrent but not future aggression, with circumscribed events seeming to exert their effects only over time. It may be that life transitions such as a move, a marriage, or a new baby, require short-term readjustments which only temporarily change behavior, whereas in contrast, circumscribed events, such as the death of a relative, are more traumatic and may portend more serious long-term consequences. It is also possible that results were affected by the relative ambiguity of valence of items in the Life Transitions subscale, whereas the Circumscribed Events items were more clearly negative. In any case, the total number of stressors did predict both concurrent and future aggression, providing support for the notion that the accumulation of stressors is particularly critical in determining maladjustment (Seifer & Sameroff, 1987).

In addition, these relations did not vary by sex, ethnicity, or grade. The lack of sex differences contrasts with findings from previous studies (e.g., Masten et al., 1988) that the relations between stress and various adjustment criteria differed between boys and girls. It may be that environmental variables are most critical in the link between stress exposure and aggression in urban communities. Perhaps, in the face of such persistent and extreme conditions, family relationships become strained, children become fearful of victimization, and opportunities for success through conventional channels are limited. Parental feelings of powerlessness and fears about child victimization may lead them to use more power-assertive and authoritarian parenting practices, which, in turn, may contribute to an increase in their children's aggressive behavior (McLoyd, 1990). Children may learn that being tough and aggressive both minimizes the emotional impact of persistent stressors and maximizes their ability to survive under difficult and extreme environmental conditions.

Consistent with this notion, in general, children living under high-ND conditions were most adversely affected by stressful events. In fact, the concurrent relation between stress and aggression, for both total number of stressors and Exposure to Violence scores, was significant only for children from high-ND communities. It appears that for children from high-ND areas, experiencing stressors and being exposed to violence contributes to aggressive behavior. Repeated observations of violence may serve both to promote internal standards of behavior accepting of violence (Huesmann, Guerra, Miller, & Zelli, 1992), and to direct one's efforts toward avoiding victimization. In fact, this interpretation is consistent with our findings that stress did not relate significantly to depression/anxiety. In an environment where resources are scarce and violence is pervasive, children might be discouraged

from depressive or anxious reactions to stressful events, because children who cry or frighten easily would be less likely to achieve instrumental goals and could be easy targets for victimization by others.

Of course, the lack of a relation between stress and depression/anxiety is inconsistent with past research and should be interpreted cautiously. In this study, we used only concurrent teacher ratings, as opposed to child self-report of depression and anxiety. Considering the low rates of concordance between child and teacher reports (Achenbach & Edelbrock, 1989), particularly with regard to internalizing symptoms (Offord & Fleming, 1991), this finding may be related to the inherent limitations of others' reports of such symptoms. However, it is also possible that the relations obtained in past studies relying exclusively on self-report data of both stress and depression were inflated because of common-method variance.

The finding that stress was not related to symptoms of depression and anxiety might also be a consequence of the age range sampled, because past research linking stress and internalizing symptoms has been conducted with older children and adolescents (Compas et al., 1989; Larson & Ham, 1993; Mullins, Siegel, & Hodges, 1985). Because few studies have examined symptoms of depression and/or anxiety as related to stress in elementary-age children, future studies should address the influence of developmental level in moderating this relation.

It is clear that these results should be interpreted with caution. First, significant correlations between predictors and adjustment variables were low to modest, although in some cases (i.e., academic achievement), the stability of the criterion variable was exceedingly high ($r = .78$) and could have limited our ability to observe significant effects for stressors. This demonstrates the complex nature of these relations and that these variables tap into a small component of the etiology of child adjustment. In addition, as the Stress Index consisted of 16 items, this measure clearly did not assess the full range of potentially stressful events. Several events judged to be too sensitive were omitted from the scale, such as family drug use, arrest or imprisonment, parental job status, financial problems, and physical or sexual abuse. Had these and other events been included, stronger relations between stress and maladjustment may have been found.

Second, the cross-sectional analyses conducted here do not enable us to infer causal relations between stress and adjustment, nor do they indicate directionality. Still, because the stressful events examined in this study are largely independent of the child's functioning and represent recollections of events occurring during the previous 12 months, it is more appropriate to suggest that the experience of stressful life events contributes to aggressive behavior, rather than the opposite. This notion was supported by the prospective analyses,

which indicated that exposure to stressors predicted subsequent teacher-rated aggression. However, because the Time 2 analyses were based on a more highly stressed and depressed/anxious sample, results of the prospective analyses may have been biased in some fashion. Future studies should implement prospective longitudinal methods, which would be particularly valuable in advancing our knowledge of the developmental pathways and causal relations between stress and adjustment.

References

- Achenbach, T. M., & Edelbrock, C. (1986). *Manual for the Teacher's Report Form and Teacher Version of the Child Behavior Profile*. Burlington: University of Vermont, Department of Psychiatry.
- Achenbach, T. M., & Edelbrock, C. (1989). Diagnostic, taxonomic, and assessment issues. In T. H. Ollendick & M. Hersen (Eds.), *Handbook of child psychopathology* (2nd ed., pp. 53-69). New York: Plenum.
- Chandler, S., & Herrmann, A. (1992, November 22). Battling neighborhood blight: Empty homes hurt stability, neighbors say. *Chicago Sun-Times*, p. 3.
- Chicago Police Department. (1991). Crime index. Chicago: Author.
- Compas, B. E. (1987). Coping with stress during childhood and adolescence. *Psychological Bulletin*, *101*, 393-403.
- Compas, B. E., Howell, D. C., Phares, V., Williams, R. A., & Giunta, C. T. (1989). Risk factors for emotional/behavioral problems in young adolescents: A prospective analysis of adolescent and parental stress and symptoms. *Journal of Consulting and Clinical Psychology*, *57*, 732-740.
- Donnelley Marketing Information Services. (1991). *Market profile analysis: Consumer and business demographic reports*. Chicago: Author.
- Dubois, D. L., Felner, R. D., Brand, R. D., Adan, A. M., & Evans, E. G. (1992). A prospective study of life stress, social support, and adaptation in early adolescence. *Child Development*, *53*, 542-557.
- Dubow, E. F., Tisak, J., Causey, D., Hryshko, A., & Reid, G. (1991). A two-year longitudinal study of stressful life events, social support, and social problem-solving skills: Contributions to children's behavioral and academic adjustment. *Child Development*, *62*, 583-599.
- Eron, L. D., Walder, L. O., & Lefkowitz, M. M. (1972). *The learning of aggression in children*. Boston: Little, Brown.
- Federal Bureau of Investigation. (1990). *Uniform crime reports*. Washington, DC: Author.
- Felner, R. D., Farber, S. S., & Primavera, J. (1983). Transitions and stressful life events: A model for primary prevention. In R. D. Felner, L. A. Jason, J. N. Moritsugu, & S. S. Farber (Eds.), *Preventive psychology: Theory, research and practice* (pp. 199-215). New York: Pergamon.
- Forehand, R., Middleton, L., & Long, N. (1987). Adolescent functioning as a consequence of recent parental divorce and the parent-adolescent relationship. *Journal of Applied Developmental Psychology*, *8*, 305-315.
- Garbarino, J., Kostelny, K., & Dubrow, N. (1991). What children can tell us about living in danger. *American Psychologist*, *46*, 376-382.
- Garmezy, N. (1987). Stress, competence, and development: Continuities in the study of schizophrenic adults, children vulnerable to psychopathology, and the search for stress-resistant children. *American Journal of Orthopsychiatry*, *57*, 159-174.
- Hetherington, E. M. (1989). Coping with family transitions: Winners, losers, and survivors. *Child Development*, *60*, 1-14.
- Huesmann, L. R., & Eron, L. D. (Eds.). (1986). *Television and the*

- aggressive child: A cross-national comparison*. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Huesmann, L. R., Guerra, N. G., Miller, L., & Zelli, A. (1992). The role of social norms in the development of aggressive behavior. In A. Fraczek & H. Zumkley (Eds.), *Socialization and aggression* (pp. 139-152). New York: Springer-Verlag.
- Illinois Department of Public Aid. (1992). [Data on public aid recipients]. Unpublished raw data.
- Johnson, J. H. (1986). *Life events as stressors in childhood and adolescence*. Newbury Park, CA: Sage.
- Larson, R., & Ham, M. (1993). Stress and "Storm and Stress" in early adolescence: The relationship of negative events with dysphoric affect. *Developmental Psychology*, *29*, 130-140.
- Masten, A. S., Garmezy, N., Tellegen, A., Pellegrini, D. S., Larkin, K., & Larsen, A. (1988). Competence and stress in school children: The moderating effects of individual and family qualities. *Journal of Child Psychology and Psychiatry*, *29*, 745-764.
- McLoyd, V. C. (1990). The impact of economic hardship on Black families and children: Psychological distress, parenting, and socioemotional development. *Child Development*, *61*, 311-346.
- Mullins, L. L., Siegel, L. J., & Hodges, K. (1985). Cognitive problem-solving and life event correlates of depressive symptoms in children. *Journal of Abnormal Child Psychology*, *13*, 305-314.
- Offord, D. R., & Fleming, J. E. (1991). Epidemiology. In M. Lewis (Ed.), *Child and adolescent psychiatry: A comprehensive textbook* (pp. 1156-1168). Baltimore: Williams & Wilkins.
- Pryor-Brown, L., & Cowen, E. L. (1989). Stressful life events, support, and children's school adjustment. *Journal of Clinical Child Psychology*, *18*, 214-220.
- Rowlison, R., & Felner, R. D. (1988). Major life events, hassles, and adaptation in adolescence: Confounding in the conceptualization and measurement of life stress and adjustment revisited. *Journal of Personality and Social Psychology*, *55*, 432-444.
- Rutter, M. (1983). Stress, coping, and development: Some issues and some questions. In N. Garmezy & M. Rutter (Eds.), *Stress, coping, and development in children* (pp. 1-42). New York: McGraw-Hill.
- Rutter, M. (1989). Psychiatric disorder in parents as a risk factor for children. In D. Schaffer, I. Philips, & N. B. Enzer (Eds.), *Prevention of mental disorders, alcohol and other drug use in children and adolescents* (OSAP Prevention Monograph No. 2, DHHS Publication No. ADM 89-1646). Washington, DC: U.S. Government Printing Office.
- Seifer, R., & Sameroff, A. J. (1987). Multiple determinants of risk and vulnerability. In E. J. Anthony & B. J. Cohler (Eds.), *The invulnerable child* (pp. 51-69). New York: Guilford.
- Tolan, P. H. (1988). Socioeconomic, family, and social stress correlates of adolescent antisocial and delinquent behavior. *Journal of Abnormal Child Psychology*, *16*, 317-331.
- Tolan, P. H., Miller, L., & Thomas, P. J. (1988). Perceptions and experience of types of social stress and self-image among adolescents. *Journal of Youth and Adolescence*, *17*, 147-163.
- Vaux, A., & Ruggerio, M. (1983). Stressful life change and delinquent behavior. *American Journal of Community Psychology*, *11*, 169-183.
- Wagner, B. M., Compas, B. E., & Howell, D. C. (1988). Daily and major life events: A test of an integrative model of psychosocial stress. *American Journal of Community Psychology*, *16*, 189-205.
- Wilson, W. J. (1987). *The truly disadvantaged: The inner city, the underclass, and public policy*. Chicago: University of Chicago Press.
- Work, W. C., Cowen, E. L., Parker, G. R., & Wyman, P. A. (1990). Stress resilient children in an urban setting. *Journal of Primary Prevention*, *11*, 3-18.
- Wyman, P. A., Cowen, E. L., Work, W. C., & Parker, G. R. (1991). Developmental and family milieu correlates of resilience in urban children who have experienced major life stress. *American Journal of Community Psychology*, *19*, 405-426.

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