

DIRECT, MEDIATED, MODERATED, AND CUMULATIVE RELATIONS BETWEEN NEIGHBORHOOD CHARACTERISTICS AND ADOLESCENT OUTCOMES

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ABSTRACT

Using data from the 1990 Survey of Children and Parents, we explored direct and indirect associations between neighborhood conditions and adolescents' well-being. Analyses of data from 348 parents and their 14- to 17-year-old children indicated that neighborhood characteristics were directly related to adolescent outcomes (i.e., psychological adjustment and school problems). Second, parenting behaviors and peer characteristics significantly mediated this association. Third, the relative adaptiveness of parenting behaviors and peer attributes was contingent on neighborhood characteristics. Finally, neighborhood, parenting, and peer variables each had a unique contribution to adolescent outcomes; thus, stress across these domains was additive and posed cumulative risk for adolescents' well-being.

Although it is widely accepted that child development is shaped by many factors (Bronfenbrenner, 1979), relatively little research has explored the ways in which forces outside of adolescents' immediate environments influence their well-being. One important potential determinant of child outcomes that only recently has been the subject of study is the neighborhood.

Neighborhoods, characterized by differing levels of economic advantage, opportunity, resources, social cohesion, and safety, have a dramatically wide range of effects on adolescents' lives (Pinderhughes, Nix, Foster, Jones, & Conduct Problems Prevention Research Group, 2001; Sampson, 2001). However, the precise mechanism of this influence remains less than clear (Leventhal & Brooks-Gunn, 2000). In

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this study, we investigated how and when neighborhoods relate to adolescents' psychological adjustment and problems at school. In addition to verifying the direct association between these constructs, we explored mediated, moderated, and cumulative relations among neighborhood characteristics, parenting behaviors, peer characteristics, and adolescent outcomes.

Direct Relations Between Neighborhoods and Adolescent Outcomes

Neighborhood characteristics can directly influence adolescent development in different ways (Jencks & Mayer, 1990; Wilson, 1987). For instance, neighborhoods differ in terms of the availability of well-equipped schools and community services that promote child development. Similarly, neighborhoods vary in terms of the presence of residents who serve as role models and collectively socialize and monitor the children in their communities. Furthermore, neighborhood conditions, such as the amount of institutional resources and job opportunities, may influence residents' attitudes and behaviors as well as child outcomes. Adolescents living in neighborhoods in which most residents are poor, have little education, and have difficulty obtaining jobs may adopt the view that they have little control over their lives and a poor chance of success (cf. Wilson, 1991).

Researchers have documented direct relations between neighborhood characteristics and adolescents' academic success that persist after controlling for family socioeconomic status (SES). For instance, neighborhood SES has been associated with adolescents' performance on standardized tests (Halpern-Felsher et al., 1997), school grades (Dornbusch, Ritter, & Steinberg, 1991), and high school graduation rates (Brooks-Gunn, Duncan, Klebanov, & Sealand, 1993; Duncan, 1994). In addition, neighborhood qualities are directly associated with adolescents' behavioral and emotional adjustment. Neighborhood SES and community disadvantage have been related to adolescent aggression and conduct disorder (Aneshensel & Sucoff, 1996) as well as delinquent and risky behaviors (Kalil & Eccles, 1998).

Indirect Relations Between Neighborhoods and Adolescent Outcomes

Alternatively, neighborhood dimensions may be conceptualized as distal variables that act through more immediate and proximal forces in adolescents' everyday lives (Baldwin, Baldwin, & Cole, 1990). The argument for such indirect relations is supported by ecological theory, which asserts that child development is shaped by different levels of environmental influence (Bronfenbrenner, 1979). These environmental forces include microsystemic factors, or the moment-by-moment inter-

actions that children and adolescents experience with significant people in their lives (e.g., parents, friends, and teachers). Ecological theory also suggests that child development is affected by more overarching exosystemic and macrosystemic factors, such as parental employment or neighborhood SES. These different ecological systems each contribute to child development; they are also interrelated and affect each other in a reciprocal and dynamic manner.

In terms germane to the present investigation, ecological theory suggests that neighborhood characteristics will have direct and unique relations with adolescent outcomes when more proximal factors are considered. Importantly, ecological theory further posits that neighborhoods will be indirectly associated with adolescents' academic success and psychological adjustment through proximal variables, such as parenting and peer relations. In addition to direct relations, neighborhoods may be related to adolescent outcomes through mediated, moderated, and additive pathways.

Parenting styles as a mediator. Neighborhoods may ultimately influence adolescent development by first affecting parenting behaviors. More specifically, parents' caregiving priorities will likely be informed by the demands and challenges of the communities in which they live. For instance, parents who live in high-crime neighborhoods are generally more restrictive and controlling than parents who reside in safer communities (Baldwin et al., 1990). Parents in such low-resource neighborhoods are more apt to warn their adolescents about community dangers, encourage them to remain home, and restrict their autonomy as means of protection (Furstenberg, Cook, Eccles, Elder, & Sameroff, 1999). Furthermore, the stresses associated with living in a high-risk neighborhood may erode parents' well-being and undermine their parenting sensitivity. For example, Simons, Johnson, Conger, and Lorenz (1997) documented that divorced mothers who lived in disorganized communities tended to display low levels of monitoring, warmth, reasoning, empathy, and communication toward their adolescents. Simons and colleagues also demonstrated that parenting quality mediated the relation between community disadvantage and both conduct problems and psychological distress for adolescent boys (Simons, Johnson, Beaman, Conger, & Whitbeck, 1996).

In turn, parenting behavior has been related to a wide range of social, emotional, and educational outcomes for children and adolescents. Most research in this area has underscored the importance of authoritative parenting, or the coupling of parental warmth and age-appropriate control (Baumrind, 1991). Longitudinal analyses indicate that authoritative parenting leads to better adolescent performance in

school (Steinberg, Lamborn, Dornbusch, & Darling, 1992). In particular, parental involvement and autonomy-granting are associated with adolescents' psychological well-being, whereas parental limit-setting and monitoring are related to behavior problems (Gray & Steinberg, 1999; Lamborn, Mounts, Steinberg, & Dornbusch, 1991). The benefits of authoritative parenting have been documented for adolescents who differ in terms of ethnicity, SES, and family structure (Steinberg, Mounts, Lamborn, & Dornbusch, 1991).

Peer characteristics as a mediator. Peer affiliations may also mediate the relation between neighborhood traits and adolescent outcomes. Specifically, adolescents who reside in disadvantaged neighborhoods are at greater risk of affiliating with peers who exhibit deviant behavior, such as damaging property, stealing, or skipping school (Brody et al., 2001). Adolescents' peer-related stress also varies as a function of their neighborhood (Allison et al., 1999). Given that neighborhood distress is directly related to adolescents' socioemotional and psychological functioning, living in a high-risk community increases the probability that a particular adolescent would be exposed to nonnormative peers (Quane & Rankin, 1998).

Peer deviance, in turn, has been associated with adolescents' well-being. Friends influence adolescents in both positive and negative ways and contribute to both prosocial and antisocial behaviors (Berndt & Keefe, 1995). In terms of problem behavior, the quality of adolescents' peer relationships has been related to adolescent psychopathology, delinquency, and self-defeating behavior (Windle, 1994). Simons et al. (1996) tested this mediated model and found that deviant peers mediated the relation between neighborhood characteristics and adolescent conduct problems. However, the precise pattern of significant relations differed as a function of adolescents' gender.

Neighborhood characteristics as a moderator. In mediated models, neighborhood characteristics are presumed to influence more proximal variables, which consequently shape child development. Alternatively, neighborhood characteristics may moderate the relation between such proximal factors and adolescent outcomes. That is, the community setting may differentially determine whether particular parenting behaviors and peer traits are associated with favorable adolescent outcomes.

For instance, Baldwin et al. (1990) not only found that parents who resided in high-risk neighborhoods were more restrictive than parents living in low-risk communities, but also reported that parental restrictiveness had different associations with cognitive development depending on the level of community risk. More specifically, restrictiveness

facilitated adolescents' intellectual achievement in high-crime neighborhoods but was counterproductive in this regard for families living in safer communities.

Similarly, Gonzales, Cauce, Friedman, and Mason (1996) reported that neighborhood risk moderated the effects of maternal restrictive control on African American adolescents' grades. In addition, peer influences on adolescents' school performance varied as a function of the neighborhood in which families lived. Adolescents' attachment to their peers was significantly and positively related to grades in low-risk neighborhoods, but did not predict school achievement in higher risk neighborhoods.

Recently, neighborhood safety has been shown to moderate the relation between both parenting and peer traits and adolescents' psychological adjustment. Pettit, Bates, Dodge, and Meece (1999) reported that 12- and 13-year-olds who lived in unsafe neighborhoods, had greater amounts of unsupervised peer contact, and whose mothers displayed low levels of monitoring were at greatest risk of experiencing externalizing disorders. There were significant main effects as well as significant interactions in predicting oppositional behavior.

Additive relations among predictor variables. Ecological theory emphasizes that child outcomes are shaped by both proximal and distal factors, and that variables in the macrosystem, exosystem, and microsystem influence each other in a reciprocal, dynamic manner (Bronfenbrenner, 1979). This assertion suggests that adolescent outcomes are multiply determined, and resilience in one domain may attenuate the effects of stresses experienced in other areas.

Evidence supports the notion that environmental risk aggregates such that stress experienced across different domains is associated with parenting sensitivity (Meyers, 1999; Woodworth, Belsky, & Crnic, 1996), quality of the home environment (Hannan & Luster, 1991), child attachment (Belsky, 1996), and child intelligence (Sameroff, Seifer, Baldwin, & Baldwin, 1993). This analytic approach is important because the number, rather than the kind, of environmental risk factors is strongly associated with child well-being (e.g., Sameroff et al., 1993). Most germane to the present investigation, Sameroff, Bartko, Baldwin, Baldwin, and Seifer (1998) documented that the number of risks accumulated across six ecological levels (i.e., family process, parent characteristics, family structure, family management of the community, peers, and community) related to 11- to 14-year-olds' psychological adjustment, self-competence, problem behavior, activity involvement, and academic performance.

The Present Study

In this study, we assessed how neighborhood characteristics directly and indirectly related to adolescents' well-being. We systematically examined these associations using several analytic strategies and cross-sectional data.

First, we hypothesized that neighborhood characteristics would be directly related to adolescent outcomes. Specifically, we expected that neighborhood-level variables would be directly associated with adolescent psychological adjustment and school problems. Moreover, we anticipated that the significant associations between neighborhood characteristics and adolescent outcomes would persist when parenting, peer, and family SES factors were controlled.

Second, we expected that neighborhood characteristics, parenting behaviors, peer traits, and adolescent outcomes would be significantly intercorrelated. We further hypothesized that both parent and peer characteristics would mediate the association between neighborhood distress and adolescents' well-being.

Third, we hypothesized that neighborhood characteristics would moderate the association of both parenting style and peer traits with adolescent outcomes. Thus, we expected that the relative adaptiveness of parenting behaviors and peer attributes would be contingent on the level of neighborhood risk.

Fourth, we hypothesized that community characteristics, parenting behaviors, and peer traits would collectively relate to adolescent outcomes. We expected that the accumulation of environmental risk across these three areas would be associated with poorer adolescent outcomes because we expected that each would have a unique relation with the dependent measures.

Whereas the majority of previous investigations have documented whether children's academic or psychological functioning differs as a function of their neighborhoods, our investigation explicitly examined the processes through which neighborhoods relate to adolescent outcomes (Leventhal & Brooks-Gunn, 2000). The 1990 Survey of Children and Parents (National Commission on Children, 1991), the data set used in this study, provided a unique vantage point from which we examined these issues.

This national survey sampled neighborhoods from across the United States rather than exclusively focusing on single cities. Surveys with a more narrow geographic focus have less ability to elucidate the theoretical pathways through which neighborhoods relate to adolescents' development (Duncan & Raudenbush, 2001). Critically, our sample was more diverse in terms of a range of demographic characteristics

than were samples in previous studies. Investigators have predominantly examined the correlates of neighborhood characteristics in distressed communities or among oppressed groups, such as African American adolescents (Gonzales et al., 1996), poor families (Kalil & Eccles, 1998), and high-risk neighborhoods (Pinderhughes et al., 2001). However, our study included European American and ethnic minority adolescents of different socioeconomic backgrounds and from urban, suburban, and rural communities across the country.

Moreover, we purposefully focused on the academic and psychological well-being of high school aged adolescents, extending the majority of research in this area which has examined the associations among neighborhood characteristics, parenting, peers, and child development in samples of younger children (Coley & Hoffman, 1996; Kupersmidt, Griesler, DeRosier, Patterson, & Davis, 1995) and early adolescents (Brody et al., 2001; Pettit et al., 1999). These older adolescents provided a valuable source of data in addition to parent report (cf. Duncan & Raudenbush, 2001).

METHOD

Participants

Our investigation used a subsample of the data from the Survey of Children and Parents (National Commission on Children, 1991). This national telephone survey assessed the well-being, attitudes, and life circumstances of American families. Data were collected in 1990 from 1,738 parents in the continental United States who lived with their children. Telephone interviews were also conducted with 929 children aged 10 to 17 years who lived in these households.

The main sample for the Survey of Children and Parents was obtained using random-digit telephone numbers. In addition, households with African American and Hispanic children were oversampled. The overall response rate for the survey was 71%.

For the present study, we selected respondents with an interviewed child between the ages of 14 and 17 years who lived with them. This selection criteria yielded a sample of 348 parent-adolescent pairs. Among parents, 39% were men and 61% were women. Parents' ages ranged from 24 to 66 years ($M = 42.22$, $SD = 6.33$); their education ranged from elementary school to graduate/professional school. Sixty-one percent were European American, 29% were African American, 10% were Hispanic, and less than 1% were Asian American. Data were also collected from 181 adolescent sons (52%) and 167 adolescent daughters (48%) who ranged in age from 14 to 17 years ($M = 15.42$,

$SD = 1.08$). Our sample included families from different regions of the United States (Northeast, 15%; Midwest, 25%; South, 40%; and West, 20%) as well as distinct geographic classifications (urban areas with populations greater than 500,000, 26%; remaining metropolitan areas, 47%; nonmetropolitan areas, 27%).

Measures

We created the study's scales using factor analysis. Items addressing constructs of interest were submitted to principal components factor analysis after any necessary reverse coding. We saved the factor scores as variables and used them in subsequent analyses.

Neighborhood variables. Parents' perception of community problems was assessed by asking them to rate the extent to which problems such as crime and violence, insufficient police protection, and abandoned and run-down buildings characterized their neighborhood. Parents also indicated the extent to which residents of their community respect rules and laws, supervise their children, and care about what occurs in the neighborhood. Parents rated the severity of each of these seven community problems on a scale from *big problem* (1) to *not a problem* (3).

Parents' perception of school quality was based on their ratings of their children's school in terms of teachers' skill, whether teachers care about their students, and the effectiveness of the principal's leadership. Parents also rated the level of school safety, whether the school maintains order and discipline, and if school personnel help students learn the difference between right and wrong. This scale also included questions about whether parents participate in decisions regarding how the school is run and communication between the school and parents. Parents graded each of these eight items on a 5-point scale from A (1) to *Fail* (5).

Furthermore, we combined the scales measuring community problems and school quality into an overall index of neighborhood distress through a second-order factor analysis.

Parenting variables. Parents' responsiveness to their children was assessed by asking adolescents how often their mother and father (separately) respect their opinions about important things in life, make them follow rules, and openly discuss issues. Adolescents responded to these six items using a 4-point scale ranging from *always* (1) to *never* (4).

Parents' time investment reflected adolescents' judgments of whether they believe their mother and father (separately) spend suffi-

cient time with them and attend important events and activities. Adolescents rated these four items on a continuum from *always* (1) to *never* (3).

Parents' monitoring was based on parents' self-rated ability to identify where and with whom their children spend time during separations, as well as parents' assessment of whether their children know how to reach them during these times, using a 4-point scale from *all the time* (1) to *only rarely* (4). This scale also included parents' ratings of the frequency of their involvement in parent-child endeavors, such as completing homework, playing games or sports, attending activities important to their children, attending school events, and speaking with the teacher about school progress. Parents rated the frequency of the first three items on a 4-point scale ranging from *all the time* (1) to *rarely* (4); they responded *yes* (1) or *no* (2) to the last two items.

We combined scales measuring parents' responsiveness, time investment, and monitoring into an overall index of authoritative parenting through a second-order factor analysis.

Peer variables. Adolescents' ratings of their peers' risky behavior was based on how many of their friends have engaged in risky activities, including use of substances (i.e., tobacco, alcohol, marijuana, and cocaine), cheating, truancy, and theft. Adolescents were also asked to indicate how many of their friends have been sent to the school principal or the police for their behavior. Responses to these nine items ranged from *a lot* (1) to *none* (3).

Antisocial peer pressure was measured by asking adolescents whether their friends have pressured them to engage in high-risk activities, including use of substances (i.e., tobacco, alcohol, and marijuana), truancy, and violent behavior. Adolescents responded either *yes* (1) or *no* (2) to these items.

We combined scales measuring peers' risky behavior and antisocial peer pressure into an overall index of peer deviance through a second-order factor analysis.

Adolescent outcome variables. Adolescent adjustment was measured via parents' perceptions of their children's well-being in terms of health, friendships, feelings about themselves, relationships with parents, and prospects for the future. Responses to these five items ranged from *excellent* (1) to *poor* (4).

Adolescent school problems were assessed by asking parents whether their children have experienced academic or behavioral difficulties at school. Parents indicated whether their children receive remedial education services, fight with other children at school, and require special parent/teacher conferences because of their behavior.

They responded *yes* (1) or *no* (2) to these items. Parents also indicated the grades that their children received at school during the past year on a scale ranging from *mostly A's* (1) to *mostly F's* (9).

Adolescent distress was based on the level of self-reported psychological symptomatology. This 14-item measure assessed adolescents' mood (e.g., feeling sad and blue, lonely, and tired and worn out) and anxiety (e.g., worrying about physical harm, and feeling nervous, tense, or on edge). Adolescents responded to each item on a 3-point continuum from *often* (1) to *hardly ever* (3).

RESULTS

Bivariate Relations with Demographic Variables

We initially examined how parents' and adolescents' demographic characteristics related to the composite and outcome variables. Family SES (reflecting both family income and parents' highest level of education) was significantly associated with neighborhood distress ($r = -.18$, $p < .01$), authoritative parenting ($r = .20$, $p < .01$), parent-rated adolescent adjustment ($r = .17$, $p < .01$), and self-rated adolescent distress ($r = -.18$, $p < .01$). Community geographic classification (e.g., urban, suburban, rural) was unrelated to adolescent outcome and had a modest relation with neighborhood distress, $F(3, 307) = 2.92$, $p < .05$; however, post hoc comparisons did not indicate significant differences between geographic regions in terms of neighborhood distress. Participants' race was related to their level of neighborhood distress, $F(2, 299) = 4.57$, $p < .01$, such that African Americans tended to reside in neighborhoods with greater problems relative to European Americans and Hispanics. Furthermore, girls were less likely than boys to associate with deviant peers, $t(301) = 24.11$, $p < .01$, or to experience school problems, $t(289) = 22.40$, $p < .01$. However, they were more likely than boys to experience psychological symptomatology, $t(300) = 20.15$, $p < .01$. Finally, older adolescents, compared to younger adolescents, tended to associate with more deviant peers, $r = .16$, $p < .01$. We found no other significant associations involving the demographic variables.

Direct Relations Between Neighborhood Characteristics and Adolescent Outcomes

Bivariate analyses focusing on direct relations. Neighborhood dimensions were significantly correlated with adolescents' psychological adjustment and problems at school (see Table 1). These relations were found using parental reports of adolescent well-being but not adolescents' self-reports.

Table 1

Correlations Among Study Variables

Variable	1	2	3	4	5	6	7	8	9	10
1. Parents' responsiveness ^a										
2. Parents' time investment ^a	.02									
3. Parents' monitoring ^b	-.05	.01								
4. Peers' risky behavior ^a	-.25**	.04	-.20**							
5. Antisocial peer pressure ^a	-.09	-.11*	-.10	.37**						
6. Perceptions of community problems ^b	-.05	-.17**	-.12*	.04	.17**					
7. Perception of school quality ^b	.05	.01	.09	-.25**	-.02	-.29**				
8. Family socioeconomic status	-.01	.19**	.26**	.06	-.06	-.27**	.02			
9. Adolescent adjustment ^b	.14**	.10	.31**	-.16**	-.12*	-.18**	.37**	.17**		
10. Adolescent school problems ^b	.01	-.03	-.18**	.16**	.21**	.11	-.26**	-.08	-.28**	
11. Adolescent distress ^a	-.20**	-.31**	.02	.17**	.32**	.04	-.01	-.18**	-.22**	.03

^a adolescent rated, ^b parent rated. * $p < .05$, ** $p < .01$.

To complement these correlational analyses, we computed odds ratios to determine the relative rates of psychological and school-based difficulties in high-risk versus low-risk neighborhoods. First, we rescored the neighborhood composite variable and the three adolescent outcome measures in a nonoptimal to optimal progression (i.e., higher scores connoted better functioning.) Second, we dichotomized these four variables at the 33rd percentile to create two groups for each measure (i.e., high- vs. low-risk neighborhood, high vs. low adolescent adjustment, high vs. low school problems, high vs. low adolescent distress). We then conducted three chi-square analyses and calculated odds ratios to determine whether residence in a high-risk neighborhood predicted adolescents' group membership (i.e., psychologically troubled, academically troubled).

Our analyses indicated that adolescents residing in high-risk neighborhoods were almost three times more likely to experience psychological adjustment problems (as reported by parents) compared to adolescents residing in low-risk neighborhoods (odds ratio = 2.92; $\chi^2 = 25.60$, $p < .01$). Similarly, they were 2.6 times more likely to experience school problems ($\chi^2 = 22.23$, $p < .01$). We found no significant differences in the rates of self-reported psychological distress (odds ratio = 1.23; $\chi^2 = .90$, ns).

Multivariate analyses focusing on direct relations. We also examined whether the statistically significant relations between neighborhoods and adolescent outcomes persist when parenting, peer, and family SES are controlled. Table 2 summarizes three hierarchical multiple regression analyses in which parenting, peer, and macrosystem variables were entered in separate blocks to predict adolescent well-being. Family SES was entered before neighborhood characteristics to remove the associated variance. Neighborhood measures uniquely contributed to the prediction of both parent-rated adolescent adjustment and school problems. Overall, each system (parenting, peer, macro) generally made a statistically significant contribution to the outcome variables as evidenced by the significant change in R^2 after each step. In sum, these eight predictors accounted for 23% of the variation in parent-reported adolescent adjustment, $F(8, 324) = 11.94$, $p < .01$; 11% of the variance associated with adolescents' school problems, $F(8, 324) = 5.24$, $p < .01$; and 22% of the variation in adolescents' self-reported psychological distress, $F(8, 324) = 11.33$, $p < .01$.

Indirect Relations Between Neighborhood Characteristics and Adolescent Outcomes

Correlations among characteristics of neighborhoods, parenting, peers, and adolescent outcomes. Adolescent outcomes were significantly

Table 2

Summary of Hierarchical Regression Analyses for Variables Predicting Adolescent Outcomes

Predictors	Adolescent adjustment				School problems				Adolescent distress			
	Step 1 β	Step 2 β	Step 3 β	ΔR^2	Step 1 β	Step 2 β	Step 3 β	ΔR^2	Step 1 β	Step 2 β	Step 3 β	ΔR^2
Step 1. Parenting predictors				.14**				.04**				.15**
Responsiveness	.17**	.17**	.16**		-.01	.02	.03		-.21**	-.17**	-.18**	
Time investment	.12*	.12*	.09		-.10	-.09	-.07		-.32**	-.31**	-.30**	
Monitoring	.31**	.30**	.27**		-.17**	-.14**	-.12*		.00	.03	.04	
Step 2. Peer predictors				.00				.03**				.06**
Peers' risky behavior		-.01	.05			.09	.04			.04	.06	
Antisocial peer pressure		-.06	-.07			.12*	.12*			.22**	.23**	
Step 3. Macro predictors				.08**				.05**				.02
Family SES			.09				-.01				-.11*	
Community problems			-.01				.07				-.09	
School quality			.28**				-.20**				.03	

* $p < .05$, ** $p < .01$.

correlated with neighborhood attributes, peer traits, and parenting style (see Table 1). Notably, patterns of significant associations differed among the three scales assessing adolescent outcome. More specifically, parent-rated adolescent adjustment was significantly correlated (in the anticipated directions) with all but one of the variables. Parents' ratings of adolescents' school problems were significantly associated with nearly all peer and community variables, but the two adolescent-rated parenting variables were not significant correlates of this dependent measure. Furthermore, self-rated adolescent psychological distress was significantly correlated with measures of parent and peer functioning, but was unrelated to the two neighborhood variables.

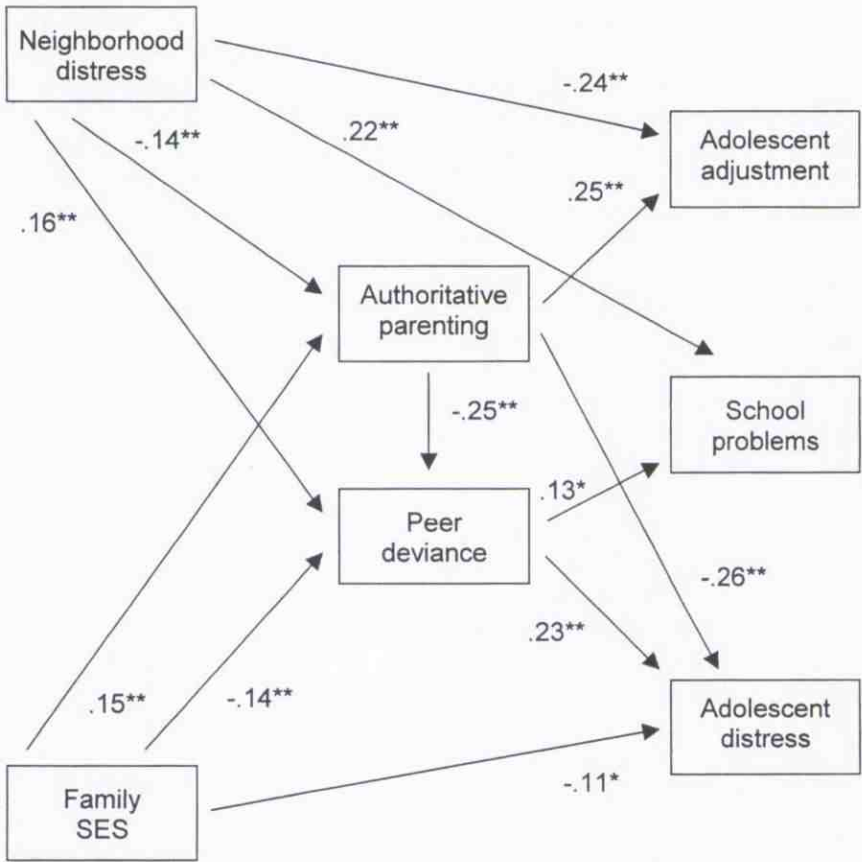
Evaluation of mediated pathways. We conducted a series of regression analyses to assess both direct and mediated associations between community characteristics and adolescent outcomes, controlling for family SES. The results are presented in Figure 1.

The composite index of neighborhood distress was both inversely related to adolescent adjustment and positively related to school problems at significant levels when the variance associated with family SES, the parenting composite, and the peer composite was controlled. However, we found that both authoritative parenting and peer deviance significantly mediated several relations as well. More specifically, neighborhood distress was significantly and inversely related to levels of authoritative parenting, which in turn was significantly related to measures of parent-rated and self-rated adolescent psychological well-being. Similarly, neighborhood distress was significantly related to levels of peer deviance, which in turn was significantly associated with both adolescents' school problems and their level of self-rated psychological distress.

Analysis of moderated relations. To test for moderated relations, we created two interaction terms by multiplying the neighborhood distress composite by the parental authoritativeness composite and the peer deviance composite. Next, we conducted separate hierarchical regression analyses predicting the three adolescent outcomes. In the first step of each regression, we entered the main effects and included a control for family SES. In the second step of these analyses, we included the respective interaction term (i.e., either Neighborhood Distress \times Parental Authoritativeness or Neighborhood Distress \times Peer Deviance). The first three equations included parental authoritativeness and the respective interaction term as predictor variables, whereas the second three equations featured peer deviance and the appropriate interaction term as predictor variables. Moderation would be indicated by a significant effect of an interaction term on adolescent outcome while controlling for main effects (Baron & Kenny, 1986).

Figure 1

Summary of the Regression Analyses Featuring Neighborhood Distress and Intervening Variables as Predictors of Adolescent Outcomes



Note. Standardized regression coefficients (β s) are shown; only significant pathways are displayed. $^{*}p < .05$, $^{**}p < .01$.

Our findings indicated that neighborhood distress moderated the relation between parental authoritativeness and adolescents' school problems, $\beta = -.18$, $t(285) = -3.20$, $p < .01$. We clarified the nature of this moderated association by separately examining the correlation between parental authoritativeness and school problems for high-risk and low-risk neighborhood groups. This analysis indicated that paren-

tal authoritativeness was associated with fewer school problems in high-risk neighborhoods ($r = -.24, p < .05$), but was unrelated to difficulties at school in low-risk neighborhoods ($r = .09, ns$).

Moreover, neighborhood distress moderated the association between peer deviance and both school problems, $\beta = .10, t(343) = 1.91, p < .05$, and parent-rated adolescent adjustment, $\beta = -.10, t(343) = -2.05, p < .05$. Neighborhood distress potentiated the relation between peer deviance and adolescents' school problems ($r_s = .24$ and $.13$ for the high-risk and low-risk neighborhood groups, respectively). Furthermore, peer deviance was related to adolescents' psychological adjustment only in high-risk communities ($r_s = -.21$ and $-.04$ for the high-risk and low-risk neighborhood groups, respectively).

Analysis of additive relations. Finally, we evaluated the additive association of neighborhood, parenting, and peer variables with adolescent outcomes by creating a cumulative environmental risk score for each participant. After scoring each of the three composite variables (neighborhood distress, parental authoritativeness, and peer deviance) in a nonoptimal to optimal progression, we classified each as a risk factor if the participant's score was at or below the 33rd percentile for this sample. This classification procedure closely followed that of previous researchers who have calculated cumulative environmental risk scores using similar continuous ecological variables (see Belsky, 1996; Meyers, 1999; Sameroff et al., 1993). We subsequently added the number of risk factors for participants and categorized them as *minimal environmental risk* (no risk factors, $n = 111$), *low environmental risk* (1 risk factor, $n = 117$), *moderate environmental risk* (2 risk factors, $n = 54$), or *high environmental risk* (3 risk factors, $n = 20$).

Analyses of variance (ANOVAs) and subsequent Tukey tests indicated that environmental risk status was significantly associated with differing levels of each of the three adolescent outcome variables. Risk categorization was significantly related to parent-rated adolescent psychological adjustment, $F(3, 294) = 12.43, p < .01$. Minimal environmental risk adolescents had significantly higher adjustment scores than the remaining groups. In addition, low and moderate environmental risk adolescents received higher parent-rated adolescent adjustment scores than adolescents in the high environmental risk group. Similarly, risk status was significantly associated with differing levels of school problems, $F(3, 286) = 10.50, p < .01$, such that high environmental risk adolescents displayed significantly more school problems than adolescents in the remaining groups. Finally, risk categorization was significantly associated with differing levels of self-rated psycholog-

ical distress, $F(3, 297) = 5.78, p < .01$. High and moderate environmental risk adolescents reported significantly greater levels of psychological symptomatology than minimal environmental risk adolescents.

DISCUSSION

Our results confirmed that there is a direct relation between neighborhood traits and adolescent development. More specifically, levels of community distress were associated with parental reports of adolescents' psychological well-being and school problems. We found that residing in a high-risk neighborhood translated into nearly a threefold increase in the rate of psychological difficulties and over double the incidence of academic or behavioral problems at school. The relation between neighborhood characteristics and these adolescent outcomes persisted even when we controlled for parenting, peer, and family SES factors.

These findings not only confirm those of previous investigations, but extend them in important ways. Our nationally derived sample was relatively unique in that we explicitly focused on older adolescents who resided in urban, suburban, and rural communities characterized by diverse ethnic and socioeconomic backgrounds. Our results therefore suggest that neighborhood characteristics are related to adolescents' well-being across varied demographic niches and that these significant associations are not limited to younger children. Our broad sampling strategy bolsters the potential generalizability of these results.

In addition, our operationalization of neighborhood traits and distress complements the measurement strategies used by most previous researchers. More specifically, the majority of research in this area has assessed neighborhood-level attributes via neighborhood SES using census tract data, predominantly from the 1980 U.S. Census (see Leventhal & Brooks-Gunn, 2000, for a review). Instead, we employed parents' perceptions of community problems and school quality as indices of neighborhood distress. This approach implicitly emphasizes that neighborhoods characterized by the same socioeconomic level can nevertheless differ in terms of attributes that are important for family functioning and child well-being (Garbarino & Sherman, 1980). Thus, our findings highlight the importance of the phenomenological, subjective aspects of neighborhoods in terms of their associations with adolescent outcomes (cf. Gonzales et al., 1996).

Our analyses focusing on the direct relations between neighborhood characteristics and adolescent well-being confirmed *whether* these variables were related, but further examination of mediated pathways

indicated *how* these constructs were associated. More specifically, we found that neighborhood characteristics were related to more proximal influences in adolescents' lives, such as the child-rearing strategies that their parents have adopted and the antisocial tendencies of their peers. These proximal variables, in turn, were associated with adolescents' psychological health and school problems. Our analyses indicated that authoritative parenting mediated the relation between neighborhood distress and both parent-reported psychological adjustment and self-reported psychological distress. In addition, peer deviance mediated the association between neighborhood distress and both adolescents' school problems and their reports of psychological distress. Adolescents residing in high-risk neighborhoods were more likely to interact with delinquent peers who modeled or pressured them to engage in risk-taking behaviors. They were also more likely to have parents who spent less time with them and loosely monitored their behaviors. These peer and parenting influences were subsequently related to adolescents' psychological and school adjustment. Thus, neighborhood functioning may ultimately cascade to the micro-system level.

Mediated pathways were especially salient for understanding variation in adolescents' self-reported distress. This scale focused in particular on internalizing symptoms, such as anxiety and depression. It should be noted that the discrepancy in the significance of the mediated pathways leading to parent-reported and self-reported adolescent psychological adjustment was probably magnified by the fact that adolescents are more accurate reporters of their internal feelings and states in comparison to parents and teachers (Kronenberger & Mayer, 2001). Adolescents were especially likely to experience anxiety or sadness when their relationships with peers and parents were distressed. Such relational distress was more apt to occur in high-risk neighborhoods. However, behavioral symptoms and school problems, which can be accurately and objectively assessed by parents, were related to neighborhood distress through both direct and indirect channels. Relational distress was not a necessary condition for such associations to exist.

Furthermore, we found that neighborhood risk acted as a moderator to determine *when* parental authoritativeness and peer distress would have strong associations with adolescents' well-being. First, authoritative parenting was associated with reduced levels of school problems in high-risk neighborhoods, whereas parenting style was unrelated to school difficulties for adolescents who lived in low-risk communities. Second, there was a stronger connection between peer deviance and school problems for adolescents who resided in high-risk neighborhoods

compared to low-risk communities. Third, the presence of deviant peers was more closely linked to adolescents' psychological difficulties in high-risk neighborhoods compared to low-risk communities.

Thus, neighborhood characteristics often determined the relative adaptiveness (or harmfulness) of parenting behaviors and peer traits. In high-risk communities, authoritative parenting and prosocial peers were more important correlates of adolescents' well-being than in low-risk neighborhoods. Our findings extend those of previous researchers who have primarily emphasized that parental monitoring is important in high-risk communities (e.g., Baldwin et al., 1990). As shown here, parental responsiveness and involvement are also highly adaptive in high-risk contexts.

These significant moderated relations can further be interpreted within a diathesis-stress framework (cf. Cummings, Davies, & Campbell, 2000). More specifically, living in a distressed neighborhood can be viewed as a vulnerability factor that places adolescents at higher risk for academic or psychological difficulties. Added stress stemming from insensitive parenting or delinquent peers may be a provoking factor that further depletes adolescents' ability to successfully cope within their environments. On the other hand, residing in a low-risk neighborhood can be a buffer that partially insulates adolescents from the problems associated with nonoptimal parenting and peer functioning. However, these moderated relations and the aforementioned mediated relations may work in tandem. That is, authoritative and prosocial peer functioning are more closely associated with adolescents' well-being in high-risk neighborhoods; unfortunately, children residing in these communities are least likely to have positive parent and peer influences.

Finally, we found that neighborhood, parenting, and peer variables had an additive association with adolescents' well-being. Those adolescents who lived in high-risk neighborhoods, experienced insensitive or disengaged parenting, *and* associated with delinquent peers who modeled or pressured them into risky behaviors were the most likely to have psychological or school problems. Our results indicated that high levels of accumulated stress across all three of these domains was consistently and significantly associated with adolescents' poor functioning and adaptation. In general, the relation between the amount of accumulated risk and adolescent outcomes was linear. That is, a minimal level of accumulated risk across these three areas was associated with relatively favorable outcomes, and a moderate level of cumulative risk was associated with an intermediate level of functioning. This may imply that adolescents are able to tolerate a moderate

number of personal and environmental challenges before their well-being is detrimentally affected. Furthermore, it is possible that support derived from one aspect of adolescents' lives (e.g., a close parent-child relationship) may effectively counteract stress generated by another (e.g., peer conflicts). These analyses further suggest that neighborhood quality may not be the only factor that moderates the relation between proximal factors and adolescents' well-being. Rather, neighborhood, parenting, and peer traits may alternate in buffering or potentiating such relations. Moreover, this interpretation is consistent with ecological assertions that adolescent outcomes are protected against disruptions from a single source because child development is multiply determined. However, adolescents who experience pervasive distress have fewer resources to rely upon that may insulate them from the adversities that they encounter.

It is important to note that we used cross-sectional data in our analyses; therefore, causal relations cannot be determined from this investigation. Instead, results document associations among the variables rather than patterns of cause and effect. Although it is unlikely that adolescent well-being is a primary determinant of neighborhood distress, bidirectional relations probably exist among other constructs. For instance, even though we hypothesized that parenting styles and peer deviance would predict adolescent adjustment, converse relations have also been documented. Child characteristics (e.g., temperament) have been shown to influence parenting practices (e.g., Lerner, 1993); similarly, youths with behavioral problems are more likely to select deviant peers with whom to affiliate (Windle, 1994). The presence and specified direction of the pathways in our analyses were determined on the basis of theoretical interest, but other configurations may be empirically supported as well.

In addition, constructs were measured using survey instruments. Although the combination of parent-report and adolescent-report data reduced common sources of error variation, assessment relied on perceptions of psychosocial phenomena. Future researchers could include more objective measures of these variables. For instance, respondents' perceptions of neighborhood distress may be used in conjunction with relevant census data (Leventhal & Brooks-Gunn, 2000). Investigators could also use behavioral observations of parent-child interaction to increase measurement validity.

Furthermore, future researchers could attempt to expand and refine our analytic framework by investigating whether other constructs influence the association between neighborhood characteristics and adolescents' well-being. For example, parents' own psychological health

may reflect neighborhood distress; parents' social and emotional functioning are also intimately connected with family dynamics (Meyers, Varkey, & Aguirre, 2002). Similarly, family members' social connections within the community may be significant. For instance, individuals who establish meaningful connections with others (e.g., extended family, friends) and regularly participate in local institutions (e.g., church) create enclaves within their neighborhood that may affect family life (Sonn & Fisher, 1998).

Moreover, the direct and indirect relations between neighborhood characteristics and adolescent outcomes may be qualified by sex or race. A small number of investigations have documented such significant interaction effects (Duncan, 1994; Simons et al., 1996). Our detailed examination of the different connections between community traits and adolescent outcomes would be nicely complemented by an explicit examination of the salience of each of these pathways for distinct demographic subgroups.

In sum, this study provides several important conceptual and methodological additions to our understanding of the ways in which neighborhoods relate to adolescent outcomes. Our analyses indicated that residing in a high-risk neighborhood is associated with an increased chance that adolescents will experience psychological difficulties and school problems. These direct relations persisted after parenting, peer, and family SES factors were taken into consideration. Perhaps more importantly, our results documented the presence of indirect connections between these constructs (i.e., mediated pathways). Neighborhood characteristics were related to proximal forces in adolescents' lives—parenting style and peer qualities; these factors, in turn, were associated with adolescent outcomes. Furthermore, our results highlighted that authoritative parenting and prosocial peers are especially important for adolescents who live in high-risk neighborhoods. These moderated relations underscored that community distress operates as a vulnerability factor that is exacerbated by stress stemming from family and peer relationships. Finally, our findings indicated that stress accumulates across neighborhood, family, and peer settings in a linear fashion that places adolescents at increasing risk for psychological and school problems. These results as a whole underscore the need to consider the broader context of adolescents' lives when evaluating the determinants of their well-being.

REFERENCES

- Allison, K. W., Burton, L., Marshall, S., Perez-Febles, A., Yarrington, J., Kirsh, L. B., & Merriwether-DeVries, C. (1999). Life experiences among urban adolescents: Examining the role of context. *Child Development, 70*, 1017-1029.
- Aneshensel, C. S., & Sucoff, C. A. (1996). The neighborhood context and adolescent mental health. *Journal of Health and Social Behavior, 37*, 293-310.
- Baldwin, A. L., Baldwin, C., & Cole, R. E. (1990). Stress-resistant families and stress-resistant children. In J. Rolf, A. S. Masten, D. Cicchetti, K. H. Nuechterlein, & S. Weintraub (Eds.), *Risk and protective factors in the development of psychopathology* (pp. 257-280). Cambridge, England: Cambridge University Press.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social-psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173-1182.
- Baumrind, D. (1991). Parenting styles and adolescent development. In J. Brooks-Gunn, R. Lerner, & A. C. Peterson (Eds.), *The encyclopedia of adolescence* (pp. 746-758). New York: Garland.
- Belsky, J. (1996). Parent, infant, and social-contextual antecedents of father-son attachment security. *Developmental Psychology, 32*, 905-913.
- Berndt, T. J., & Keefe, K. (1995). Friends' influence on adolescents' adjustment to school. *Child Development, 66*, 1312-1329.
- Brody, G. H., Ge, X., Conger, R., Gibbons, F. X., Murry, V. M., Gerrard, M., & Simons, R. L. (2001). The influence of neighborhood disadvantage, collective socialization, and parenting on African American children's affiliation with deviant peers. *Child Development, 72*, 1231-1246.
- Bronfenbrenner, U. (1979). *The ecology of human development*. Cambridge, MA: Harvard University Press.
- Brooks-Gunn, H., Duncan, G. J., Klebanov, P. K., & Sealander, N. (1993). Do neighborhoods influence child and adolescent development? *American Journal of Sociology, 99*, 353-395.
- Coley, R. L., & Hoffman, L. W. (1996). Relations of parental supervision and monitoring to children's functioning in various contexts: Moderating effects of families and neighborhoods. *Journal of Applied Developmental Psychology, 17*, 51-68.
- Cummings, E. M., Davies, P. T., & Campbell, S. B. (2000). *Developmental psychopathology and family process: Theory, research, and clinical implications*. New York: Guilford.
- Dornbusch, S. M., Ritter, L. P., & Steinberg, L. (1991). Community influences on the relation of family status to adolescent school performance: Differences between African Americans and non-Hispanic whites. *American Journal of Education, 38*, 543-567.
- Duncan, G. J. (1994). Families and neighbors as sources of disadvantage in the schooling decisions of White and Black adolescents. *American Journal of Education, 103*, 20-53.
- Duncan, G. J., & Raudenbush, S. W. (2001). Neighborhoods and adolescent development: How can we determine the links? In A. Booth & A. C. Crouter (Eds.), *Does it take a village? Community effects on children, adolescents, and families* (pp. 105-136). Mahwah, NJ: Erlbaum.

- Furstenberg, F. F., Jr., Cook, T. D., Eccles, J., Elder, G. H., Jr., & Sameroff, A. (1999). *Managing to make it: Urban families and adolescent success*. Chicago: University of Chicago Press.
- Garbarino, J., & Sherman, D. (1980). High-risk neighborhoods and high-risk families: The human ecology of child maltreatment. *Child Development*, 51, 188-198.
- Gonzales, N. A., Cauce, A. M., Friedman, R. J., & Mason, C. A. (1996). Family, peer, and neighborhood influences on academic achievement among African-American adolescents: One-year prospective effects. *American Journal of Community Psychology*, 24, 365-387.
- Gray, M. R., & Steinberg, L. (1999). Unpacking authoritative parenting: Reassessing a multidimensional construct. *Journal of Marriage and the Family*, 61, 574-587.
- Halpern-Felsher, B. L., Connell, J. P., Spencer, M. B., Aber, J. L., Duncan, G. J., Clifford, E., Crichlow, W. E., Usinger, P. A., Cole, S. P., Allen, L., & Seidman, E. (1997). Neighborhood and family factors predicting educational risk and attainment in African American and White children and adolescents. In J. Brooks-Gunn, G. J. Duncan, & J. L. Aber (Eds.), *Neighborhood poverty: Context and consequences for children* (Vol. 1, pp. 146-173). New York: Russell Sage Foundation.
- Hannan, K., & Luster, T. (1991). Influence of parent, child, and contextual factors on the quality of home environment. *Infant Mental Health Journal*, 12, 17-30.
- Jencks, C., & Meyer, S. E. (1990). The social consequences of growing up in a poor neighborhood. In L. E. Lynn, Jr., & M. F. H. McGeary (Eds.), *Inner city poverty in the United States* (pp. 111-186). Washington, DC: National Academy Press.
- Kalil, A., & Eccles, J. S. (1998). Does welfare affect family processes and adolescent adjustment? *Child Development*, 69, 1597-1613.
- Kronenberg, W. G., & Mayer, R. G. (2001). *The child clinician's handbook* (2nd ed.). Boston: Allyn and Bacon.
- Kupersmidt, J. B., Griesler, P. C., DeRosier, M. E., Patterson, C. J., & Davis, P. W. (1995). Childhood aggression and peer relations in the context of family and neighborhood factors. *Child Development*, 66, 360-375.
- Lamborn, S. D., Mounts, N. S., Steinberg, L., & Dornbusch, S. M. (1991). Patterns of competence and adjustment among adolescents from authoritative, authoritarian, indulgent, and neglectful families. *Child Development*, 62, 1049-1065.
- Lerner, J. V. (1993). The influence of child temperamental characteristics on parent behaviors. In T. Luster & L. Okagaki (Eds.), *Parenting: An ecological perspective* (pp. 101-120). Hillsdale, NJ: Erlbaum.
- Leventhal, T., & Brooks-Gunn, J. (2000). The neighborhoods they live in: The effects of neighborhood residence on child and adolescent outcomes. *Psychological Bulletin*, 126, 309-337.
- Meyers, S. A. (1999). Mothering in context: Ecological determinants of parent behavior. *Merrill-Palmer Quarterly*, 45, 332-357.
- Meyers, S. A., Varkey, S., & Aguirre, A. M. (2002). Ecological correlates of family functioning. *American Journal of Family Therapy*, 30, 257-273.
- National Commission on Children. (1991). *Speaking of kids: A national survey of children and parents*. Washington, DC: Author.

- Pettit, G. S., Bates, J. E., Dodge, K. A., & Meece, D. W. (1999). The impact of after-school peer contact on early adolescent externalizing problems is moderated by parental monitoring, perceived neighborhood safety, and prior adjustment. *Child Development, 70*, 768-778.
- Pinderhughes, E. E., Nix, R., Foster, E. M., Jones, D., & The Conduct Problems Prevention Research Group. (2001). Parenting in context: Impact of neighborhood poverty, public services, social networks, and danger on parental behaviors. *Journal of Marriage and the Family, 63*, 941-953.
- Quane, J. M., & Rankin, B. H. (1998). Neighborhood poverty, family characteristics, and commitment to mainstream goals: The case of African American adolescents in the inner city. *Journal of Family Issues, 19*, 769-794.
- Sameroff, A. J., Bartko, W. T., Baldwin, A., Baldwin, C., & Seifer, R. (1998). Family and social influences on the development of child competence. In M. Lewis & C. Feiring (Eds.), *Families, risk, and competence* (pp. 161-185). Mahwah, NJ: Erlbaum.
- Sameroff, A. J., Seifer, R., Baldwin, A., & Baldwin, C. (1993). Stability of intelligence from preschool to adolescence: The influence of social and family risk factors. *Child Development, 64*, 80-97.
- Sampson, R. J. (2001). How do communities undergird or undermine human development? Relevant contexts and social mechanisms. In A. Booth & A. C. Crouter (Eds.), *Does it take a village? Community effects on children, adolescents, and families* (pp. 3-30). Mahwah, NJ: Erlbaum.
- Simons, R. L., Johnson, C., Beaman, J., Conger, R. D., & Whitbeck, L. B. (1996). Parents and peer group as mediators of the effect of community structure on adolescent problem behavior. *American Journal of Community Psychology, 24*(5), 145-171.
- Simons, R. L., Johnson, C., Conger, R. D., & Lorenz, F. O. (1997). Linking community contexts to quality of parenting: A study of rural families. *Rural Sociology, 62*, 207-230.
- Sonn, C. C., & Fisher, A. T. (1998). Sense of community: Community resilient responses to oppression and change. *Journal of Community Psychology, 26*, 457-472.
- Steinberg, L., Lamborn, S. D., Dornbusch, S. M., & Darling, N. (1992). Impact of parenting practices on adolescent achievement: Authoritative parenting, school environment, and encouragement to succeed. *Child Development, 63*, 1266-1281.
- Steinberg, L., Mounts, N. S., Lamborn, S. D., & Dornbusch, S. M. (1991). Authoritative parenting and adolescent adjustment across varied ecological niches. *Journal of Research on Adolescence, 1*, 19-36.
- Wilson, W. J. (1987). *The truly disadvantaged: The inner city, the underclass, and public policy*. Chicago: University of Chicago Press.
- Wilson, W. J. (1991). Studying inner-city social dislocations: The challenge of public agenda research. *American Sociological Review, 56*, 1-14.
- Windle, M. (1994). A study of friendship characteristics and problem behaviors among middle adolescents. *Child Development, 65*, 1764-1777.
- Woodworth, S., Belsky, J., & Crnic, K. (1996). The determinants of fathering during the child's second and third year of life: A developmental analysis. *Journal of Marriage and the Family, 58*, 679-692.

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