Published in final edited form as:

Am J Community Psychol. 2012 September ; 50(1-2): 101–113. doi:10.1007/s10464-011-9481-7.

Neighborhood Disorder and Children's Antisocial Behavior: The Protective Effect of Family Support Among Mexican American and African American Families

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Abstract

Using data from a sample of 673 Mexican Origin families, the current investigation examined the degree to which family supportiveness acted as a protective buffer between neighborhood disorder and antisocial behavior during late childhood (i.e. intent to use controlled substances, externalizing, and association with deviant peers). Children's perceptions of neighborhood disorder fully mediated associations between census and observer measures of neighborhood disorder and their antisocial behavior. Family support buffered children from the higher rates of antisocial behavior generally associated with living in disorderly neighborhoods. An additional goal of the current study was to replicate these findings in a second sample of 897 African American families, and that replication was successful. These findings suggest that family support may play a protective role for children living in dangerous or disadvantaged neighborhoods. They also suggest that neighborhood interventions should consider several points of entry including structural changes, resident perceptions of their neighborhood and family support.

Keywords

Neighborhoods; Family relations; Antisocial behavior; Mexican Americans; African Americans

Introduction

Ecological theories of development have emphasized the importance of studying multiple levels of context that form the child's environment (Bronfenbrenner and Morris 1998). One level of the environment that has received considerable attention is the neighborhood context (Leventhal et al. 2009). Recent work on the link between neighborhoods and child development has focused on factors that mediate (e.g., Kohen et al. 2008) or moderate (e.g., Browning et al. 2005) neighborhood effects. Identification of such mediators and moderators of neighborhood effects are crucial to the development of interventions intended to address disparities across neighborhoods. The current study advances this line of research in two important ways.

First, based on two studies of late childhood we evaluate specific predictions from the transactional model of neighborhood influences on children's development (Roosa et al. 2003). This model builds on earlier research and theory to provide a relatively comprehensive account of how neighborhoods should affect children and adolescents. Second, we examine predictions from the model using information from two independent study populations, one a community study of Mexican American families and the other a community study of African American families, thus providing a particularly stringent test of hypotheses from this theoretical framework. That is, our goal in testing the model across two quite different groups is to assess the degree to which hypotheses from the transactional model operate similarly across two very different populations in terms of history, cultural background, ethnicity and family traditions. This research strategy helps establish the boundary conditions or generalizability of the theory.

Neighborhoods as an Important Context for Development

A considerable amount of research shows associations between neighborhood characteristics and developmental outcomes during childhood and adolescence. Although research exists on neighborhood resources and affluence as promoters of healthy development (e.g., Brisson and Usher 2005), most work on neighborhoods and development has conceptualized neighborhoods in terms of dangerousness, criminality and lack of resources. That is, neighborhoods are considered to place children at risk for developmental problems if they are low in social cohesion, are characterized by poverty or economic disadvantage, and demonstrate high rates of criminality and social disorganization. We use the term "neighborhood disorder" to describe these characteristics. These elements of neighborhood disorder have been consistently linked to negative developmental outcomes, including aggression, associating with deviant peers, and the use of or intent to use controlled substances (e.g., Bierut et al. 2008; Cantillon 2006; Hart et al. 2008). These are the childhood developmental outcomes considered in the present study markers of risk for increasing problem behavior from late childhood through the years of adolescence.

Early Antisocial Behaviors

Childhood and early adolescent externalizing is an important marker of antisocial behavior and also a risk factor for delinquent and violent behaviors occurring later in the life course (Loeber and Hay 1997). In theory, neighborhood disorder should predict externalizing behavior because the neighborhood lacks the resources necessary to prevent deviant behavior, and because children and adolescents may be exposed to aggressive/deviant

models and perceive that they are rarely sanctioned for their misbehavior (Jencks and Mayer 1990). Several studies have shown positive associations between neighborhood disorder and child or adolescent externalizing behaviors (Ingoldsby et al. 2006), including aggression towards peers (Hart et al. 2008) and criminal behavior (Schuck and Widom 2005).

Another important marker of early antisocial behavior is the tendency to select antisocial friends. Several investigators have argued that more deviant youth select friends with similar characteristics (e.g., Patterson et al. 1992) and others have argued that reports of antisocial friends are a proxy for one's own antisocial behavior (e.g., Gottfredson and Hirschi 1990). This affiliation process is especially important during late childhood and adolescence because peers begin to occupy a central role in modeling and even encouraging deviant behaviors, and these peer networks may offer a potent context in which norms governing the use of violence may come to operate. This process likely occurs because associating with delinquent peers enables the emergence of a pro-delinquent reference group (Glaser 1956) that promotes delinquent conceptions of the self, as well as pro-delinquent attitudes, justifications and motives to engage in delinquent behavior (Heimer and Matsueda 1994).

A third index of antisocial behavior linked with neighborhood disorder is the use of or the intent to use controlled substances (CS). Most adults who use CS begin in adolescence (Johnston et al. 2008), and early use has been linked to a variety of negative outcomes in adolescence and adulthood, including alcohol abuse and dependence, illicit drug use, violence, and risky sexual behavior (e.g., Gruber et al. 1996). Several studies have found an association between neighborhood disorder and use of CS (e.g., Bierut et al. 2008). Because actual prevalence rates for substance abuse are low in childhood and early adolescence, research with those age groups often focuses on related variables that will increase the likelihood of eventual drug use, like access to substances or intent to use. The importance of considering intentions when seeking to explain/predict behavior was highlighted by Ajzen and Fishbein (1980) and work on use of CS suggests intent is an important predictor of actual use (Perron and Howard 2008). In the current study, we expect neighborhood disorder as indexed by putatively more objective sources (i.e., census and observer reports) will be positively related to children's antisocial behavior as defined using the three aforementioned indices (i.e., externalizing, deviant peers, and intent to use CS), consistent with the theoretical framework that guides the research.

A Transactional Perspective on Neighborhoods

The theoretical framework for the current study is based on elements from the transactional model of neighborhood influences (Roosa et al. 2003). Broadly speaking, the transactional model proposes specific processes through which neighborhood characteristics should affect the development of children and adolescents. According to the transactional model, neighborhood characteristics inform individual and family perceptions of neighborhood quality. These perceptions of neighborhood quality, as well as neighborhood social processes, in turn, affect family processes, which affect child outcomes. Importantly, neighborhood social processes are considered to be emergent from the aggregate of the families residing in the neighborhood, not from objective neighborhood characteristics. The current investigation does not attempt to empirically test the transactional model in its entirety, but instead focuses on theoretical predictions from the model related to neighborhood perceptions as mediators of neighborhood effects and family processes as moderators of neighborhood effects.

Perceptions as a Mediator—One hypothesis of the transactional model relevant to the current study is the proposed full mediation of the link from objective neighborhood disorder to child and adolescent antisocial behavior through perceived neighborhood

disorder. This first hypothesis from the transactional model, that neighborhood characteristics as indexed by census or observer-based data represent a distal risk factor (Garmezy 1983) that has an influence on children and families through resident perceptions about the neighborhood, is consistent with other theoretical work. Neighborhood disorder as measured using archival data from census or police crime reports is often conceptualized as a stressor to which all neighborhood residents receive some exposure (Attar et al. 1994). Applying a stress process model (e.g., Bandura 2001) suggests that the objective levels of a stressor like neighborhood disorder will affect residents through their perceptions of that disorder. Furthermore, the health belief model (Becker 1974) posits that individuals act to reduce the threat of a stressor because they see themselves to be susceptible to the threat, perceive the threat to be a severe one, and fear it (Harrison et al. 1992). Finally, Bronfenbrenner's ecological model suggests that the actual experiences of the child or adolescent within the neighborhood will perhaps be more important than objective neighborhood characteristics. That is, perceptions of danger or disorder likely evolve through transactions with the proximal environment.

This perception argument takes into account the fact that the same environmental conditions may be viewed differently by different people as well as the reality that residents living in the same neighborhood may have different experiences in that environment. Some empirical support for this mediation hypothesis exists in the neighborhood literature. First, residents in the same neighborhoods vary widely in their specific experiences with, interpretations of, and reactions to neighborhood conditions (Leventhal et al. 2009) and some work has shown that these perceptions of neighborhood attributes fully mediate associations between census or other informant reports and resident behaviors (Chung and Steinberg 2006). The current study includes archival, observer, and child assessments of neighborhood disorder. Consistent with the transactional model proposed by Roosa et al. (2003), we predict that child perceptions of neighborhood disorder will fully mediate the association between objective indices of neighborhood disorder and antisocial behavior.

Parent Support as a Predictor of Child Perception—Roosa et al. (2009) also argue that family characteristics such as warmth and support will influence perceptions of neighborhood conditions. Although their emphasis is on moderation (which we address below), we also expect that parent support will directly predict lower levels of perceived disorder, after accounting for census and observer ratings of neighborhood disorder. Social support is one of the most consistent predictors of stress response (Gramer and Reitbauer 2010; Ohira 2004; Vedhara et al. 2000), in part because it reduces the threat that a stressor is appraised to present (Cohen and Wills 1985). Thus, we hypothesize in the current study that the presence of family support will be negatively related to the child's perception of the neighborhood as a risky and dangerous place.

Family Support as a Moderator—The final hypothesis drawn from the transactional model relevant to the current study is that family processes will moderate relations between perceived neighborhood quality and child developmental outcomes (Roosa et al. 2003, p. 62). This third hypothesis from the transactional model also is consistent with other theoretical work. For example, according to control theory (for a review see Le Blanc 1997), a child who feels strong support from and affinity towards his or her family will be motivated to maintain normative standards of behavior, despite living in a neighborhood that neglects those behavioral norms. For example, adolescent males who witness community violence are less likely to engage in violent acts themselves if their parents are supportive (Brookmeyer et al. 2005). Similarly, in the present study we predict that children who perceived their neighborhoods to be dangerous or disadvantaged will be at less risk for antisocial behavior if their families are supportive.

The Current Study

Figure 1 illustrates the conceptual framework for the present study. Drawing on predictions from the transactional model of neighborhood influences and other literature just reviewed, the current study is guided by five hypotheses: (a) neighborhood disorder will be associated with higher levels of child antisocial behavior (i.e., aggression, associations with deviant peers, and intent to use controlled substances), (b) child perceptions of neighborhood disorder will fully mediate the association between census/observer indicators of neighborhood disorder and child antisocial behavior, (c) parent support will predict lower levels of perceived neighborhood disorder, (d) parent support will predict lower levels of child antisocial behavior, and (e) parent support will attenuate the positive association between child perceptions of neighborhood disorder and child antisocial behavior. That is, we expect perceived neighborhood disorder to predict child antisocial behavior more strongly when parent support is low. The current study examines these associations during late childhood, a time when these pre-adolescents are becoming more aware of neighborhood risks and may be more susceptible to neighborhood influences than earlier in childhood. To account for any potential association between parent education and family income with neighborhood disadvantage and child antisocial behavior, we controlled for these in the current analyses.

In addition to testing specific predictions from our theoretical model, another important goal of this study is to determine whether these predictions will hold across two very different groups of children and families. Concerns about the robustness of research results, and the capacity to replicate across populations, have long been a concern in the field of child development (Weisz 1978), as such replications across samples are fundamental to scientific progress. As Rosenthal and Rubin (1985, p. 527) noted, “Scientific facts are virtually impossible to establish in any one study; rather, they result from the accumulation of evidence through replication.” In this investigation we attempt to replicate predictions from our model across two study populations: African Americans and Mexican Americans. Both Mexican American and African American children and adolescents are at high risk for poverty which is a major factor in determining whether or not families live in dangerous and disadvantaged neighborhoods. Thus, these participants provide an especially appropriate population base for evaluating the study hypotheses (Drake and Rank 2009).

These two groups of families are similar socioeconomically, but different in many other important ways. For instance, national statistics show that African American households are more likely to be headed by single mothers than Mexican American households (U.S. Census Bureau 2011). This difference is also reflected in our samples, with 52% of our African American families being headed by single mothers in contrast to 18% of our Mexican American families. An additional difference between these two groups involves cultural history. That is, Mexican Americans are generally recent immigrants to the U.S. from a neighboring country, whereas African Americans typically trace their lineage across multiple generations in the U.S. with roots going back to countries in Africa. That is, on average African Americans will be more acculturated to mainstream U.S. culture than Mexican Americans. Another important difference involves language, with many Mexican Americans preferring Spanish over English, especially if they are immigrants to the U.S. (U.S. Census Bureau 2004), whereas most African Americans are native English speakers. Using latent variable structural equation modeling to test our hypothesized associations across these two very different groups provides a robust assessment of the external validity of our model, consistent with the tradition of replication in science. Prior replication studies suggest that latent variable structural equation modeling is particularly suited to replicative analyses in that it (a) assumes imperfect measurement based on a limited number of

measures in any single study drawn from a broad range of possible indicators and (b) allows comparisons at the level of theoretical constructs (Conger et al. 1995).

Study 1: Mexican Origin Sample

Method

Participants—Data for this study were collected as part of a broader project concerned with the transition into adolescence as experienced by Mexican Origin children and their parents. A sample of 673 families (547 two-parent and 126 single mother families) was recruited via telephone and door-to-door contacts through the cohort of all fifth-grade students (randomly drawn from school rosters) in two cities in northern California. Data collection took place during 2006 and 2007. Criteria for inclusion in the study included: (a) the biological mother and father identified as Mexican or Mexican American; (b) in two-parent families, the father had to be the biological father of the focal child; and c) the focal child had to be living with the biological mother in either a single or two-parent family. Sixty-nine percent of the eligible families agreed to participate, which is comparable to the response rates reported by other community studies that attempt to recruit multiple family members (Capaldi and Patterson 1987).

The families in the study lived in urban or in suburban areas. Because of inclusion criteria, all of the families were of Mexican origin, and annual income ranged from 0 to +\$95,001 with a median of \$30,001–\$35,000. Fathers' education ranged from 0 to 20 years with a mean of 9.09 years of education, while for mothers the range was from 0 to 20 years with a mean of 9.39 years. The fathers ranged in age from 25 to 65, with a median of 39 years; mothers' ages ranged from 26 to 57, with a median of 37 years. Children averaged 10.4 years of age ($SD = 0.6$), and were approximately evenly split across gender (51.9% female).

Procedures—Each family was visited twice at their home for data collection usually within a 1- or 2-week period. The purpose of two visits was to distribute the data collection and reduce respondent fatigue. During each visit, the participating family members individually completed a set of computer-based interviews focusing on family processes, individual family member characteristics, and socioeconomic circumstances. On average, each visit took approximately 2 h and two interviewers independently assessed family members. Families in which both the mother and father participated were paid \$200 for their participation, while single-parent families were paid \$135. Approximately 80% of the mothers, 80% of the fathers, and 20% of the children elected to complete their interviews in Spanish. Interviewers received extensive training and were bilingual in Spanish and English. Most interviewers were of Mexican origin. Interviews were conducted in separate parts of the home so that answers to questions were confidential.

Measures of Neighborhood Disorder—We used *block-group level data from the 2000 US census* to obtain nine variables used in prior empirical work as indicators of neighborhood disorder: (1) median age of neighborhood residents, (2) average education of neighborhood residents, (3) percent of males 16 or older in the workforce in management positions, (4) percent of mother-headed families with children under five, (5) percent of households receiving public assistance, (6) median family income of neighborhood residents, (7) percent of housing that is owner-occupied, (8) percent of housing that is vacant, and (9) percent of males 16 or older in the workforce and unemployed. We divided non percentage variables by their maximum value to generate an observed range from zero to one for analyses. For example, median family income was divided by the maximum observed value of \$165,632.

Following the practice of others (e.g., Chung and Steinberg 2006), a factor analysis of census variables was conducted in order to create indices. Exploratory factor analysis using promax rotation of the nine neighborhood disorder variables suggested a two-factor solution. Variables 1–5 loaded onto the first factor labeled ‘resident characteristics’ ($\alpha = 0.72$), while variables 6–9 loaded onto the second factor labeled ‘housing characteristics’ ($\alpha = 0.79$). Items 1–3, 6, and 7 were reverse coded for analyses, so that higher scores on the composites would reflect higher levels of neighborhood disorder. Each of the composites was used as one of two indicators for a latent factor representing neighborhood disorder.

The two trained staff who interviewed family members each completed a three-item assessment that was used to generate an *observer report of neighborhood disorder*. Questions about dangerousness, physical deterioration, and noise level of the neighborhood were completed on a four-point scale, with higher numbers reflecting higher neighborhood disorder. The intraclass correlation across raters was acceptable ($r = 0.81$) and each item was averaged across raters to create a 3-item scale containing information from both raters ($\alpha = 0.85$). The scale was used as the third indicator of neighborhood disorder, and confirmatory factor analysis of this factor gave acceptable standardized factor loadings ranging from 0.48 (observed characteristics) to 0.84 (resident characteristics).

Measure of Child Perceptions of Neighborhood Disorder: Ten items from the *Neighborhood Criminal Events Scale (NCES)* (Roosa et al. 2005) were completed by the child. The introduction to the survey was as follows “Now we are going to talk about your neighborhood. By neighborhood I mean the block on which you live and the blocks on either side of you. Please think about this small area and tell me how often each of the following has happened there in the past year.” Three of the items were “How often were there groups of people or kids who make you feel unsafe, hanging around your neighborhood,” “How often were there people damaging other people’s property” and “How often is graffiti put on buildings, fences, or elsewhere.” Prior work among Mexican-American mothers found acceptable reliability for the NCES (Roosa et al. 2005). In the current study, the scale was reliable ($\alpha = 0.87$ for English version, 0.81 for Spanish version), and the 10 items were randomly assigned to one 4-item and two 3-item indicators of a latent factor representing child perception of neighborhood disorder following procedures recommended by Kishton and Widaman (1994). Confirmatory factor analysis of this factor gave acceptable standardized factor loadings ranging from 0.75 to 0.89.

Measure of Parent Support—Children completed a 23-item scale of perceived parent support from the *Behavioral Affect Rating Scale (BARS)* (Conger 1989) that began: “During the past 3 months when you and your [mother] have spent time talking or doing things together, how often did your [mother].” Items were completed on a four-point scale and included “Help you do something that was important to you,” and “Listen carefully to your point of view.” Items assessing harshness/rejection were reverse-coded and combined with items measuring support/warmth. The child reports of both parents were combined ($\alpha = 0.85$ for English version, 0.80 for Spanish version) and the items were reduced to three indicators for the ‘parent support’ latent factor. Confirmatory factor analysis of this factor gave acceptable standardized factor loadings ranging from 0.75 to 0.89.

Measure of Family SES and Other Control Variables—To assess parent educational attainment in single-parent families we used mother’s self-report of years of schooling completed, and in two-parent families we used the highest value from mother’s and father’s self-reports of years of schooling completed. To assess income we used mother’s self-report of income in single mother households and the sum of mother and father self-reports in two-parent families. Income was reported in increments of \$5,000.

Family structure (single- vs. two-parent), age of child, and child gender also were included as controls, but as they showed no unique prediction to outcomes (for either sample), they are not included in the analyses presented here.

Measures of Child Antisocial Behavior—*Intent to use controlled substances (CS)*

during the preceding year was assessed using a nine-item scale that asks whether the respondent intends to use substances in the next year (Gibbons et al. 2004) with higher scores reflecting higher intent to use. Items were answered on a four-point scale, and included “Do you plan to drink alcohol in the next year,” and “How likely is it that you will drink alcohol in the next year?” Parallel questions were asked regarding cigarettes and illegal drugs. These nine items had acceptable reliability ($\alpha = 0.89$ for the English version, 0.71 for the Spanish version) and served as one indicator for the antisocial behavior latent factor.

The degree to which the child *associated with deviant peers* was assessed using a 23-item scale adapted from several sources (Elliott et al. 1985). The introduction to the scale read: “The following questions focus on your friends and what they might have done during the past 3 months.” Questions were answered on a four-point scale and sample items include “How many of your friends, purposely damaged, destroyed, or tagged property that did not belong to them,” and “How many of your friends hit or threatened to hit someone?” The 23 items had good reliability ($\alpha = 0.95$ for the English version, 0.91 for the Spanish version) and served as another indicator for the antisocial behavior latent factor.

Child *externalizing* was assessed using the conduct disorder scale from the Computer-based Diagnostic Interview Schedule for Children (*C-DISC*; Shaffer and Fisher 1997). Items used asked about behavior during the previous 12 months, and were answered on a two-point scale (1 = yes, 0 = no). Sample items include “You did mean things to people,” “You broke/damaged someone else’s things on purpose,” and “You bullied someone smaller who wouldn’t fight back.” The total symptom count for the conduct disorder scale was used as a third indicator of child antisocial behavior in the current analyses, and confirmatory factor analysis of this antisocial behavior factor gave acceptable standardized factor loadings ranging from 0.42 (intent to use CS) to 0.76 (associations with deviant peers). Boys reported more externalizing than girls $t(653) = 2.24, r = 0.09, p = 0.026$.

Data Analysis—Because an infinite number of models can provide good fit with a given covariance matrix, analyses involved the comparison of several related structural equation models, estimated using full-information maximum-likelihood (Muthén and Muthén 2006). Missingness was less than 10% for all variables. In order to operationalize the statistical interactions, we multiplied the manifest parcels for parent support by the manifest parcels for perceived neighborhood disorder (Jonsson 1998), resulting in three product parcels defining the interaction factor. If the interaction was significant, it was plotted using the standardized regression coefficients (Whisman and McClelland 2005).

When evaluating the fit of structural models to the data, we used several types of indicators. We used the standard Chi-square index of statistical fit that is routinely provided under maximum likelihood estimation of parameters. We also used two indexes of practical fit, the root mean square error of approximation (RMSEA; Browne and Cudeck 1993) and the Tucker—Lewis index (TLI; Tucker and Lewis 1973). Values required for good fit are less than 0.05 for the RMSEA and above 0.95 for the TLI (Hu and Bentler 1999).

The 673 families in the current study came from 206 census block groups, thus the assessments of neighborhood disorder were not independent across families. Because there was not a sufficient number of families in each block group to explicitly model this

nestedness, analyses were run using both regular estimation as well as a correction that estimated the standard error based on the block groups instead of the participants. In no case did a path that was significant in the regular estimation become nonsignificant after controlling for nestedness. Therefore, in the interests of utilizing the Chi-square difference test to inform model building, we report analyses based on the regular estimation.

Results

Descriptive statistics for the manifest variables are presented in Appendix. Correlations among latent variables and indicators of SES are presented in Table 1. The current study refers to the correlations below the diagonal. As expected, neighborhood disorder and child perception of neighborhood disorder were significantly correlated ($r = 0.25$), which is comparable to prior work (e.g., Chung and Steinberg 2006). Consistent with hypothesis 1, objective neighborhood disorder was positively associated with child antisocial behavior ($r = 0.12$, $p < 0.05$). Other correlations were also consistent with study hypotheses; thus, we next conducted formal tests of the theoretical model.

Table 2 contains the fit indices for a series of nested models addressing study hypotheses. The first model in Table 2 is Model 1a, which allows the 17 manifest variables to load onto the four hypothesized latent factors and also allows all latent factors to be freely correlated. Model 1b allows only those structural paths specified by our hypotheses, which results in a nonsignificant change in fit, $\Delta\chi^2 (\Delta df = 4) = 5.93$, $p = 0.20$ for the Mexican American participants. Model 1c sets to zero eight paths that were not significant in model 1b, which results in a not significant worsening in model fit, $\Delta\chi^2 (\Delta df = 8) = 4.52$, $p = 0.81$, and was selected as the final, most parsimonious model.

Figure 2 contains the standardized coefficients from Model 1c. The factor loadings were all acceptable; for example, the standardized factor loadings for objective neighborhood disorder ranged from $\lambda = 0.47$ to $\lambda = 0.86$. Neighborhood disorder as defined by census and observer reports predicted higher levels of neighborhood disorder as reported by the child ($\beta = 0.23$, $SE = 0.06$). Consistent with hypothesis 2, the direct association between objective neighborhood disorder and child antisocial behavior was not significant in the presence of the child's perception of disorder. Consistent with hypothesis 3, parent support predicted lower levels of perceived neighborhood disorder ($\beta = -0.18$, $SE = 0.04$), after controlling for objective disorder. Consistent with hypothesis 4, parent support predicted lower levels of antisocial behavior ($\beta = -0.33$, $SE = 0.05$). Consistent with hypothesis 5, the interaction between parent support and child rating of neighborhood disorder was significant in predicting antisocial behavior ($\beta = -0.33$, $SE = 0.05$). In the presence of the higher-order interaction term, parent support was negatively associated with antisocial behavior ($\beta = -0.15$, $SE = 0.05$), while child rating of neighborhood disorder was positively related to antisocial behavior ($\beta = 0.29$, $SE = 0.05$). The indirect path from objective neighborhood disorder to child antisocial behavior was significant ($\beta = 0.07$, $SE = 0.02$) using bootstrapped confidence intervals. The regression of antisocial behavior onto child gender, exact age, family structure, and family SES did not affect the magnitude of the coefficients presented in Fig. 2.

Panel A in Fig. 3 depicts the regression equation for predicting child antisocial behavior using standardized coefficients at three levels of parent support (i.e., -1 SD, the mean, $+1$ SD). Perceived neighborhood disorder predicted child antisocial behavior especially in families characterized by low support. The association between neighborhood disorder and antisocial behavior was significant at -1 SD from the mean on parent support ($p < 0.001$) and at the mean of parent support ($p < 0.001$) but not at $+1$ SD above the mean on parent support ($p = 0.93$).

Study 2: Replication of Study 1 in an African American Sample

Methods

Participants—The Family and Community Health Study (FACHS) recruited 897 families, 475 in Iowa and 422 in Georgia, for participation in an investigation of African American children and their families. Each family included a target child, who was between the ages of 10 and 11 years ($M = 10.5$ years, 54% girls) at the time of recruitment and who was identified as African American by the family and/or in school records. Interviews were conducted with the target child, his or her primary caregiver, and an older sibling if one was present. If a second caregiver was living in the home, he or she was invited to participate as well.

The primary caregiver lived in the household with the target child and was responsible for the majority of the child's care. Most (83.5%) of the 897 primary caregivers were the child's biological mother; 5.5% were the child's father; 5.6% were the child's grandmother; 2.5% were foster or adoptive parents; 1.3% were other relatives; 0.6% were stepparents; and fewer than 1% fell into nonrelative categories. Overall, 93% of the primary caregivers were female. Their ages ranged from 23 to 80 years, and their mean age was 37.1 years. Ninety-two percent of the primary caregivers identified themselves as African American. The remaining 8% identified themselves as ethnically mixed or as belonging to another ethnic group. Education among primary caregivers ranged from less than high school (18%) to advanced graduate degrees (3%), with most having completed high school (42%). The Iowa and Georgia samples did not differ significantly with regard to the income or education of the primary caregiver. The average family per capita income for the Georgia sample was \$8,242 ($SD = \$6,990$), compared with \$9,536 ($SD = \$6,437$) for the Iowa families.

Procedures—Each family was visited twice at their home for data collection. The purpose of two visits was to distribute the data collection and reduce respondent fatigue. During each visit, the participating family members individually completed a set of computer-based interviews focusing on family processes, individual family member characteristics, and socioeconomic circumstances. On average, each visit took approximately 2 h and two interviewers independently assessed family members. Caregivers received \$100 and youths received \$70 for their participation. To enhance rapport and cultural understanding, African American university students and community members served as field researchers, and received extensive training before interviewing. Interviews were conducted in separate parts of the home so that answers to questions were confidential.

Measures of Neighborhood Disorder—We used *block-group level data from the 1990 US census* for nine variables: (1) median age of neighborhood residents, (2) percent of residents with at least a high school education, (3) percent of residents in the workforce in white collar jobs, (4) percent of mother-headed families, (5) percent of households receiving public assistance, (6) median family income of neighborhood residents, (7) percent of housing that is owner-occupied, (8) percent of housing that is vacant, 9) percent of males 16 or older in the workforce and unemployed. Exploratory factor analysis suggested a two-factor solution. Variables 1–2, 4–6, and 9 loaded onto the first factor ($\alpha = 0.79$) which was similar to but not an exact replication of the 'resident characteristics' factor from Study 1, while variables 3, and 7–8 loaded onto the second factor similar to the 'housing characteristics' factor from Study 1 ($\alpha = 0.72$). Items 1–3, 6, and 7 were reverse-coded for analyses, and each composite became a separate indicator of neighborhood disorder.

Trained staff who interviewed family members each completed a 7-item assessment that was used to generate an *observer report of neighborhood disorder*. Questions addressed children playing on the blockface, and neighborhood neglect (e.g. graffiti, houses or commercial

units that were burned out, boarded up, or abandoned). Although this scale was longer than the observer-based scale used in Study 1, both observer-based scales correlated similarly with the other variables in the model. The intraclass correlation across raters was acceptable ($r = 0.67$), and each item was averaged across raters to create a seven-item scale containing information from both raters ($\alpha = 0.78$) which was used as an indicator of neighborhood disorder. Confirmatory factor analysis of this neighborhood disorder factor gave acceptable standardized factor loadings ranging from 0.47 (observed characteristics) to 0.72 (resident characteristics).

Measure of Child Perception of Neighborhood Disorder: Children completed a six-item scale created for the study of perceived neighborhood disorder during the previous 6 months, which was adapted from a longer scale (Sampson et al. 1997). Items included “How often was there a robbery or a mugging” and “How often was there a violent argument between neighbors?” This measure of neighborhood disorder was shorter than the measure used in Study 1, but the scale was reliable ($\alpha = 0.74$) and the six items were randomly reduced to three 2-item indicators for the latent factor. Confirmatory factor analysis of this factor gave acceptable standardized factor loadings ranging from 0.61 to 0.70.

Measure of Parent Support—Parent support was assessed using the same scale that was used in Study 1 ($\alpha = 0.79$), and the 23 items were randomly reduced to one 7-item and two 8-item indicators for a parent support latent factor. Confirmatory factor analysis of this factor gave acceptable standardized factor loadings ranging from 0.72 to 0.84.

Measure of Family SES—Caregiver education was the highest value from either primary or secondary caregivers’ education. To assess income we used primary caregiver’s self-report of income. We also included the additional control variables mentioned in Study 1 (i.e., family structure, age and gender of the focal child).

Measures of Child Antisocial Behavior—*Intent to use controlled substances* during the next year was assessed using the same scale as Study 1 ($\alpha = 0.63$). Boys reported more externalizing than girls ($t(795) = 4.69$, $r = 0.16$, $p < 0.001$). The nine items were used as an indicator for the latent factor called ‘child antisocial behavior.’ Association with *deviant peers* was assessed using 19-items from the same scale as study 1 ($\alpha = 0.88$). Boys reported more deviant peers than girls ($t(797) = 2.48$, $r = 0.09$, $p = 0.013$). The 19 items were used as a second indicator for the latent factor. Child aggression was assessed using the same scale as used in Study 1, which served as the third indicator for the latent factor. Confirmatory factor analysis of this antisocial behavior factor gave acceptable standardized factor loadings ranging from 0.50 (intent to use CS) to 0.64 (associations with deviant peers).

Results

As shown in Table 1, the zero-order correlation between objective and perceived neighborhood disorder was higher ($r = 0.42$) than in study 1 ($r = 0.25$). In general, the pattern of associations was similar to the pattern seen in Study 1. Table 2 contains the fit indices for the structural equation models for the African American participants. As was the case for Mexican Origin families, Model 1b shows a nonsignificant worsening in fit over model 1a for African American families, $\Delta\chi^2 (\Delta df = 4) = 7.27$, $p = 0.12$, and Model 1c shows a nonsignificant worsening in fit over model 1b, $\Delta\chi^2 (\Delta df = 8) = 12.82$, $p = 0.12$. Therefore, Model 1c was selected as the most parsimonious representation of study findings.

Figure 2 contains the standardized coefficients from Model 1c for African American families. The overall pattern of results is similar to Study 1. For example, support was found for all five hypotheses. Similar to Study 1, the indirect path from census and observer

assessments of neighborhood disorder to child antisocial behavior was statistically significant ($\beta = 0.16$, $SE = 0.03$). Family support negatively predicted perceived neighborhood disorder and child antisocial behavior, as well as moderating the association from perceived neighborhood disorder to antisocial behavior.

Figure 3 contains the regression equation for child antisocial behavior using standardized coefficients at three levels of parent support (i.e., -1 SD from the mean, at the mean, and $+1$ SD above the mean). Perceived neighborhood disorder predicted child antisocial behavior especially in families characterized by low support. The association between neighborhood disorder and antisocial behavior was significant at -1 SD on parent support ($p < 0.001$), at the mean of parent support ($p < 0.001$), but not at $+1$ SD on parent support ($p = 0.084$).

General Discussion

The current study addressed five specific hypotheses from the transactional model of neighborhood influences (Roosa et al. 2003): (a) neighborhood disorder would be associated with higher levels of child antisocial behavior, (b) child perceptions of neighborhood disorder would fully mediate the association between census/observer indicators of neighborhood disorder and child antisocial behavior, (c) parent support would predict lower levels of perceived neighborhood disorder and (d) child antisocial behavior, and (e) parent support would attenuate the positive association between child perceptions of neighborhood disorder and antisocial behavior. Results supported all five hypotheses. Especially impressive, we found support for these hypotheses across two quite different ethnic groups.

These findings advance the field in several ways. The theoretical predictions from the transactional model of neighborhood influences were consistent with empirical findings, thus lending support to this relatively new theoretical model. The identified mediation reinforces the importance of incorporating perceptions of neighborhoods in future theoretical and empirical work. As noted by Roosa et al. (2003), relying solely on objective indicators of neighborhood quality could eliminate an important source of individual and family differences in responses to neighborhood conditions. These perceptions likely represent residents' actual experiences with neighborhood problems (e.g., experiences with gang members, witnessing unreported crime) which are only roughly measured by census and observer data.

The direct association between parent support and child perception is important for researchers interested in individual differences among resident perceptions of neighborhood disorder (e.g., Roosa et al. 2009). This direct effect likely occurs because the neighborhood experience is different for children with supportive parents. The implication is not that these children are unrealistic or Pollyannaish in their assessments of their neighborhoods; rather, supportive parents may structure the child's activities to minimize contact with neighborhood risks (Burton 1991), send them out of the neighborhood to socialize (Burton and Jarrett 1991), increase resource allocation to high-risk children (Romich 2009) and may even help manage the child's interactions with peers inside the neighborhood (Parke et al. 1994) in order to minimize exposure to negative elements in the neighborhood.

The direct association between parent support and antisocial behavior supports the existing literature linking parent support to healthy child behavior (e.g., Garnefski and Diekstra 1996), and the attenuated association between neighborhood disorder and antisocial behavior at high levels of parent support expands the beneficial role of parent support, suggesting that when parents are supportive, the level of neighborhood disorder is unrelated to child antisocial behavior. Although prior work has shown parent support to buffer the effect of witnessing community violence (Brookmeyer et al. 2005), this effect was limited to

a single outcome (engaging in violent acts) and was only found for males. The current findings expand this effect to a larger set of behavioral outcomes, and find the effect to hold for both males and females.

Another way the current findings advance the field is that predictions from the model replicate across two very different ethnic groups, using very similar measures. Both Mexican American and African American children and adolescents are at increased risk for poverty which is a major factor in determining whether or not families live in dangerous and disadvantaged neighborhoods. Also, some work has shown moderation of neighborhood effects across ethnic groups (e.g., Freisthler et al. 2007). Thus, these participants provide an especially appropriate population base for evaluating the study hypotheses (Drake and Rank 2009). Replication across samples is a step too rarely taken in community studies of neighborhood characteristics, and bolsters the validity of the predictions based on the transactional model (Roosa et al. 2003). The findings are remarkable in the sense that antisocial behavior becomes much more prevalent later in adolescence. Therefore, we believe these findings should be even more robust for adolescents. With regard to gender differences, although boys in these data are significantly higher in externalizing (among both the Mexican American and African American samples), as well as in associations with deviant peers (among the African American sample), the presence of these mean differences does not lead to differences in the associations predicted by our model.

This study has several limitations that should be noted. First, the data are cross-sectional, and therefore cannot be used to make causal inferences. Second, although the measures of constructs were similar across the two ethnic groups, they were not exactly the same. This limitation precludes tests of difference in the magnitudes of regression coefficients. Furthermore, advances in spatial mapping using distance weighting across adjacent block-groups may offer an improvement over the straightforward area-referenced geocoding employed here. Finally, child reports were used for all the variables except objective neighborhood disorder, which means the results could be partially inflated due to shared-method variance.

Notwithstanding these limitations, the current study has several implications for neighborhood-oriented interventions. First are structural interventions which are implemented to help reduce unemployment, to help assist residents increase their socioeconomic status, and to promote nuclear families and decrease the number of single-parent households could benefit both resident families directly as well as the broader neighborhood context. Second, the current study makes a compelling argument for the full mediation of neighborhood effects by resident perception of neighborhood quality. Full mediation of a distal stressor (i.e., neighborhood disorder) by resident perceptions suggests the possibility of reducing child or adolescent antisocial behavior by targeting these perceptions. What is therefore needed is additional work on which structural environmental elements of disordered neighborhoods lead residents to perceive their neighborhood as dangerous or disordered. Which census variables are either proxies for the salient cues, or are themselves the salient cues for environmental disorder? Do children perceive their neighborhoods as disordered based on noise level, traffic patterns, housing characteristics, resident characteristics, or something else? Identifying the salient cues of disorder could lead to more informed structural environmental recommendations for reducing child antisocial behavior.

Finally, the existence of validated and widely-disseminated interventions designed to increase parent support makes it a reasonable entry point for interventionists. Interventions directed at family support could not only reduce antisocial behavior indirectly by helping children maintain more positive perceptions of their neighborhood, but also reduce

antisocial behavior directly. That is, parent support appears to play multiple roles in reducing the link from neighborhood disorder to antisocial behavior. The ability of parent support to eliminate the effect of neighborhood disorder on antisocial behavior provides, to our minds, a compelling argument for interventionists seeking solutions to the risks of neighborhood disorder to consider targeting parent support.

Appendix

See Table 3.

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Fig. 1.
The theoretical model

Fig. 2. Standardized coefficients from model 1c for Mexican Origin Families ($\chi^2 = 209.33$, $df = 105$, TLI = 0.949, RMSEA = 0.038) and African American families ($\chi^2 = 247.04$, $df = 105$, TLI = 0.905, RMSEA = 0.039) with standard errors in *parentheses*. Coefficients are presented with MA *above*, AA *below*

A Mexican American Families

B African American Families

Fig. 3. Moderation by family support for child perception of neighborhood disorder predicting antisocial behavior among **a** Mexican American and **b** African American Families

Table 1

Correlations among latent variables used in analyses

Variable	1	2	3	4	7	8
1. Neighborhood disorder ^a	–	0.42**	–0.06	0.25**	–0.43**	–0.33**
2. Neighborhood disorder ^b	0.25**	–	–0.16**	0.50**	–0.24**	–0.14**
3. Family support	–0.09	–0.14**	–	–0.50**	0.05	0.10
4. Antisocial behavior	0.12*	0.36**	–0.28**	–	–0.19*	–0.11**
7. Family income	–0.19*	–0.08 [†]	0.04	0.02	–	0.45**
8. Parent education	–0.26**	–0.10*	0.07	–0.09	0.28**	–

[†] $p < 0.10$;* $p < 0.05$;** $p < 0.01$ ^a Census/observer ratings of neighborhood disorder^b Child rating of neighborhood disorder; Mexican origin families below diagonal, African American families above diagonal

Table 2
Fit of structural models to data on neighborhood disorder and early adolescent antisocial behavior

Model	Mexican origin families					African American families				
	χ^2	df	$\Delta\chi^2$	Δdf	p	χ^2	df	$\Delta\chi^2$	Δdf	p
1a. 4-factor model, factors freely correlated	219.78	196	—	—	—	267.13	196	—	—	—
1b. Model 1b, with restricted pattern of regression weights in <i>B</i>	213.85	200	5.93	4	0.20	259.86	200	7.27	4	0.12
1c. Model 1c, setting to zero nonsignificant paths in <i>B</i>	209.33	105	4.52	8	0.81	247.04	105	12.82	8	0.12

$\Delta\chi^2$ = change in Chi-square from the immediately preceding model; Δdf = change in degrees of freedom from the immediately preceding model; p = probability associated with the $\Delta\chi^2$ value

Table 3

Descriptive statistics for variables used in analyses

Variable	M	SD	Minimum	Maximum
Mexican American families				
Resident characteristics	0.47	0.09	0.17	0.64
Housing characteristics	0.31	0.10	0.09	0.56
Observed disorder	2.84	0.57	2.00	4.67
Perceived disorder	1.45	0.54	1.00	4.00
Family support	3.49	0.61	1.00	4.00
Deviant peers	1.13	0.22	1.00	3.93
Intent to use CS	1.03	0.13	1.00	2.78
Externalizing	0.39	1.04	0.00	11.00
African American families				
Resident characteristics	0.38	0.07	0.15	0.53
Housing characteristics	0.62	0.07	0.03	0.75
Observed disorder	1.33	0.27	1.00	2.43
Perceived disorder	1.46	0.35	1.00	3.00
Family support	2.67	0.35	1.00	3.21
Deviant peers	1.21	0.24	1.00	2.47
Intent to use CS	1.08	0.18	1.00	2.89
Externalizing	1.71	2.63	0.00	21.00