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Trying to keep children out of trouble: Child characteristics, neighborhood quality, and within-household resource allocation

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Abstract

Prior ethnographic evidence suggests that parents combat neighborhood dangers through spending time with and money on children perceived to be at risk. This paper summarizes a secondary data investigation of whether interactions between neighborhood quality and child characteristics predict patterns of intra-household resource allocation. Using a sample of N=1879 12- and 13-year-olds from the National Longitudinal Survey of Youth, I find that in neighborhoods with greater numbers of problems, parents spend more time and money with firstborn children and who are particularly short or impulsive relative to how parents treat such children in lower problem neighborhoods. Comparisons of cross-sectional and sibling fixed-effect models suggest the shortness and firstborn effects are not due to unobserved family characteristics. These results lend modest support to the assertion that parents systematically try to use within-family resources to protect certain children from threats posed by neighborhoods with high levels of crime or low levels of social cohesiveness.

Keywords

neighborhood quality; intra-household resource allocation; parent-child relationships

Children who grow up in disadvantaged neighborhoods fare worse across multiple measures of well-being than do children reared in neighborhoods with richer resources (Brooks-Gunn, Duncan, & Aber, 1997). Disadvantaged neighborhoods do not automatically harm all children, however. Some children and families in fact thrive in neighborhoods marked by poverty or crime (Burton & Jarrett, 2000). Evidence of resilience suggests that research on neighborhoods and child well-being should also include examinations of parents' and children's actions within and in response to neighborhoods. Parents and children may react to neighborhood conditions by changing tangible aspects of family life. For some families, this means moving to a different location. Other families may adapt to their surroundings by deciding to allocate resources in response to their environment.

This paper reports on a study of whether parents appear to spend time and money on their children as a strategy to deal with neighborhood dangers or shortcomings. Anecdotes and evidence from ethnographic studies suggest that parents, mothers in particular, try to combat perceived neighborhood dangers through directing resources toward individual children (Furstenberg, Cook, Eccles, Elder, & Sameroff, 1999; Jarrett & Jefferson, 2003; Romich, 2000); this evidence motivates this research. Using an ecological model of development, I investigate the connection between child characteristics, neighborhood quality, and within-household resource allocations. Analyses are conducted on a sample of 1,879 12- and 13-year olds from the National Longitudinal Survey of Youth 1979 Child Supplement.

1. Background

1.1 Ethnographic evidence

An important strategy for understanding how families with children perceive, adapt to, and try to change neighborhood conditions is directly listening to and observing families' experiences. Research on neighborhood effects is strengthened by such inquiry that "bring[s] people back in" (Jarrett & Jefferson, 2003, p. 36). From in-depth visits with 49 African-American mothers in a Chicago housing project, Jarrett and Jefferson (2003) describe mothers' concerns about the dangers their neighborhood held, both for children's physical safety and their moral and life development. Citing a lack of local public resources such as educational or recreational opportunities, mothers conscientiously counteract these perceived threats by trying to keep their children away from bad influences and provide in-home or supervised activities. In a study of Philadelphia families from a wider variety of urban neighborhoods, Furstenberg and colleagues (1999) identify similar examples of parents garnering resources to help protect children.

A discussion with an informant on a different ethnographic study suggests that parents tailor strategies to particular children (Romich, 2000). A woman who had applied for a work-support program that was the ostensive focus of the study (Weisner, Gibson, Lowe, & Romich, 2002), discussed the dangers she felt were facing her children in a neighborhood "infested with gangs and drugs and violence." She worried particularly about her teen-age son, whom she feared was "veering in the wrong direction." She felt her son was more vulnerable than her young-adolescent daughters: "It's different for girls, but for boys it's dangerous." Out-of-work and separated from her husband, she rarely had extra money, but when she did, she said she would try to spend it on her son. This parent used resources to protect her children, responding with a child-specific strategy based on the child's gender and current behavior.

1.2 Conceptual framework

This qualitative evidence on parents' actions in response to child characteristics and neighborhood features is consistent with Bronfenbrenner's ecological view of human development (Bronfenbrenner, 1995; Bronfenbrenner & Morris, 1998). Ecological theory holds that development is driven by interactions between the developing biopsychological organism (the child) and systems or settings both close to and remote to the child's daily life. Proximal settings are those in which the child has regular and repeated interactions. For most children, the co-resident family is the most significant proximal system; other important close-in settings include classrooms, peer groups, and activity environments (teams or clubs). Key elements of proximal settings include the actors and resources within the setting, the types of activities that take place, and the nature of the interactions between setting elements (Seidman, Tseng, & Weisner, 2006).

Proximal settings nestle within systems or settings that are more distant to the child, such as the school system as a whole, the neighborhood, or the local economy. These more remote settings may be physical places, or they may be systems in the political or social sense. Remote settings are important if they affect one or more elements of a proximal setting. For instance, although most children spend little or no time in their parents' workplaces, a workplace can be an important remote setting if it affects the parent's emotional functioning while at home, perhaps making a parent less affectionate or harsher. In this example, a setting external to the child's life influences the nature of interactions within a proximal setting.

Effects are neither unidirectional nor uniform across persons. Bronfenbrenner posits several types of interactions across and between individuals, proximal settings, and external environments:

The form, power, content, and direction of the proximal processes effecting development vary systematically as a joint function of the biopsychological characteristics of the developing person; of the environment, both immediate and more remote, in which the processes are taking place; and the nature of the developmental outcomes under consideration. (Bronfenbrenner, 1995 p. 621)

Ecological theory calls for models of development that include person-process-environment interactions, but in research practice it is difficult to connect proximal and more remote environments in developmental studies (Cicchetti & Aber, 1998).

The ethnographic accounts of parent's strategies in risky neighborhoods can hence be understood as effects of a more distant setting - the neighborhood - on the types of resources and activities present within the proximal setting of the family. Parents evaluate neighborhoods and respond by adjusting parenting strategies. Parental responses are unlikely to be one-fits-all. In the case of the motivating fieldwork anecdote, the mother described a response based on an interaction between perceived threats and gender. Parents may also consider other child attributes, such as temperament or behavior (Cook, 2001), and channel resources to children whose actions they perceive as placing them particularly at risk.

Specifically, this study addresses the question, do interactions of child characteristics and neighborhood quality predict intra-household patterns of resource allocation? Key to answering this question is being able to distinguish between parent actions that apply equally to all children in the household and actions that target a particular child. Testing the hypothesis that individual child characteristics matter requires a child-specific measure of resources. Practically, this must both be a divisible good (different children can get different amounts), reported for each child individually rather than for the family as a whole, and reasonably adjusted from child to child. For example, a measure that shows the amount of time a particular child uses a computer at home is a better child-specific measure of context than an indicator of whether there is a computer in the household. Computer access is divisible (children can share) but child-level reporting is key. In the current study, the outcome of interest is an indicator of activities shared by the child and parents. This allows for a child-specific measure of the amount of parental time and money spent on a child. The activities in question - doing homework together, going on outings, etc - are more easily adjusted than larger investments such as choosing a private school or securing alternate after-school care.

1.3 Possible effects of child characteristics

What child characteristics elicit parental concern? Gender for one. Bad neighborhoods may pose disproportionate risks to young adolescent boys, who spend less time indoors and more likely spend outdoor time in casual and organized sports, which bring them in contact with many others (Hofferth & Sandberg, 2001; McHale, Crouter, & Tucker, 2001). As noted above, boys are also perceived as particularly vulnerable to gang recruitment. Concern over girls may increase later as they mature and become more likely to engage in sexual activity.

Parents may be more responsive to children whom they perceive as more likely to get in trouble in bad neighborhoods, indicating that problem behavior may trigger greater investment when the local environment is likely to exasperating problem behavior trajectories. Other child characteristics may invoke particular reactions, although the direction of likely effects is not always clear. For instance, physical maturity may heighten a child's vulnerability to dangerously precocious lifestyles (Magnusson, Stattin, & Allen, 1985). A taller boy may appear older than he is; a taller girl may appear more sexually mature. If height increases extra-household opportunities, taller children may rely on parents less or alternatively they may be more able to extract desired resources.

A child's share of resources may also depend on that child's role within the family. The relationship between the child and a parent likely matters. Parents also may be more responsive to the needs of children to whom they are closer (Romich, 2007). Resource allocation may also depend on the child's position within a sibling group. Birth order has been linked to differential parental treatment of adolescents (Crouter, Helms-Erickson, Updegraff, & McHale, 1999; Tucker, McHale, & Crouter, 2003) and differential long-term investment in education (Conley, 2004). Family size may matter as well. Per-child investment is higher when there are fewer total children among whom to distribute resources, suggesting only-children and children with fewer siblings may get more money and time (Conley & Glauber, 2005). Whether any of these relational attributes have particular significance within bad neighborhoods will be investigated.

This paper contributes to understanding of neighborhoods and child development in two key ways. First I use a large national dataset to test hypotheses gleaned from ethnographic studies. This is an example of cross-method triangulation, a mixed-methods research strategy in which findings that emerge from one type of data are tested in another (Greene, Caracelli, & Graham, 1989). Triangulating across methods enhances external validity. Second, this paper is unique in focusing on patterns across and within families and across a representative set of neighborhoods. One concern with cross-sectional models is that neighborhood choice likely reflects family preferences, resources and hard-to-capture characteristics such as parents' motivation or values. Sibling fixed effects models control for any stable yet unobserved family-level effects while allowing for an estimation of the effects of child characteristics that differ between siblings within the same households.

2. Methods

2.1 Sample

The sample consists of young adolescents whose mothers are respondents of the 1979 National Longitudinal Survey of Youth (NLSY79). The NLSY79 began with a nationally representative sample of men and women who were age 14 to 21 in 1979. Beginning in 1986, data have been gathered about the children of the women in the 1979 cohort and these data are known as the NLSY79 Child Data, or NLSY-C (Chase-Lansdale, Mott, Brooks-Gunn, & Phillips, 1991). Interviews take place every two years and include parent reports on children's environments and well-being, common developmental measurements of children, and young adolescent self-reports.

A pooled sample was created from children ages 12 or 13 when interviewed in the 1994 through 2000 waves. Response rates were 95.0% in 1994; 90.7% in 1996, 90.1% 1998 and 86.7% in 2000. Table 1 summarizes the process used to select the analysis sample from the universe of 3201 children age 12- and 13-year-olds and interviewed in one of the waves. First, because the hypotheses pertain to neighborhood risks, children whose families live in rural areas were excluded from the sample. Next, 393 (16.6% of remaining) cases with missing or incomplete data on the items used to create the dependent variable were eliminated. Finally, for an additional 102 youth (5.1 % of remaining), data were missing on two or more of the indicators of child characteristics. Excluded cases were more likely to be non-Hispanic white than non-excluded cases (due mostly to the elimination of rural households) and had marginally less educated mothers (12.5 years v. 12.7 years of education), but did not differ significantly on early family income, mother's Armed Forces Qualifying Test score, gender or early behavioral problems. This process yielded an analysis sample of 1879 children. Because the NLSY-C tracks children born to a sample of women, it includes many sibling groups. For 941 children in 422 families there are observations of sibling pairs or groups.

The top panel of Table 2 displays sample characteristics. The original NLSY79 included a purposive over sample of African American and low-income households. Correspondingly,

35.1% of children in this sample are African American and just over a quarter are Hispanic. Fewer than half the children (45.6%) have a mother with a high school diploma but no further education and 29.1% have a mother with some college. A plurality of children (47.0%) live with two biological parents, while 12.8% live with a mother and a step-father, and 40.2% live with an unmarried mother. Because the NLSYC samples women of the original sample and the children who live with them, it does not have any children who live only with single fathers. Sixty-nine percent of children have an employed mother and the average household income is just under \$35,000 per year.

2.2 Measures

Key variables and covariates are described below. Measures included in the NLSY-C were selected by a team of developmental psychologists and are considered to have generally adequate psychometric properties for the sampled population (Chase-Lansdale et al., 1991). However, as is often the case with secondary data analysis (Cherlin, 1991; McCall & Appelbaum, 1991), the questions asked in the survey were not explicitly designed to test the current hypotheses.

Shared activity index—The dependent variable is an index created from young adolescents' reports of shared parent-child activities. Items are drawn from a self-administered supplement completed by each child. Questions designate a time frame and ask a yes/no question about whether the child did a certain activity with a parent. For example, "Have you and your parent gone to a movie together in the past month?" The total sharing index is created by summing the binary responses to eight activity areas: attending movies, going out to dinner, going shopping for the child, playing together, working together on the child's school work, going to church, going on an outing, and a general "doing stuff" together. Children report an average of 4.3 shared activities.

Neighborhood problems—A measure of neighborhood quality was constructed from a set of items capturing specific neighborhood features. Mothers were given a potential problem, such as "people don't have enough respect for rules and laws" and asked, "Is this a big problem in your own neighborhood, somewhat of a problem or not a problem at all?" Items include measures of both resources and collective efficacy (Sampson, Raudenbush, & Earls, 1997). On average, mothers indicated that a total of 2.91 of the eight areas are at least somewhat of a problem in their neighborhood, with the most common problem being "too many parents don't supervise their children." The eight items were combined to create an overall neighborhood problems measure (Cronbach's $\alpha = .853$). This measure compares favorably with other measures of neighborhood quality.ⁱⁱ

Child characteristics—In addition to sex and age, a small theory-driven set of other child physical, relational and psychological characteristics were included. Height, an indicator of physical maturity, is included as a proxy for developmental and externally perceived maturity. Table 1 reports height in inches. For analyses, height is converted to a z-score standardized by month of age and gender using U.S. growth charts. A second measure of physical maturity is

ⁱⁱThe NLSY79 contains two other measures of neighborhood quality that can be compared to this neighborhood problems scale. First is a single item in which parents were asked to rank their neighborhood as a place to raise children on a five-value scale ranging from "excellent" to "poor." Second is a set of objective indicators gleaned from various editions of the County and City Data book and included in the restricted-use Geocode data set (details on the Geocode matching procedure are available upon request). These measures are from the Census unless otherwise specified and include the number of serious crimes known to police (source: Uniform Crime Report), the percentage of persons below the poverty level among persons under 18, the percentage of the population with at least a high school degree (reverse coded as dropout rate), the percentage of households who have lived at the same address for at least five years (reverse coded as residential instability), and the percentage of female headed households among all households with dependent children. The constructed neighborhood problems scale is significantly correlated with the parent assessment and all four of the Census measures (poverty, dropout rate, residential instability and proportion of female-headed households).

a binary variable indicating whether menarche has occurred for girls. A child's report of closeness to the mother is used as an indicator for the quality of the mother-child relationship. Variables were also constructed to capture whether the child was a first-born or only child.

Problem behavior may invoke greater parental investment or inappropriate demands for resources may be part of a larger pattern of problem behavior. I use the Behavior Problems Index (BPI) (Peterson & Zill, 1986), a behavior check-list completed by mothers. I include the externalizing BPI scales collected at age 8 or 9 (prior to the survey age in order to minimize endogeneity). BPI scores used in regressions are standardized by age and sex. Children who tend to make decisions or take actions with little or no deliberation may be more at risk. To capture this, a measure of impulsivity was created from four items on the child self-administered section of the interview. Respondents were asked how strongly they agree (four choices) with statements including, "I think that planning takes the fun out of things." These items are similar to questions derived by Buss and Plomin (1975) and Dickman (1990). Numeric values of responses are combined into a single index standardized by sex and month of age with higher values indicating greater impulsivity.

To test the interaction between these child characteristics and neighborhood quality, the continuous or ordinal indicators of height, closeness, behavior problems and impulsivity were transformed into binary variables indicating extreme values as indicated in the lower right portion of Table 2. For instance, two dummy variables are created for children who are "tall" or "short," as defined by being respectively a standard deviation above or below average by age and gender. For BPI and the impulsivity measures, high value indicators identify children in the top 10 percentile on the respective score. Practically, these transformations allow for an empirical specification in which child characteristics are interacted with the continuous neighborhood problems scale (ex: tall x neighborhood problems). Conceptually, this specification aligns with a hypothesis that parents may respond when their children are particularly at risk based on personal behavior or characteristics.

Control variables—The main NLSY files permit the inclusion of characteristics of the child's mother and household composition as control variables. The mother's highest grade completed (four dummy variables, high school completion is omitted) is included as a rough measure of family SES. I also include the mother's score on the Armed Forces Qualifying Test (AFQT), a measure of intellectual abilities administered in 1980, and a dummy variable for current employment. Household income and the presence of the child's father or stepfather in the household are additional indicators of total household resources. The number of siblings is based on children currently in the household, including step-siblings.

2.3 Model and empirical specification

The general hypothesis that the resources allocated to a child depend, in part, on an interaction between the child's characteristics and neighborhood quality, can be expressed as reduced form ordinary least squares (OLS) equation, as in equation 1 below. Here resources (Y) are a function of child characteristics (CC), neighborhood problems (NH), the interaction between child characteristics and neighborhood problems (CC*NH), a vector of variables capturing family characteristics (FC) and other control variables (X).

$$Y = \beta_o + \beta_c CC + \beta_n NH + \beta_{cn} CC * NH + \beta_{FC} FC + \beta_x X_f \quad (1.)$$

The primary parameter of interest is β_{cn} which gives the effect of the child characteristic-neighborhood interaction.

Empirical estimations of relationships such as (1) may be biased by the endogeneity of naturally-occurring family processes (Duncan, Ludwig, & Magnuson, 2004). The process whereby families choose (or “select into”) neighborhoods is a source of endogeneity. Choosing a neighborhood is one type of child investment, which may be caused by or systematically related to other observed and unobserved family characteristics (FC). Unobserved family characteristics related to child characteristics, neighborhood quality or the interaction thereof may bias the estimation of β_c , β_n , and β_{cn} . For instance, parents that place a particularly high value on child well-being may sacrifice other consumption to be able to live in a high quality neighborhood and may choose to spend more time with their children. In this case, parents’ values are related to both low levels of neighborhood problems and more shared activities. If parent value systems are not observed, this would bias the estimation of the effect of neighborhood problems β_n downward.

The current study uses non-experimental data and a sibling fixed-effect (SFE) model to address the potential of bias resulting from endogeneity. The basic concept underlying a SFE model is that time-invariant observed and unobserved family effects can be eliminated through a first difference process. Below are two versions of equation (1) corresponding to sibling 1 and sibling 2 in family ⁱ.

$$\text{sibling 1} \quad Y_{1i} = \beta_0 + \beta_c CC_{1i} + \beta_n NH + \beta_{cn} CC_{1i} * NH + \beta_f FC + \beta_x X_1 \quad (2)$$

$$\text{sibling 2} \quad Y_{2i} = \beta_0 + \beta_c CC_{2i} + \beta_n NH + \beta_{cn} CC_{2i} * NH + \beta_f FC + \beta_x X_2 \quad (3)$$

Taking the first difference (2 minus 3) gives

$$(Y_{1i} - Y_{2i}) = (\beta_0 - \beta_0) + \beta_c (CC_{1i} - CC_{2i}) + \beta_n (NH - NH) + \beta_{cn} ((CC_1 - C_2) * NH) + \beta (FC - FC) + \beta_x (X_1 - X_2) \quad (4)$$

which reduces to

$$(Y_{1i} - Y_{2i}) = \beta_c (CC_{1i} - CC_{2i}) + \beta_{cn} ((CC_1 - C_2) * NH) + \beta_x (X_1 - X_2) \quad (5)$$

The key to the value of this approach is that the coefficients β_c and β_{cn} maintain the same interpretation that they had in the cross-sectional model (1) but are no longer subject to bias from unmeasured consistent family-level characteristics. This first difference approach eliminates the effect of child-invariant family characteristics and the main effect of neighborhood quality. This means that the effect of neighborhood quality on allocations to

ⁱThis use of sibling fixed-effects models to estimate child effects in the current study is different from another common application of sibling effect models to estimate neighborhood impacts based on families who move neighborhoods. The current approach relies on differences between siblings to estimate the impact of child characteristics on resource allocation. Sibling models have also been used to estimate the connection between neighborhood quality and child outcomes. However, this approach relies on dramatic changes in neighborhoods over time, which is unlikely given the relatively short time period of the sample, and family moves from one neighborhood to another. Unless reasons for moves can be incorporated into models, this estimation strategy is suspect (Aaronson, 1997). Since neighborhoods are one type of resource, a move to a neighborhood with different resources probably comes with a change in family economic circumstances. Some changes, for instance changes in family employment income, can be captured, but other plausible changes are less easy to track down. For instance catastrophic losses, unexpected expenses (such as results from a medical emergency), or the effect of changes in housing cost on family budgets trigger a move to a worse neighborhoods as well as a general budget tightening. The current line of inquiry is concerned more with child characteristics within neighborhoods. Fixed-effects models relying on changes in neighborhood over time are not appropriate given this question.

children in general cannot be estimated, but interaction between child characteristics and neighborhood quality can be estimated with less bias than in the level model (1). This model is appropriate for the current hypotheses regarding the interaction between child characteristics and neighborhood quality. It is not suited for more general estimates of the direct effect of neighborhood quality.¹

For empirical testing, a multivariate Poisson specification estimated by a maximum likelihood procedure is used. The Poisson regression is suitable for non-negative counts when overdispersion is not present. Tables report incident rate ratios (IRRs), which give the ratio of expected responses for a one-unit change in x . The interpretation of IRRs is similar to that for odds ratios in logistic regression, in that IRRs greater than 1 indicate greater likelihood. For binary explanatory variables, an IRR of 1. n can be roughly interpreted as a $n\%$ change in the likelihood of moving up one item in the count. When the right-hand-side variable is standardized, the IRR reflects the change in frequency associated with a one standard-deviation change in the age-adjusted underlying scale. Statistical significance is based on p -values adjusted for the hierarchical structure of data. Note that FE models generate less precise estimates (larger standard errors) because across-family variance is eliminated. Relying on sibling variation in the dependent variable magnifies measurement weaknesses, particularly when the outcome of interest is a discrete or count variable.

Models include the household and mother control variables indicated above. The year of observation is included in all models to capture trends in children decision-making over time and any otherwise unobserved effects of the over-representation of children born to young mothers in earlier waves. Regression models also include dummy variables for missing values on covariates. Certain control variables, the year dummies, and the missing value dummy coefficients are not reported in the tables, but are available by request.

3. Results

The first column of Table 3 displays a model that includes child characteristics and household-level control variables. This cross-sectional model shows which child- and family-level characteristics are associated with different levels of resource allocation, but coefficient estimates are subject to potential endogeneity bias. The neighborhood problem scale is associated with fewer activities. Children living in neighborhoods that are one standard deviation higher on the problem scale are 3.3% more likely to share fewer activities with their parents. Older children also share fewer activities, with each additional year of age associated with a 3.7% decrease in the probability of getting one more activity. Not surprisingly, children who report being close to their parent also share more activities (IRR = 1.141, $p < .001$). Parents share fewer activities with children with more behavior problems but impulsive children report sharing more. First children also share marginally more activities, even after controlling for family size.

Several measures of family characteristics used as control variables also significantly predict shared activities. In terms of family structure, children who live with a step-father or a single mother report fewer shared activities than those who live with both biological parents. Older mothers share fewer activities with children, but college-educated mothers are 10.3% more likely to share more activities. Whether the mother is employed and total household income are not significant predictors of the number of shared activities, and patterns do not vary significantly across race and ethnicity.

The second set of columns in Table 3 displays results from the basic sibling fixed effects (FE) models. These FE models were used to investigate whether intra-household resource allocation patterns are systematically related to child characteristics. These models predict differences

between siblings on the left-hand-side variable (sharing count) using differences between siblings on the covariates. Any constant family-level effect is averaged out. Since two or more siblings are required to estimate the FE models, the sample size is much smaller than in the cross-family models. Coefficients are reported only for covariates for which the interpretation is the same as in the level equation as outlined in the description of the fixed effects models in equations 2 and 3 above. Note that the coefficient on neighborhood quality is not reported since any estimate of that would necessarily be based only on families for which parents' perception of neighborhood changed over the time period (see footnote ¹). To capture legitimate changes in neighborhood quality over time or resulting from caused by moves, the neighborhood problems measure is included as a control variable but not reported as it does not have a cross-sectional model parallel.

Of the five child characteristics that significantly predicted shared activities in the cross sectional model, only age and closeness to mother are significant in the fixed-effect model. For these two, the direction and magnitude of effects are similar to those in the cross-family model, indicating a reassuring correspondence between the models. However, as is to be expected with fixed effects models standard errors are about twice as large. Having more behavior problems, being more impulsive and being the first born were also significant predictors in the cross-sectional models. Of these, the point estimates for BPI and impulsivity are both in the opposite direction and insignificant, suggesting the coefficients estimated in the cross-sectional models are biased. The point estimate for the first-born effect is lower and not significantly different than the null hypothesis of no effect in the fixed-effect model, but the direction is preserved.

The main hypothesis is whether child characteristics interact with neighborhood quality to predict the amount of time and money spent on children. The third and forth columns in Table 3 report cross-sectional and fixed effect tests of the neighborhood X child gender (boy) interaction. In both models, neither the main effect of being a boy nor the interaction between boy and neighborhood quality are significant predictors of shared activities.

Table 4 repeats the coefficients on the neighborhood X boy model and then summarizes the results from a series of additional models in which neighborhood X child characteristic interactions were tested one-by-one. Each of these models parallels the neighborhood X boy model in Table 3. To isolate the effect of extreme values (having a high level of behavior problems, being particularly impulsive or being particularly tall or short), all models with the extreme value interactions also include the main effect and the continuous measure.

The top panel of Table 4 shows neighborhood X child characteristic interactions in the full sample. Three of the eight interactions tested are statistically significant. In bad neighborhoods, parents are 8% more likely to share more activities with highly impulsive children (IRR 1.08 $p < .074$), 9.5% more likely to share more activities with particularly short children, and about 5% more likely to share more activities with tall children. None of these interactions are statistically significant in the fixed-effect models. The direction of the effect is preserved for shortness and firstborn, but the estimates are not very precise. The point estimate for impulsivity is in the opposite direction and insignificant, suggesting that the coefficient estimated in the cross-sectional model may be biased.

The next middle and bottom panels of Table 4 summarize the cross-sectional models estimated on the subsamples of boys and girls. These show that the main effects for impulsivity and being the firstborn are driven by boys and girls respectively. In higher problem neighborhoods, parents are 16.4% more likely to share more activities with boys who are highly impulsive. There is no discernable effect of impulsivity for girls. However, the neighborhood X firstborn effect is stronger for girls, with parents 10.8% more likely to share more activities with firstborn

girls in higher problem neighborhoods. Parents also spend more time with particularly short boys and girls in lower-quality neighborhoods. Because fixed-effect sibling models require a sample of boys with brothers and girls with sisters, the sample sizes were not sufficient to estimate FE models by gender.

4. Discussion

Motivated by ethnographic accounts of how parents try to combat perceived neighborhood dangers or deficits by directing time or money to their children, this paper has explored the connections between child characteristics, neighborhood quality, and intra-household resource allocation.

4.1 Limitations

In attempting to reproduce findings from qualitative data in a secondary analysis of survey data, several lessons were learned about measurement and design challenges of such post-hoc cross-methods work. The shared activity index does give a rough proxy for time and money, but is limited on dimensions of both measurement and construct validity. The outcome variable is created from a single set of questions and is best thought of as a count of children's perceptions of activities rather than a validated measure of investment in general. Even when results were statistically significant, the lack of practical significance was overwhelming. Stated in general terms the results are that the presence of certain child characteristics make it perhaps 5- to 16-% more likely that a child reports doing one more activity out of the eight tracked. Parents in high problem neighborhoods may chose to respond to perceived dangers through strategies other than spending more time and money with children. For instance, parents may work to get children in to organized activities or change children's schools - either through participating in public school choice programs or by sending children to private schools. For youth with severe emotional or behavioral disorders, parents may pursue mental health treatments. Despite these limitations, the longitudinal and national nature of the data and the economic diversity within the sample make this a valuable sample for developmental questions (Chase-Lansdale et al., 1991). For purposes of the current analysis, these limitations are partially offset by the triangulation between the hypotheses and prior ethnographic findings.

One strength of this paper is the use of a sibling effect model to provide a rigorous test for results, but the drawbacks of this approach warrant mention as well. Fixed effect models have the advantage of reducing some bias, but several substantive and practical cautions must be kept in mind. First, this form cannot account for any family-level characteristic that changes over time and is potentially endogenous. Second, this assumes that any unmeasured family characteristic has a consistent effect on all siblings. These models also perform less well in many empirical tests. As a rule, fixed-effect regression models require larger samples, and, obviously, sibling models cannot be estimated for youth without siblings or whose siblings were not also study respondents. FE models generate less precise estimates because across-family variance is eliminated. Relying on sibling variation in the dependent variable magnifies measurement weaknesses, particularly when the outcome of interest is a discrete or count variable.

4.2 Findings

Findings can be summarized in three parts. First, children who live in neighborhoods with fewer problems report sharing more activities with their parents than do children who live in more troubled neighborhoods. This is not surprising given that neighborhood selection is one way that parents invest in children. Parents who choose to live in a higher-quality neighborhood are likely to be more interested or more able to invest in their children than do those parents who live in lower-quality neighborhoods. Some of this is observable, but largely it is not.

Second, certain child characteristics are associated with greater or fewer shared activities, regardless of neighborhood type. Two types of models were used to examine the link between child characteristics and shared activities. Comparing FE estimates with parallel estimates from regular cross-sectional regressions can show whether the cross-section estimates are likely biased by unobserved factors. Coefficient estimates that share the same direction and a similar magnitude of across both types of models suggest that findings are not an artifact of unobserved family-level characteristics. Two relationships were consistent across both types of models. Parents share fewer activities with older children, perhaps reflecting additional out-of-home opportunities for older children. Not surprisingly, children who report being close to their mothers also report sharing more activities. Three other relationships were found only in the cross-sectional models: behavior problems were correlated with fewer shared activities while impulsivity and being the oldest child in the family were positive predictors of more reported activities. Results from FE models were not very precise due to large standard errors typical of these types of models. However, the direction of these imprecise estimates suggests that the activity sharing patterns associated with behavior problems and impulsivity stem not from a parental reaction to these characteristics but rather from some other unobserved family characteristics.

Third, modest evidence is found to support the key hypothesis of the study, that interactions between neighborhood problems and certain child characteristics shape the in-home environment. Three neighborhood times child characteristic interactions significantly predicted the number of shared activities in cross-sectional models. In lower-quality neighborhoods, parents spent more time with highly impulsive youth, short youth, and firstborns. The impulsivity effect was driven by boys, with parents 16.5% more likely to spend time with highly impulsive boys in bad neighborhoods relative to the propensity for sharing activities with highly impulsive boys in better neighborhoods. Shortness was also more significant for boys in bad neighborhoods, with parents 11.9% more likely to spend time with short boys in bad neighborhoods. None of the neighborhood - characteristic interactions proved significant in the FE models. In the case of the shortness and firstborn effects, the FE point estimates, while statistically insignificant (due to standard errors), maintain the same direction. This suggests that these effects are not merely functions of endogenous family processes, but are actually evidence that parents channel additional resources to shorter children and firstborn children in bad neighborhoods.

4.3 Implications

Overall, this analysis provides convincing evidence that parents react to child characteristics when allocating resources and somewhat more modest evidence that particular characteristics matter more in lower quality neighborhoods. This study adds to knowledge about neighborhoods and child well-being by illustrating how parent actions connect children's individual characteristics and more remote environments. The ecological model suggests that activities within the home - part of the proximal environment - may be shaped by certain interactions between child characteristics and the external environment of the neighborhood. As such, parental intervention becomes a mechanism by which neighborhood effects are blunted.

Recall the motivating anecdote of a mother particularly concerned about her son "veering into trouble." Although there's no evidence that parents systematically funnel resources to boys rather than girls in lower-quality neighborhoods, results do suggest that parents do seem to pay particular attention to short boys and impulsive boys. Although the current analysis did not examine subsequent well-being among targeted boys, it would be interesting to follow up to see if these protective measures serve their purpose. Evidence that close monitoring and strict

parenting is protective for African-American youth who have exhibited problem behaviors and live in higher-risk neighborhoods (Cleveland, Gibbons, Gerrard, Pomery, & Brody, 2004).

Assuming then, that parents respond to perceived risk and these responses are effective, it is interesting to contrast two strategies for improving the well-being of youth living in poor-quality neighborhood. Should public investments be used to strengthen existing neighborhood resources or is it better provide families with opportunities to move out of bad neighborhoods? The latter strategy, of promoting residential mobility, received a high profile test in the Moving to Opportunity (MTO) experiment, which provided families with vouchers to move to higher quality neighborhoods. A follow up study showed that boys in families given the opportunity to move ended up having even higher levels of delinquent behavior than boys in families not offered the vouchers (Kling, Liebman, & Katz, 2007; Kling, Ludwig, & Katz, 2005). Moving to a better neighborhood clearly did not protect boys' well-being.

The current study suggests that parents are already trying to combat what they perceive as their children's vulnerability. In this case, strengthening and expanding local programs - such as after-school programs, sports teams, arts programs, and social clubs - and making these opportunities financially available will provide parents with the resources to use as they see fit to foster their children's well-being.

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Table 1

Summary of Sample Selection Criteria

	No. Child Observations Excluded	No. Child Observations Remaining
All children aged 12 or 13 at date of mother's interview in 1994-2000 waves		3201
<i>Exclusions</i>		
Live in rural setting	827	2374
Missing shared activities report	393	1981
Missing two or more key predictors	102	1879

Table 2

Study variables with descriptive statistics

	Mean	Std.Dev	Min	Max
<i>Mother and family background</i>				
Mother's age	35.9	(2.862)	29	43
Race				
African-American	35.1%	(.477)	0	1
Hispanic	26.9%	(.443)	0	1
non-African-American, non-Hispanic	38.0%			
Mother's AFQT	-.003	(.994)	-1.200	2.581
Mother's Education				
Less than high school	13.9%	(.346)	0	1
High school	45.6%	(.498)	0	1
Some college	29.1%	(.454)	0	1
College graduate	11.4%	(.318)	0	1
Mother's Working Status				
Currently employed	69.0%	(.463)	0	1
Number of hours worked per week	26.2	(20.658)	0	96
Total household income	\$34,893	(3,833)	0	\$332,808
Family Structure				
Mother and stepfather	12.8%	(.334)	0	1
Mother and biological father	47.0%	(.499)	0	1
Mother only	40.2%	(.490)	0	1
<i>Neighborhood problems</i>				
How much of a problem is... (0=not a problem, 1=somewhat, 2=big problem)				
Abandoned/run-down buildings	.312	(.584)	0	2
People don't care what goes on	.504	(.668)	0	2
Crime and violence	.510	(.689)	0	2
Not enough police protection	.381	(.642)	0	2
People don't respect rules	.585	(.717)	0	2
Parents don't supervise children	.741	(.790)	0	2
Not enough public transportation	.446	(.718)	0	2

	Mean	Std.Dev	Min	Max	
People who can't find jobs	.570	(.760)	0	2	
<i>Child Characteristics</i>					
Boy	49.9%	(.500)	0	1	boy
Age	13.0	(.574)	12	13.9	-
Height (inches)	62.7	(3.602)	39	76	tall; short (mean +/- 1 s.d.)
close to mother at 12-13	3.414	(.968)	1 (not)	4 (extremely)	extremely; fairly or not
BPI at 8-9	-.005	(.964)	-2.157	1.415	high BPI (top 10%)
Impulsivity	-.006	(.463)	-1.673	1.418	high impulsivity (top 10%)
First Child	.495	(.500)	0	1	first
Number of siblings	1.8	(1.224)	0	8	-
<i>Sharing Activities</i>					
Sharing scales	4.3	(1.909)	0	8	

Table 3

Cross-sectional and fixed-effects models predicting number of shared activities

	Basic model						Interaction model (neighborhood x boy shown)					
	Cross-sectional (N=1879)			Fixed-effect (N=941)			Cross-sectional (N=1879)			Fixed-effect (N=941)		
	IRR	(s.e.)	P>z	IRR	(s.e.)	P>z	IRR	(s.e.)	P>z	IRR	(s.e.)	P>z
Neighborhood problems	.967	(.016)	.045	**			.947	(.021)	.012	**		
Boy	1.010	(.020)	.599		(.046)	.660	1.011	(.020)	.597		(.047)	.649
NH x Boy							1.040	(.031)	.184		(.052)	.895
Age	.963	(.016)	.022	**	(.034)	.063	* .963	(.016)	.022	**	(.034)	.064
Height	1.002	(.009)	.784		(.022)	.438	1.003	(.009)	.760		(.022)	.434
Close to mother	1.141	(.019)	.000	***	(.042)	.000	1.140	(.019)	.000	***	(.042)	.000
BPI at 8 to 9	.976	(.011)	.028	**	(.031)	.723	.976	(.011)	.029	**	(.031)	.716
Impulsivity	1.048	(.023)	.030	**	(.050)	.601	1.047	(.023)	.034	**	(.050)	.600
First born	1.081	(.023)	.000	***	(.065)	.482	1.082	(.023)	.000	***	(.065)	.482
Number of siblings	1.008	(.010)	.397				1.009	(.010)	.351			
African-American	1.029	(.031)	.340				1.029	(.031)	.339			
Hispanic	.998	(.030)	.937				.998	(.030)	.935			
Lives with stepfather	.922	(.031)	.014	**			.921	(.031)	.013	**		
Single mother	.916	(.024)	.001	***			.916	(.024)	.001	***		
Mother's age	.990	(.005)	.042	**			.990	(.005)	.043	**		
Mother's AFQT	.993	(.015)	.650				.993	(.015)	.636			
Mother ed'n <HS	.939	(.037)	.106				.939	(.037)	.108			
some college	1.023	(.026)	.367				1.024	(.026)	.357			
college graduate	1.103	(.039)	.005	***			1.103	(.039)	.005	***		
Mother employed	1.002	(.024)	.950				1.001	(.024)	.977			
Income	1.003	(.003)	.425				1.002	(.003)	.432			

Incident rate ratios (IRR) reported.

Note: Models are estimated using poisson estimated with maximum likelihood procedure. All models also include indicator variables for year of observation and imputed missing values (not reported in tables). Robust p-values are adjusted for multiple children within families.

* Significant at 10% (one tailed test)

**
significant at 5%

significant at 1%.

Table 4
Summary of interaction terms from cross-sectional and fixed-effect models predicting shared activities

Full sample	Cross-sectional (N=1879)		Fixed-effect (N=941)		
Interaction tested	IRR	(s.e.)	IRR	(s.e.)	p>z
neighborhood problems...					
X boy	1.040	(.031)	.184	1.007	(.052)
X high behavior problems	1.049	(.053)	.338	1.086	(.116)
X high impulsivity	1.080	(.046)	.074	* .968	(.099)
X tall	1.013	(.031)	.683	.971	(.069)
X short	1.095	(.049)	.041	** 1.055	(.102)
X “extremely close to mother”	.956	(.032)	.182	.947	(.049)
X “less close to mother”	1.040	(.075)	.588	1.067	(.125)
X firstborn	1.051	(.031)	.098	* 1.018	(.056)
Boys					
Cross-sectional (N=937)					
Interaction tested	IRR	(s.e.)			
neighborhood problems...					
X high behavior problems	1.079	(.069)			
X high impulsivity	1.164	(.063)	***		
X tall	1.024	(.045)			
X short	1.119	(.067)	*		
X “extremely close to mother”	.948	(.046)			
X “less close to mother”	1.019	(.116)			
X firstborn	.990	(.041)			
Girls					
Cross-sectional (N=942)					
Interaction tested	IRR	(s.e.)			
neighborhood problems...					
X high behavior problems	.966	(.063)	.590		

Cross-sectional (N=942)

Girls

Interaction tested	IRR	(s.e.)	
X high impulsivity	.996	(.056)	.942
X tall	.992	(.041)	.855
X short	1.073	(.075)	.317
X "extremely close to mother"	.949	(.044)	.251
X "less close to mother"	1.088	(.101)	.364
X firstborn	1.108	(.047)	.015 **
X menarche	.930	(.053)	.203

Note: Models are estimated using poisson estimated with maximum likelihood procedure. Models also include indicator variables for year of observation and imputed missing values. Robust p-values are adjusted for multiple children within families.

* Significant at 10% (one tailed test)

** significant at 5%

*** significant at 1%.