Reciprocal Associations between Neighborhood Context and Parent Investments: Selection Effects in Two Longitudinal Samples

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Abstract

The present study addresses the degree to which neighborhood disadvantage and parenting investments are reciprocally linked over time, and the relative degree to which both show indirect effects on child externalizing through each other. Data come from two studies: the first followed families from the child’s birth to age 11 ($N = 1,364$), the second followed children from birth to age 9 ($N = 4,898$). In both studies, material and emotional parenting investments/resources predicted selection into neighborhoods over time, and neighborhood disadvantage frequently predicted relative change in parenting investments. The prediction to change in child externalizing was larger for parenting investments than it was for neighborhood characteristics in most of the models tested.

Keywords: social environments; communities; neighborhoods
Reciprocal Associations between Neighborhood Context and Parent Investments: Selection Effects in Two Longitudinal Samples

The link between neighborhood attributes and child development has been replicated across scores of samples, among families across a wide range of socioeconomic status (SES) and ethnic backgrounds (Leventhal & Brooks Gunn, 2009). Based on this literature, policymakers and other stakeholders frequently interpret these associations as causal. That is, neighborhood context is now believed to create changes in child socioemotional outcomes. Even so, a longstanding concern about neighborhood effects on child development is that families may select nonrandomly into neighborhoods. Selection into neighborhoods would inflate associations between neighborhood attributes and child outcomes, and call into question the underlying directional assumption that correlations between neighborhoods and family processes reflect a causal effect of neighborhoods. In the current study, we address this important issue, focusing on the outcome of child externalizing behavior problems.

People select into environments (Jaffee & Price, 2007). Selection effects can refer to constraints or preferences that are volitional (Scarr & McCartney, 1983) or nonconscious; they result in people moving into environments that are in some way correlated with preexisting personal characteristics (Cao, Mokhtarian, & Handy, 2009). In terms of the neighborhood context, such selection effects are what urban sociologists such as Gans (1968) referred to when he proposed that community life is primarily the aggregate of individual characteristics. Selection is frequently studied in work on social contexts. For example, recent work on the hypothesized influence of peers on adolescent development specifies both selection into peer group, as well as peer influence (Dishion, 2013). Similar considerations are made when studying the influence of one’s spouse/coparent on parenting behavior (Schofield et al., 2009; Schofield &
Weaver, 2016). Failure to model selection into environments (e.g., niche picking) can spuriously inflate associations between the environment and later development (Liberson, 1986), and can create other errors of inference. For instance, one possibility is that poorer people tend to live in poorer neighborhoods because they cannot leave the resource-providing social networks in which they are embedded (such as childcare provided by friends, neighbors or family members). Another possibility is that poorer families may have the income to move into a better neighborhood yet lack the credit history to qualify for a good interest rate on a mortgage. Consequently, even in instances where residents could potentially afford to live in a different neighborhood, it would nonetheless be impractical to leave their current neighborhood. If the poorest or least capable residents were to remain in a particular neighborhood while the more resourceful or capable residents were to move to other neighborhoods, this would lead to an overestimation of neighborhood effects. If selection is occurring with regard to neighborhoods, it will require a reevaluation of how neighborhood models are to be specified. There is reason to expect that selection occurs at the neighborhood level, and that the selection is related to the same traits and processes that influence family dynamics. However, the selection-based interpretation is less common partially due to a lack of evidence of selection into neighborhoods.

There have been very few tests of selection into neighborhoods (Bagley & Mokhtarian, 2002; Hedman, & van Ham, 2010). Qualitative research suggests multiple drivers of neighborhood choice (Batty & Flint, 2010; Hickman, 2010; Mee, 2007), yet the few quantitative studies that have tested for such selection effects include only demographic variables (Diez-Roux et al., 1997; Ecob & Macintyre, 2000; McKinnish & White, 2011; Sampson & Sharkey, 2008). However, people who live near each other are more likely to be similar with regard to their personality (Jokela et al., 2014), their rate of extreme marital conflict (Hetling & Zhang, 2010),
and child maltreatment experiences (Zhou, 2006). The typical interpretation of these correlations is that the neighborhood context is exerting a causal influence on residents, making them friendly or aggressive, responsible or impulsive. The selection-based interpretation is that residents with similar personalities, levels of marital conflict, or child maltreatment are either attracted to or pushed into particular neighborhoods. Therefore, an adequate accounting of preexisting characteristics would include not only SES, but also parent attributes which are associated with later child behavioral outcomes and have been shown to be distributed nonrandomly across neighborhoods including the home environment (Bradley & Caldwell, 1977), personality (McCabe, 2014), parenting behaviors (Cowan, Cowan, & Barry, 2011), support from a stable nurturing romantic relationship (Erel & Burman, 1995), and so on. Exemplars of many of these categories are distributed nonrandomly across neighborhoods, further implicating them in the hypothesized selection process (Hetling & Zhang, 2010; Jokela et al., 2014; Zhou, 2006).

A second perspective that supports selection into neighborhoods comes from economic work on the material investments parents make in their children (Mayer, 1997). That is, where children live reflects in part an investment parents make in their child, similar to having reading materials in the home or health insurance for the child. Higher quality neighborhoods afford children greater opportunities for safety, outdoor recreation, and positive peer interactions that may not be available in lower quality neighborhoods. Economic forces are indeed a driver of selection, as only families that can afford to move to better neighborhoods have the option to do so. Once economic constraints are taken into account, however, the choice of neighborhoods becomes an indicator of material investment in the child’s well-being. Therefore, selection into neighborhoods ought to be subject to the same drivers that predict other parental investments (either material or emotional see Schofield et al., 2011).
In the current study, we hypothesize reciprocal associations between neighborhood SES and parent investments (Figure 1). We expect neighborhood SES will predict relative change in parent investments (Path A) and child externalizing problems (Path C). These paths are consistent with the dominant perspective that neighborhoods causally influence family processes and child development. However, we also expect that parent investments (and related resources) will predict selection into or out of neighborhoods (Path B). This path is very rarely measured, and has never been tested over time to our knowledge. Finally, we expect that parent investments and related resources will predict relative changes in child externalizing problems (Path D). This last path is consistent with the dominant perspective that parents causally influence child development.

We focus on neighborhood SES because it is the canonical variable of interest for many developmental studies of neighborhood effects (Leventhal & Brooks-Gunn, 2009), and we focus on externalizing problems because most neighborhood effects relate to deviant or delinquent behavior, of which externalizing behavior problems are the developmental precursors. We include household income as a parenting investment in all models, because of the clear role economic constraints would have on the ability to relocate into or out of a neighborhood. In addition to these theoretical processes, the present study also addresses the issue of replication. 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). In order to more comprehensively evaluate the current hypotheses, we test our theoretical model across two longitudinal samples: families participating in the NICHD Study of Early Child Care and Youth Development and families participating in the Fragile Families Study. Both samples experience considerable variation in neighborhood SES, both include prospective longitudinal
data which are necessary to test for selection (Jokela et al. 2014), and both include multiple measures of parental investments which are necessary to assess the support for these hypotheses.

**Method**

**Primary Sample**

**Participants**

Participants were the families in the National Institute of Child Health and Human Development (NICHD) Study of Early Child Care and Youth Development (SECCYD). These 1,364 families were recruited in 1991, shortly after their child’s birth, from hospitals at 10 sites across the United States. Specific recruitment procedures are detailed elsewhere (NICHD Early Child Care Research Network, 2005). This study was conducted with approval from the affiliated Institutional Review Boards. This sample included a substantial proportion of low-education parents (30% had a high school degree or less), ethnic minority families (13% were African American compared with the national proportion of 12%), and the mean income level was the same as the U.S. average ($37,000).

**Procedures and Variables**

Detailed measures of family demographics, maternal behaviors, and children’s characteristics and adjustment were obtained from multiple informants beginning when children were 1 month of age and continued annually until they were 15 years old.

**Neighborhood socioeconomic status (SES).** Family addresses were geocoded and used at seven assessments to identify corresponding neighborhood attributes from the 1990 U.S. census (at the blockgroup level). In the current study, census measures of neighborhood SES included percent of female-headed households, residents who are unemployed, in poverty, and lack a high school degree. These data were available at the 1 month, 15 month, 36 month, 54
month, first grade, third grade, and fifth grade assessments (mean $\alpha = .75$, range: .71-.78).

Descriptive statistics for neighborhood variables are presented in Table 1.

**Income to needs ratio.** Family income was reported by mothers at each assessment.

**Support from romantic partner.** Mothers completed the intimacy subscale of the Love and Relationships Scale (created for this study) at the following assessments: 1 month, 36 months, 54 months, first grade, and third grade. Six items were answered on a range from 1(*strongly disagree*) to 5(*strongly agree*). Sample items included “My spouse/partner can really understand my hurts and joys” and “My spouse/partner listens to me when I need someone to talk to” ($\alpha = .87$).

**Parenting behavior.** Mothers were recorded when interacting independently with their children during play scenarios and problem-solving tasks. Observations were obtained eight times between the child’s birth and grade 5, and sent to a single site for coding. In order to maintain a developmentally appropriate measure of sensitivity, indicators changed somewhat over time (NICHD Early Child Care Research Network, 1997, 1998). At 6, 15, and 36 months, sensitivity was the sum of three 4-point ratings: sensitivity to the child’s non-distress signals (e.g., acknowledging the child's affect, contingent vocalizations by the mother, facilitating the manipulation of an object or child movement), positive regard (e.g., speaking in a warm tone of voice, hugging or other expressions of physical affection, an expressive face), and reflected intrusiveness (e.g., taking away objects or food while the child still appears interested, not allowing the child to handle toys he/she reaches for, insisting that the child do something in which he/she is not interested, not allowing the child to make choices).

At 54 months and in grades 1, 3 and 5, sensitivity was the sum of three 7-point ratings: supportive presence (e.g., pay attention to the child when the child talks, be engaged in the
interaction, appear to enjoy interacting with the child), respect for autonomy (e.g., ask the child’s opinion, negotiate rule with the child, acknowledge the child’s perspective), and reflected hostility (e.g., point out child’s weaknesses, put the child down, use a negative or sarcastic tone of voice). Inter-coder reliability was established by having two coders assess approximately 20% of the tapes, randomly drawn from each assessment period ($r_{ICC} > .70$). Confirmatory factor analyses supported a single factor solution at each timepoint, with good fit and standardized loadings above .40.

**Attitudes about being a parent.** Mothers reported on their beliefs about parenting three times between the child’s birth and grade six using the Modernity scale (Schaefer & Edgerton, 1985). The 30 items on this scale provide an estimate of how progressive (democratic, child-centered) versus traditional (authoritarian, strict, adult-centered) the parent’s attitudes are toward child rearing and discipline. Sample items include “parents should teach their children that they should be doing something useful at all times” (reflected), “parents should go along with the game when their child is pretending something” and “children have a right to their own point of view and should be allowed to express it.” Responses ranged from 1=strongly disagree to 5=strongly agree. Consistent with prior work using this scale (Dowsett, Huston, Imes, & Gennetian, 2008), we combined the items into a single index, which had composite reliabilities above .80 across all timepoints for both parents.

**Mother personality.** Mothers completed the 12-item scales for agreeableness ($\alpha = .74$), neuroticism ($\alpha = .84$), and extraversion ($\alpha = .75$) from the revised Neo Personality Inventory (Costa & McCrae, 1992) when the child was 6 months old.
Maternal mental health. Mothers’ depressive symptomatology was assessed using questions from the Center for Epidemiologic Studies Depression Scale (Radloff, 1977) when children were 1, 6 and 15 months, and in fifth grade (all $\alpha > .85$).

Home environment. The 55-item HOME Inventory (Bradley & Caldwell, 1984) was used to measure the quality and quantity of stimulation and support available at home when children were 15 months old and again when children were in third grade ($\alpha > .80$).

Child externalizing behavior problems. Mothers completed age-appropriate versions of the Child Behavior Checklist (CBCL; Achenbach 1991) when children were 24 months, 36 months, 54 months, in Kindergarten, and in grades 1, 3, and 4. The T score standardization was used in the current analyses.

Analyses

As shown in Figure 1, all hypothesis tests were conducted longitudinally. The seven assessments of neighborhood disadvantage were fit into an autoregressive model, as were the seven assessments of family income, and the measures of other investments (which varied in the number of times they were measured). Separate models were run for each investment resource, though they all included household income as a covariate, and externalizing problems as an outcome. We used Mplus Version 6 (Muthén & Muthén, 2012) to estimate the models using full information maximum likelihood estimation. Study hypotheses were evaluated using structural equation models with model fit assessed using the standard chi-square index of statistical fit that is routinely provided under maximum likelihood estimation of parameters, as well as practical fit indices (Browne & Cudeck, 1993; Tucker & Lewis, 1973; Hu & Bentler, 1999). Models were simplified by equating equivalent paths across time (when it did not result in a significant loss of fit).
Results

As shown in Table 1, the families in this study lived in neighborhoods reflecting a wide range of income, employment, household structure, and education. Across the seven assessments, 9.5% of the residents had an income-to-needs ratio lower than one, and that estimate ranged across neighborhoods from 0% to 100%. Separate models were estimated for each parent investment/investment resource. The fit indices from these six models are presented on the left side of Table 2. For example, the model in which the parenting investment resource was support from a romantic partner had an absolute fit of $\chi^2(232) = 909.6$, with acceptable relative fit: RMSEA of .046, TLI = .957.

The standardized coefficients from these six analytic models appear in Table 3. For example, the first model was the model in which the parenting investment resource was support from a romantic partner. Information from this model appears in the first column of data. Path A in Figure 1 reflects the hypothesis that neighborhood socioeconomic disadvantage will predict parenting investment resources (both material and emotional). Consistent with this hypothesis, in this first model the coefficients from neighborhood socioeconomic disadvantage to income were all significant, and ranged in magnitude from -.12 to -.03. The coefficients from neighborhood disadvantage to support from a romantic partner were not significant [range: .03 to .03]. Across the remaining models neighborhood disadvantage frequently predicted lower household income, and predicted emotional parenting investments two thirds of the time. The magnitudes of these coefficients are small, because they represent change over a relatively brief period (approximately 2 years). Over time, they would cumulate into a larger effect.

Path B in Figure 1 reflects the hypothesis that parenting investment resources (both material and emotional) will predict neighborhood socioeconomic disadvantage. Consistent with
this hypothesis, household income predicted changes in neighborhood socioeconomic disadvantage consistently across all six models (100% of paths tested). Emotional investment resources also predicted changes in neighborhood socioeconomic disadvantage (92% of paths tested). The neighborhood data across these assessments all came from the same census year, meaning that observed changes in neighborhood socioeconomic disadvantage only represent families who relocated, not changes over time in neighborhood socioeconomic condition.

Path C1 and C2 in Figure 1 reflect the hypothesis that neighborhood disadvantage will predict changes over time in child externalizing behavior problems, after accounting for parents’ emotional and material investment resources. Consistent with this hypothesis, neighborhood disadvantage consistently predicted relative changes in externalizing behavior across all six models (100% of paths tested).

Paths D1 and D2 in Figure 1 reflect the expectation that parenting investment resources will predict changes over time in child externalizing behavior problems, net of neighborhood socioeconomic disadvantage. Consistent with this expectation, relative changes in externalizing problems were predicted by family income (100% of paths tested) and emotional investment resources (100% of paths tested). To compare the magnitude of these coefficients, a model constraint was applied which constrained the path from neighborhood disadvantage to externalizing to be equal in magnitude (in absolute value) to the path from emotional investments to externalizing. This model constraint significantly worsened model fit for all models except observed sensitivity. Similar model constraints comparing neighborhood disadvantage to household income significantly worsened model fit for all models except home environment. Both emotional investment and material investment resources were more strongly linked than neighborhood disadvantage to changes in child externalizing problems.
Finally, inclusion of both income and emotional investments as longitudinal processes allowed for an examination of reciprocal associations over time between those two constructs. Household income was associated with increases in emotional investments (80% of paths tested), and emotional investments predicted increases in household income (100% of paths tested).

**Replication Sample**

**Participants**

The Fragile Families and Child Well-being Study (Fragile Families), is a longitudinal birth cohort study of 4,898 children born between 1998 and 2000 in 20 U.S. cities with populations of 200,000 or more (Reichman et al., 2001). This study deliberately oversampled births to unmarried parents, yielding a sample where one-quarter of births were to married parents and three-quarters were to unmarried parents. The baseline interviews were conducted shortly after the child’s birth with follow-up interviews one, three, five, and nine years later. This study was conducted with approval from the affiliated Institutional Review Boards. Eighty-seven percent of eligible mothers responded to the first wave of the survey, and subsequent response rates have been above 70%. The sample is ethnically diverse: 47% Black, 21% White, 27% Latino, and 5% other. Just over 80% of the mothers had been born in the U.S. Mother’s average age was 25 years, and two thirds had at least graduated from high school.

**Measures**

**Neighborhood socioeconomic status (SES).** Family addresses were geocoded and used at each assessment to identify corresponding neighborhood attributes from the 2000 U.S. census (at the tract level). In the current study, census measures of neighborhood SES included percent of female-headed households, residents who are unemployed, in poverty, and lack a high school
degree (mean $\alpha = .88$, range: $.87-.89$). Descriptive statistics for neighborhood variables are presented in Table 1.

**Income to needs ratio.** Family income was reported by mothers at each assessment.

**Support from romantic partner.** Support from the mother’s romantic partner was assessed at year one and year three using a 5-item scale created for this study. Items were answered on a scale from 1(*never*) to 3(*often*). Sample items include “How often is your partner fair/willing to compromise when you have a disagreement” and “How often does your current partner encourage you or help with things that are important to you” ($\alpha = .60$ at year 1, .60 at year 3).

**Parenting behavior.** At years two, three, and five mothers reported on the degree to which their child was spanked by the mother, father, or mother’s romantic partner. Two questions were answered in reference to each caregiver: “Has [caregiver] spanked the child in the past month” 0(no) and 1(yes) and “how often did [caregiver] spank the child in the past month” 1(*once or twice*), 2(*a few times in the past month*), 3(*a few times each week*) and 4(*every day*). From these questions an overall scale was created for each parent ranging from 0(*did not spank child*) to 5(*spanked every day*), then combined across caregivers ($\alpha = .66$ at year 2, .68 at year 3, .62 at year 5).

**Attitudes about being a parent.** At years two, three, and five mothers completed a four-item scale created for this study which assessed the mother’s impression of being a parent. Items were answered on a scale from 1(*strongly disagree*) to 4(*strongly agree*) and included items such as “Taking care of children is more work than pleasure” and “would be doing better in life without child” (mean $\alpha = .64$, range: .61-.66).
**Mother personality.** At year three mothers completed six items assessing impulsivity ($\alpha = .84$) from the Impulsivity scale (Dickman, 1990).

**Maternal mental health.** Maternal depression was reported by the mother at years two, three, and five. The Fragile Families draws on the Composite International Diagnostic Interview - Short Form (CIDI-SF), Section A (Kessler et al. 1998) to assess depression. The CIDI is a standardized instrument for assessment of mental disorders and follows the criteria of the Diagnostic and Statistical Manual of Mental Disorders – Fourth Edition (DSM-IV; APA 1994). The CIDI-SF takes a portion of the full set of CIDI questions and estimates the probability that a respondent would be positively diagnosed with depression if given the full CIDI interview. Specifically, women were asked if they had experienced feelings of depression or anhedonia in the past year, lasting two weeks or more. If so, they were asked about seven additional symptoms: (1) losing interest (2) feeling tired (3) weight changes (4) trouble with sleep (5) trouble concentrating (6) feeling worthless or (7) thinking about death. Symptoms were summed into a scale of depressive symptomatology.

**Home environment.** At year three and year five mothers completed a 29-item version of the HOME Inventory (Bradley & Caldwell, 1984) with items measuring parental warmth, verbal skills, lack of hostility, and physical interior of home ($\alpha = .82$ at year 3, .8 at year 5).

**Child externalizing behavior problems.** At year 5 mothers completed a 14-item version of the Child Behavior Checklist (CBCL; Achenbach 1991), and a 38-item version at year 9.

**Results**

As shown on the right side of Table 1, the families in this study lived in neighborhoods reflecting a wide range of income, employment, household structure, and education. Across the five assessments, 17.4% of the families in these neighborhoods were living below the poverty
line, and that estimate ranged across neighborhoods from 0% to 100%. Separate models were estimated for each parent investment/investment resource. The fit indices from these six models are presented on the right side of Table 2. For example, the model in which the parenting investment resource was support from a romantic partner had an absolute fit of $\chi^2(53) = 862.2$, with acceptable relative fit: RMSEA of .056, TLI = .907.

The standardized coefficients from these six analytic models appear in Table 4. Although neighborhood disadvantage continued to predict relative changes in family income (83% of paths tested), it was less frequently linked with changes in emotional investment resources across models (43% of paths tested) than it was in the SECCYD. Income consistently predicted relative changes in neighborhood disadvantage (96% of paths tested), as did emotional investment resources (64% of paths tested). The neighborhood data across these assessments all came from the same census year, meaning that observed changes in neighborhood socioeconomic disadvantage only represent families who relocated, not changes over time in neighborhood socioeconomic condition. Externalizing behavior problems was predicted by neighborhood disadvantage (67% of paths tested), household income (83% of paths tested), and emotional investment resources (100% of paths tested).

Similar to Study 1, model constraints were applied which constrained the path from neighborhood disadvantage to externalizing to be equal in magnitude (in absolute value) to the path from emotional investments to externalizing. This model constraint significantly worsened model fit for all models except home environment. Similar model constraints comparing neighborhood disadvantage to household income significantly worsened model fit for all models except home environment. Both emotional investment and material investment resources (when
significant) were more strongly linked than neighborhood disadvantage to changes in child externalizing problems.

**Discussion**

Overall, as hypothesized, neighborhood SES predicted change over time in parent investment resources. Support for this hypothesis was more frequent for family income than for emotional parent investments. It may be the case that neighborhood context more consistently offers opportunities or resources for changing income than opportunities or resources for changing emotional investments. Similar findings have been documented regarding parent SES and parent investments. For instance, after accounting for selection effects, parent SES predicts material investments but not emotional investments (Schofield et al., 2011). Of course, it may be that different elements of the family environment not included in the current study would be more affected by neighborhood socioeconomic disadvantage. A third possibility is that the structural characteristics which influence these individual and family level attributes (Kling et al., 2001) are not reflected in aggregate census data.

There was support for selection into neighborhoods based on both material and emotional investment resources. In both samples, people moved into (or out of) neighborhoods based on the six emotional investment resources, as well as the material investment resource (i.e., household income). Although this is consistent with previous research on personal characteristics and selection into neighborhoods (Jokela, 2009), it is important that our findings not be interpreted to suggest that individuals choose neighborhoods based on individual characteristics alone. There are many additional structural determinants that impact decision-making, and an extensive body of literature in the field of social epidemiology (Berkman, Kawachi, & Glymour, 2014) around the social construction of health and health inequities that goes beyond individual characteristics.
as critical drivers of relocation (Arroyo, 2006). For example, while education is one potential consideration for choosing to live in a particular neighborhood, high quality education is not equitably available to all. High poverty neighborhoods receive less funding per student than low poverty neighborhoods, which can contribute to high teacher turnover rates, poorer educational facilities, and other impacts (Arroyo, 2006; Condron & Roscigno, 2003). One study showed that barriers to education may be even greater for African American children because of harsher, more negative disciplinary responses due, in part, to racial stereotypes by teachers and administrators (Okonofua & Eberhardt, 2015). Policies and structural inequities that inhibit moving out of impoverished neighborhoods are certainly not limited to education; additional challenges for people living in poverty include, among others, reduced access to affordable housing, banking services, and employment opportunities (Metzler et al., in press). As such, future efforts in the exploration between neighborhood attributes and health should continue to integrate a health equity perspective in drafting research aims, generating hypotheses, and drawing conclusions. Nevertheless, selection effects based on individual or family-level characteristics are real and merit continued study.

This nonexperimental data cannot provide strong causal inference. Although both samples showed variation in most neighborhood characteristics, it remains possible that other samples could provide a different pattern of results. We would note, however, that the current two datasets offered us rich measurement of family and personal characteristics, which are necessary to adequately test for selection effects. Third, although these analyses covered the years from birth to late childhood, it is possible that outcomes measured in later periods of development would provide less support for our hypotheses. Some family environment measures had comparatively modest reliability; we would expect larger effects with more reliable
measures. Finally, our focus was on socioeconomic disadvantage, and a different pattern of results could emerge for indicators of neighborhood social organization, like collective efficacy.

The neighborhood environment likely affects resident behavior. At the same time, residents are not randomly sorted into neighborhoods. Studies of neighborhood effects should include longitudinal tests of both processes (i.e., selection and neighborhood effects) in order to make justifiable claims about which process is operating. Inferring causal effects from cross-sectional data on neighborhoods and family processes will likely conflate the causal effect of neighborhood environment with previous selection into the neighborhood environment.
References


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[http://scholarworks.gsu.edu/geosciences_theses/7](http://scholarworks.gsu.edu/geosciences_theses/7)
Table 1

*Neighborhood Attributes Across Both Studies*

<table>
<thead>
<tr>
<th>Percent of:</th>
<th>Early Child Care and Youth Development</th>
<th>Fragile Families Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residents with income-to-needs ratio less than 1.00</td>
<td>$9.5$ 10.2 0 100</td>
<td>-</td>
</tr>
<tr>
<td>Families below poverty level</td>
<td>-</td>
<td>$17.4$ 13.0 0 100</td>
</tr>
<tr>
<td>Residents who are unemployed</td>
<td>$4.6$ 4.7 0 51</td>
<td>$10.00$ 7.2 0 66</td>
</tr>
<tr>
<td>Households headed by single mothers with children under 18</td>
<td>$9.1$ 9.2 0 76</td>
<td>$20.2$ 13.0 0 100</td>
</tr>
<tr>
<td>Residents over 25 without a high school degree</td>
<td>$17.6$ 13.6 0 91</td>
<td>$71.3$ 15.1 28 100</td>
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</table>
Table 2

*Fit Indices From Final Models Across Both Studies*

<table>
<thead>
<tr>
<th>Emotional investment/resource</th>
<th>SECCYD</th>
<th></th>
</tr>
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<tbody>
<tr>
<td></td>
<td>$\chi^2$</td>
<td>$df$</td>
</tr>
<tr>
<td>Support from romantic partner</td>
<td>909.6</td>
<td>232</td>
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<tr>
<td>Parenting behavior</td>
<td>1069.8</td>
<td>250</td>
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<tr>
<td>Attitude about parenting</td>
<td>779.9</td>
<td>194</td>
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<tr>
<td>Parent personality</td>
<td>672.2</td>
<td>162</td>
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<tr>
<td>Parent depression</td>
<td>1060.6</td>
<td>256</td>
</tr>
<tr>
<td>Home environment</td>
<td>1023.3</td>
<td>230</td>
</tr>
</tbody>
</table>

Note. SECCYD= Study of Early Child Care and Youth Development, RMSEA= Root mean square error of approximation, TLI = Tucker Lewis index
Table 3

<table>
<thead>
<tr>
<th>Path</th>
<th>Support from RP</th>
<th>Observed sensitivity</th>
<th>Parenting attitudes</th>
<th>Agreeableness</th>
<th>Maternal depression</th>
<th>Home environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Neighborhood→income</td>
<td>[-.12, -.03]100</td>
<td>[-.12, -.02]100</td>
<td>[-.04, -.01]17</td>
<td>[-.12, -.02]100</td>
<td>[-.12, -.02]100</td>
<td>[-.02, -.03]100</td>
</tr>
<tr>
<td>A. Neighborhood→emotional investment</td>
<td>[.00, .00]0</td>
<td>[.00, -.20]80</td>
<td>[.02, -.09]50</td>
<td>-</td>
<td>[.04, .05]100</td>
<td>[.16, .12]100</td>
</tr>
<tr>
<td>B. Income→neighborhood</td>
<td>[-.08, -.05]100</td>
<td>[-.07, -.05]100</td>
<td>[-.06, -.04]100</td>
<td>[.05, -.08]100</td>
<td>[.05, -.08]100</td>
<td>[.07, -.04]100</td>
</tr>
<tr>
<td>B. Emotional investment→neighborhood</td>
<td>[-.02, .01]67</td>
<td>[.07, .02]83</td>
<td>[.13, -.04]100</td>
<td>[.03, -.03]100</td>
<td>[.04, -.05]100</td>
<td>[.06, -.03]100</td>
</tr>
<tr>
<td>C. Neighborhood→externalizing</td>
<td>[.03, .04]100</td>
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<td>[.03, -.02]100</td>
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Note. [min, max]# = percent of paths over time measuring this relation that were statistically significant. RP=romantic partner. Boldface = p < .05.
Table 4

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<th>Path</th>
<th>Support from RP</th>
<th>Parenting harshness</th>
<th>Parenting attitudes</th>
<th>Impulsivity</th>
<th>Maternal depression</th>
<th>Home environment</th>
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Note. [min, max]# = percent of paths over time measuring this relation that were statistically significant. RP=romantic partner. Boldface = p < .05
Figure 1. Theoretical Model of Reciprocal Associations between Neighborhood Context and Parent Investment