

# Where, When, Why, and For Whom Do Residential Contexts Matter? Moving Away from the Dichotomous Understanding of Neighborhood Effects

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## Abstract

The literature on neighborhood effects frequently is evaluated or interpreted in relation to the question, “Do neighborhoods matter?” We argue that this question has had a disproportionate influence on the field and does not align with the complexity of theoretical models of neighborhood effects or empirical findings that have arisen from the literature. In this article, we focus on empirical work that considers how different dimensions of individuals’ residential contexts become salient in their lives, how contexts influence individuals’ lives over different timeframes, how individuals are affected by social processes operating at different scales, and how residential contexts influence the lives of individuals in heterogeneous ways. In other words, we review research that examines where, when, why, and for whom do residential contexts matter. Using the large literature on neighborhoods and educational and cognitive outcomes as an example, the research we review suggests that any attempt to reduce the literature to a single answer about whether neighborhoods matter is misguided. We call for a more flexible study of context effects in which theory, measurement, and methods are more closely aligned with the specific mechanisms and social processes under study.

## INTRODUCTION

The first comprehensive review of the quantitative literature on neighborhood effects, titled “Growing Up in Poor Neighborhoods: How Much Does It Matter?,” was written by Susan Mayer and Christopher Jencks and published in 1989 (Mayer & Jencks 1989). Several years later, a second review of the expanding literature on neighborhood effects, “Does Neighborhood Matter? Assessing Recent Evidence,” was conducted by Ingrid Gould Ellen and Margery Austin Turner (Ellen & Turner 1997). Both of these reviews offer insightful ideas about the most likely mechanisms by which the neighborhood environment might be linked with a range of different child and adult outcomes, and describe evidence from a rapidly growing, diverse set of studies designed to estimate the effects of neighborhood composition on individual outcomes. We call attention to these early reviews of the literature not because of their content, however, but because of their titles. Although the articles describe a complex emerging literature on the relationship between neighborhood settings and individual outcomes, the titles carry the implication that the literature can be condensed to the single question of whether the residential environments that surround us influence our life chances. These article titles are meaningful because they reflect a larger tendency in academic debates and public discourse to reduce the literature on neighborhood effects to this basic question, with the implication that the answer is dichotomous: yes or no.

In the years since these early reviews were published, this dichotomous perspective has continued to serve as a point of departure for the evaluation and interpretation of the literature on neighborhood effects. This does not mean that academic or journalistic interpretations of the literature have ignored the nuanced, and sometimes conflicting, findings that have emerged in the empirical literature; however, the complex findings that have been uncovered often are interpreted in relation to the larger question, “Do neighborhoods matter?” We believe that this question, and the dichotomous

perspective that it represents, have had a disproportionate influence on the development of the research literature on neighborhoods and individual outcomes.

Specifically, we identify four major themes or patterns in the literature that are either closely connected to or a direct consequence of the dichotomous perspective on neighborhood effects. The first is the emphasis on methodological shortcomings of the quantitative literature and the challenge of overcoming the problem of selection bias. Lying just beneath the surface of the question “Do neighborhoods matter?” is a persistent skepticism directed toward results from studies that do not rely on variation in neighborhood conditions driven by natural or controlled experiments (Cheshire 2012, Ludwig et al. 2008, Mayer & Jencks 1989). We acknowledge that this skepticism has driven researchers of neighborhood effects to develop more rigorous methodological approaches that allow for stronger causal inferences. However, we believe that the primary focus on the methodological problem of selection bias has led to a dearth of research on the mechanisms through which neighborhood inequality is linked with the outcomes of individuals (Sampson 2008).

Second, in the pursuit of an answer to the question of whether neighborhoods matter, a substantial amount of attention has been devoted to adjudicating between different definitions and methods of operationalizing neighborhoods (Briggs 1997, Tienda 1991). Although conceptual precision is an important goal, the core ideas, theories, and claims made in the literature on neighborhood effects are broader than any single definition of a neighborhood (Burton et al. 1997, Chaskin 1997, Galster 2008, Sampson 2013). The focus on the term neighborhood, and all of the connotations it carries along with it, has distracted attention from the larger question of how different dimensions of the residential context, which operate at multiple geographic and social scales, become salient in the lives of individuals and families (Galster 2008, Logan 2012, Sampson et al. 2002).

Third, the dichotomous perspective and the associated emphasis on methods for causal inference have driven researchers to attempt to isolate the effects of the neighborhood from the effects of other important contexts in children's lives, such as the school or the family. We argue that much of the research designed to isolate the effects of neighborhoods from the effects of other social contexts has overlooked the ways in which different dimensions of individuals' social environments are linked together in space and time (Entwisle 2007, Sampson 2008, Sharkey & Elwert 2011). As a result, this research has reached misleading conclusions about the relative importance of each setting.

Fourth, the very question—"Do neighborhood effects matter?"—carries the implication that it is possible to condense the literature on neighborhood effects to a point where one might arrive at an answer (Small & Feldman 2012). To reach an answer to this question requires a simplification of theory and empirical findings that does not correspond with the complexity of theoretical models or empirical evidence relating to the relationships between individuals and the contexts in which they live. More than 25 years after William Julius Wilson's *The Truly Disadvantaged* (1987) provided the inspiration for a resurgent interest in neighborhood effects, we now have enough evidence to recognize how limited, and distracting, the dichotomous perspective is for the advancement of the field.

The research reviewed in this article demonstrates why the literature on neighborhood effects should be interpreted not through the lens of the dichotomous perspective, but rather in relation to a more complex theoretical model of the relationships between individuals within residential contexts. We focus on empirical work that considers how different dimensions of individuals' residential contexts become salient in their lives, how contexts influence individuals' lives over different timeframes, how individuals are affected by social processes operating at different scales, and how residential contexts influence the lives of individuals in heteroge-

neous ways.<sup>1</sup> Our review is guided by a conceptual model put forth in a chapter on the future of research on neighborhood effects by David Harding and several collaborators. Harding et al. (2011) argue that the effect of the neighborhood should be thought of as a multiplicative function of neighborhood characteristics, the timing and duration of individuals' exposure to the neighborhood, and individuals' vulnerability to the effects of the neighborhood (see also Galster 2012, Small & Feldman 2012). This model accounts for the fact that children who have lived in the same community throughout their lives and who have become enmeshed in the social life of the neighborhood are likely to be most deeply affected by the set of peers, institutions, risks, and opportunities in the immediate environment that surrounds them. Children who live within a given community but attend school in a different part of town, children who are required to come home immediately after school and remain inside, and children who spend summers with relatives are less likely to be affected by what happens on the residential block on which they live.

The logic behind this theoretical model of neighborhood effects is intuitive, but the implications for the literature are profound. The framework proposed by Harding et al. (2011) suggests that in order to understand how residential environments affect the lives of youth, researchers have to conceptualize and analyze which features of the environment are most salient for different aspects of children's lives, how individuals interact with their environments over different periods of time, and how these patterns of interaction vary for subsets of the population. The neighborhood, from this perspective, is not a static feature of individuals' lives that is experienced in a uniform

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<sup>1</sup>The reader should note that much of the theoretical basis for the study of neighborhood inequality suggests that the natural unit of analysis for the study of neighborhood effects is neighborhoods or communities, and not individuals (Sampson 2008). However, our argument is more directly relevant for the study of individual outcomes, and thus we exclude research on area-level outcomes from the review.

manner by everyone within it (Lupton 2003). Rather, a single neighborhood is experienced in different ways by groups of individuals who have lived there for varying lengths of time, and who spend their time within the neighborhood in different ways and in their own spaces, carving out unique social worlds from the common environment that surrounds them (Sharkey 2006). This perspective on neighborhood effects moves away from the question of whether neighborhoods matter and moves toward the questions of when, where, why, and for whom do residential contexts matter.

In this article we review research offering evidence that responds to these questions. Given that the last major review of the neighborhood effects literature in the *Annual Review of Sociology* was published in 2002 (Sampson et al. 2002), we focus our attention on research published since then.<sup>2</sup> In order to narrow the scope of our review further, we concentrate on empirical studies, mostly based in the United States, that examine the relationship between residential contexts and individual outcomes related to cognitive skills, academic achievement, and educational attainment. This is an area of neighborhood effects research that has received extensive attention and, arguably, has developed the furthest.

This decision means that we are leaving out a substantial portion of the literature on neighborhood effects, including research on the causes of neighborhood inequality; research analyzing neighborhood-level outcomes; most international research; and the large literature examining income, health, crime, and other important social outcomes. However, the criteria for the scope of our review are not rigid. Where it is useful for the article, we reach further back in time to highlight relevant research published prior to 2002, and we complement the review of literature on cognitive and academic outcomes by drawing on selected

insights or findings from research focusing on other outcomes if the research is relevant to our argument. Our goal is not to provide an exhaustive review of all studies that have looked at neighborhoods and educational or cognitive outcomes since 2002, but rather to highlight research that responds to the questions in the title of the article. In this sense, this article should be seen as complementary to the large number of reviews of the literature that have been produced over time, including several in the past decade or so (e.g., Durlauf 2004, Ellen & Turner 2003, Galster 2012, Sastry 2012).

## RESIDENTIAL CONTEXT EFFECTS ACROSS DIFFERENT SPATIAL SCALES AND GEOGRAPHIES

The literature on neighborhood effects always has struggled to define and operationalize its fundamental concept, the neighborhood. The difficulty in defining the concept of a neighborhood is attributable to the discrepancies between definitions derived from theoretical arguments, definitions derived from individuals' perceptions of what their neighborhood is and where its boundaries lie, and definitions that are based on data availability (Burton et al. 1997, Durlauf 2004, Lupton 2003, Rosenblatt & DeLuca 2012).<sup>3</sup> The goal of moving toward a clearer definition of neighborhood has been challenged further by the discrepant findings from analyses of the effects of different contextual phenomena measured at different scales (e.g., Hipp 2007).

Instead of putting forth another proposal for the most appropriate definition and operationalization of the neighborhood, we begin by calling for an end to the debate about what a neighborhood is and at what scale it should be measured (see also Sampson 2013). Instead, we argue for a flexible approach to the study

<sup>2</sup>Logan (2012) also reviewed research on neighborhoods in his recent *Annual Review of Sociology* article, but the focus of the article was on spatial analysis.

<sup>3</sup>Compare, for instance, Gans' (1967) idea of "functional neighborhoods," Tienda's (1991) idea of "statistical neighborhoods," and Grannis' (2005) idea of "tertiary street communities."

of the effects of the residential environment surrounding individuals, in which the appropriate scale at which concepts are defined and studied is based on theory and evidence specific to the phenomenon or social process under study (Galster 2008). Further, we argue that the terms residential context and residential environment are more useful in capturing the theoretical ideas that underlie the literature than the term neighborhood. Whereas the term neighborhood carries connotations suggesting that what is most important about one's environment is the space immediately surrounding the home and the interaction between individuals or families who live near to each other, interactions and use of space are only two of many ways in which residential contexts become salient in individuals' lives. Residential contexts influence the lives of residents through institutional mechanisms, through peers and networks, through exposures to incidents of violence or polluted air, and through proximity to risks and access to opportunities. The study of context effects must be flexible enough to capture effects that arise from these and other mechanisms, all of which may operate at multiple scales with unique boundaries.

In this section of the article, we review research that provides evidence on spatial variation in residential context effects, focusing on studies that analyze mechanisms operating at different scales that link residential contexts with academic and cognitive outcomes (see also Logan 2012). We conclude the section by highlighting recent evidence on geographic variation in residential context effects.

As a default, the quantitative literature on neighborhood effects has used the census tract as the boundary to operationalize the concept of the neighborhood. A large number of studies demonstrate associations between different compositional characteristics of the census tract, such as neighborhood poverty, the presence of affluent neighbors, and rates of residential mobility, and individual outcomes, such as dropping out of high school or scores on assessments of cognitive skills [see Leventhal & Brooks-Gunn (2000) for a review

of the early literature and Sastry (2012) for an updated review]. Although much of this literature utilizes basic regression methods, examples of studies that use variants of this approach include research by Harding (2003) using propensity score matching combined with sensitivity analysis to analyze high school dropout rates, research by Duncan et al. (2001) using correlations in cognitive skills performance among middle and high school students living in the same census tracts, and research by Aaronson (1998) and Plotnick & Hoffman (1999) exploiting variation in neighborhood poverty experienced by siblings to analyze educational outcomes.

Considered as a whole, the body of research conducted at the level of the census tract has revealed that characteristics of the neighborhood's population reflecting concentrated poverty or disadvantage appear to be consistently linked with children's academic or developmental trajectories (Sastry 2012). But the literature is vague in specifying what it is about the residential environment that alters children's ability to learn and succeed in school, or to develop cognitive skills. The focus of the quantitative literature on the boundaries of the census tract is inconsistent with ethnographic work that documents the importance of the immediate blockface in which families live (Rosenblatt & DeLuca 2012) as well as the risks that may be present in the larger section of the city or town in which families' own neighborhoods are embedded (Pattillo 1999, 2003). By focusing more directly on specific theoretical pathways linking the residential context to individual outcomes, and expanding, contracting, or otherwise altering the geographic scales at which studies are conducted, new insights have emerged about the mechanisms linking residential contexts to academic and cognitive outcomes.

Consider, first, some of the most basic features of the environment surrounding children when they leave the home: the air they breathe, the water they drink, and the sounds they hear. The impact of the physical environment surrounding children is an understudied dimension of neighborhood effects, but an expanding

literature provides persuasive evidence that exposure to air, water, and noise pollution may have substantively large effects on children's health, cognitive development, and academic achievement (Currie et al. 2011, Entwisle 2007, Evans 2006, Evans & Kantrowitz 2002).

Exposure to air pollution is thought to be linked with school attendance by making it more likely that students with respiratory problems are absent from school (Currie et al. 2011). Ransom & Pope (1992) found that changes in air pollution due to the closing and reopening of an integrated steel mill in Utah had a substantial effect on school attendance rates. Analyzing data from large school districts in Texas, Currie et al. (2009) showed that reductions in school-level exposure to carbon monoxide levels led to reduced absences. Exposure to lead arises in part from drinking water traveling in lead pipes, as well as through dust or chips from lead-based paint within the home and lead deposited in the soil (a remnant from the days of leaded gasoline). Reyes (2012) found that groups of students in Massachusetts with higher blood-lead levels were less likely to pass statewide standardized assessments, providing support for a larger literature arguing that exposure to lead in the environment impairs cognitive development (Lanphear et al. 2005).

Noise in the environment may matter for learning and academic progress as well. A well-known study of students in a single New York City school found that reading levels of students placed in classrooms on the side of the building that faced adjacent train tracks were substantially lower than students whose classrooms were located on the other, quieter side of the school (Bronzaft & McCarthy 1975). Other research has found that students whose homes, schools, or classrooms are located below airline flight paths, near noisy highways, or adjacent to elevated train lines have lower reading skills than comparable students in quieter settings (Cohen et al. 1973, 1980; Evans 2006; Evans & Maxwell 1997; Hambrick-Dixon 1985; Stansfeld et al. 2005).

Variation in exposure to air, water, and noise pollution is the result of social, economic, and

political forces that affect the residential locations of individuals and families; the locations of industry, schools, and public infrastructure such as train stations and highways; and the prevalence of environmental toxins (Bullard 2000, Crowder & Downey 2010, Downey 2006). Research on environmental inequality is thus a central part of understanding how the physical environment surrounding individuals affects their development, academic performance, and long-term social and economic outcomes.

When they have studied specific environmental exposures, sociologists have focused more attention on social dimensions of the environment surrounding children, such as the presence of violence. A new literature on community violence suggests that both direct and indirect exposure to stressors in the environment may be particularly damaging to children's cognitive functioning and academic performance (Harding 2009, Sharkey et al. 2013). To overcome the problem of nonrandom selection into violent neighborhoods, Sharkey (2010) exploited exogenous variation in the timing of interview assessments and local homicides to identify the effect of extreme local violence on children's performance on cognitive skills assessments. Comparing African American children living in Chicago to peers living in the same neighborhoods but assessed at different times, Sharkey (2010) found that children perform substantially worse on cognitive skills assessments if they are given the assessments in the immediate period of four to seven days following a local homicide that occurred near the home. The effect was strongest when the homicide occurred in the block group in which the child lived, weaker if it occurred in the census tract, and weaker still if it occurred in the larger neighborhood cluster, which was measured as a cluster of contiguous tracts. The pattern showing decaying effects of local violence suggests that the mechanism leading to impaired cognitive functioning likely involves the stress, shock, trauma, or fear experienced by individual children who are exposed to or made aware of extreme violence close to home. In the study of community violence, this



research suggests that boundaries such as census tracts, police precincts, or school catchment areas would seem to be less relevant than the absolute distance between the location of incidents of violence and children's residential addresses.

Alternatively, context effects arising through institutional mechanisms are likely to operate at different geographic scales with unique boundaries. Allard & Small (2013) make a compelling case that institutions and organizations have been neglected in the literature on neighborhood effects, which has focused largely on the compositional characteristics of neighborhoods as opposed to the institutions that are present within communities. Interactions with organizations as diverse as the police, churches, social service providers, health care providers, and child care centers are central to social and economic life within communities (see Small 2009), yet these organizations are missing from much of the empirical literature. Considering our focus on academic and cognitive outcomes, the boundaries of school catchment areas serve as a natural starting point for thinking about the relationship between institutions and residential contexts.

Heather Schwartz (2010) analyzed the educational outcomes of children living in public housing within Montgomery County, MD, which features a nationally renowned public school system and a large-scale inclusionary housing program. Schwartz exploited the fact that families eligible for public housing were randomly assigned to subsidized apartments that were dispersed across the county, creating an exogenous source of variation in the quality of the zoned elementary schools to which children were assigned based on where they live. Analyzing a sample of 850 children over time, Schwartz found that children assigned to advantaged schools performed much better in reading and in math compared to peers who were assigned to less-advantaged schools with higher levels of student poverty. By the end of elementary school, the baseline math achievement gap between low-income students and their nonpoor peers within advantaged schools was cut in half. Low-income students assigned

to less-advantaged schools did not experience the same relative improvements in academic performance over time. In this case, residing in an advantaged neighborhood did not generate the same improvements in academic performance as attending an advantaged school, providing evidence that the relevant mechanism was school quality. The relevant unit of analysis by which to measure the effects of the environment on academic achievement was the school attendance zone, and not the census tract (see also Curto et al. 2011, Dobbie & Fryer 2011).

Findings from a second study suggest that in different urban settings there may be very different mechanisms linking children's residential environments to their academic or developmental outcomes. Bringing together data from multiple observational and experimental studies examining children's performance on tests of academic and cognitive skills, Burdick-Will et al. (2011) found that children moving out of areas of concentrated disadvantage within Chicago showed substantial improvements in performance on cognitive skills assessments and reading and math assessments. The magnitude of the estimated effect of moving out of highly disadvantaged communities was similar using three very different sources of data, all of which were based on samples from Chicago: an observational study that used a theoretically driven model of selection into neighborhood disadvantage combined with methods that adjust for time-varying confounding (Sampson et al. 2008); a quasi-experimental study based on a public housing lottery (Ludwig et al. 2010); and the Chicago sample from the Moving to Opportunity (MTO) program, an experimental residential mobility study conducted in Chicago and four other cities. In all three of these samples based in Chicago, the estimated effect of moving out of highly disadvantaged neighborhoods on children's verbal/language test scores was found to be between 0.15 and 0.25 standard deviations. Although results from the Baltimore sample of MTO showed the same strong effects of moving out of high-poverty neighborhoods found

in Chicago, there was no effect found in the samples from three of the other MTO sites: Boston, Los Angeles, and New York City (Burdick-Will et al. 2011).

The researchers collaborating on the study explored several possible explanations to help understand why the effect of moving out of public housing projects was so different in Baltimore and Chicago as compared to the three other MTO sites. School quality was an obvious choice as a potential explanation, but there was no evidence indicating that differences in school quality helped to account for variation in the effects of moving out of high-poverty communities. Children who moved out of disadvantaged neighborhoods in two independent public housing experiments conducted in Chicago experienced minimal improvements in school quality, yet they showed substantial increases in test score performance. The authors concluded that for students in extremely disadvantaged environments, changes in school quality may not be necessary to generate sharp improvements in test scores. An additional exploratory analysis suggested that the groups of students that experienced the largest improvements in test scores were those who moved out of the most intensely disadvantaged and violent communities, which were disproportionately found in the Chicago and Baltimore sites of MTO (Burdick-Will et al. 2011).

Although this finding is far from definitive, it reflects the larger point that the mechanisms through which the environment becomes salient in a child's life are likely to be different across unique geographic, social, and historical contexts (Small 2004, Small & Feldman 2012). In Montgomery County, MD, living in a neighborhood that is zoned for a high-quality school may be the most important mechanism by which a child's address affects her academic trajectory. In the housing projects of mid-1990s Chicago, being exposed to severe levels of violence may have been more relevant to a child's developmental trajectory than the quality of the local school (see also Deluca et al. 2012). The uniqueness of the local setting in which studies of context effects are situated is essen-

tial to understanding variation in the importance of residential and school contexts for child outcomes.

Whereas the dichotomous perspective implies that there is a single answer to the question of whether neighborhood or school contexts affect children's academic trajectories, the empirical evidence generated from several residential and school mobility studies conducted in different settings makes clear that this is not the case. Evidence from the Gautreaux Assisted Housing Program in Chicago showed large effects of mobility to Chicago's suburbs on a range of academic outcomes of children (Rubinowitz & Rosenbaum 2000); evidence from the Yonkers (NY) Family and Community Project, which provided families the chance to move into mixed-income housing developments, showed null or negative effects on educational outcomes (Fauth et al. 2007); evidence from MTO showed strong effects in some cities and null effects in others (Burdick-Will et al. 2011); evidence from the Mt. Laurel program in New Jersey, which followed families as they moved into a new mixed-income housing development, showed improvements in study habits but no change in grades (Massey et al. 2013); evidence from families in public housing in Denver showed strong effects of various neighborhood characteristics, most notably violent crime rates, on high school academic success (Cutsinger et al. 2011); and evidence reviewed in Deluca & Dayton (2009) from a range of school voucher studies showed similarly mixed results, with positive benefits in some settings and null results in others.

These programs are not identical to each other, so one would not expect that the effects on children's academic or developmental outcomes would be the same in each study. However, the tremendous variation in program effects arising from broadly similar programs provides a strong hint that the impact of assisted residential mobility is likely to depend on the local context in which the program is implemented. "Where" neighborhoods matter most is still an open question, and one that should be explored with empirical



evidence designed to test setting-specific theoretical questions while also moving toward explanations for variation in effects in different geographic contexts (Small & Feldman 2012).

## **TEMPORAL DIMENSIONS OF RESIDENTIAL CONTEXT EFFECTS**

It is natural to think that the residential environment surrounding children will have a greater influence on their lives if they are in the same environment over years or decades. Only recently, however, has the dimension of time entered into the empirical literature on neighborhood effects. In 2003, Blair Wheaton and Philippa Clarke argued that the absence of empirical work analyzing neighborhoods from a life course perspective represented a blind spot in the growing literature on neighborhood effects. The importance of duration of exposure to poor and segregated communities was present in the theoretical arguments from the seminal works of William Julius Wilson (1987) and Douglas Massey & Nancy Denton (1993), but the empirical literature commonly treated children's neighborhoods as if they are a static feature of their lives. Analyzing the relationship between neighborhood poverty and children's mental health, Wheaton & Clarke (2003) found that early exposure to neighborhood poverty was associated with mental health symptoms years later in a child's life. By integrating a focus on both space and time, this study laid the groundwork for a more refined empirical literature on the effects of neighborhoods over longer periods of childhood and over generations of families.

The need for a temporal perspective on neighborhood effects is reinforced by research demonstrating the persistence of neighborhood advantage and disadvantage in the lives of families. Analyzing spells of residence in high-poverty neighborhoods, Quillian (1999) found that black families experience substantially longer spells in high-poverty neighborhoods than white families, who were found to be very unlikely to live in high-poverty neigh-

borhoods over an extended duration of time. This study is one of several to document severe racial disparities in long-term exposure to disadvantaged residential environments (Briggs & Keys 2009, Quillian 2003; South et al. 2005, Timberlake 2007). The common finding in this strand of research is that white families may experience spells of residence in high-poverty communities, but these spells are typically temporary. For black American families, residence in poor or disadvantaged communities is much more stable, and persistent exposure to such communities is common. Racial gaps in long-term exposure to neighborhood disadvantage are amplified when families are observed over multiple generations. Sharkey (2008) found that more than half of black American families have lived in the poorest quarter of American neighborhoods over the past two consecutive generations, compared to only 7% of white families (see also van Ham et al. 2012a for European comparisons).

A set of recent studies demonstrates that incorporating a focus on duration of exposure is central to understanding the full consequences of living in disadvantaged communities. In a longitudinal study conducted in Chicago, Sampson et al. (2008) found that exposure to concentrated disadvantage alters the trajectories of African American children's cognitive skills development. Children raised in highly disadvantaged neighborhoods performed substantially worse on tests of reading and language skills when assessed years later. This study is unique in the literature in that the modeling strategy is based on a theoretically driven analysis of selection into disadvantaged neighborhoods as a function of an extensive set of time-varying characteristics of children, their families, and the communities in which they have lived over time (Sampson & Sharkey 2008). Using this model of selection into disadvantaged communities as an initial step, the analysis utilized a newly developed set of methods that allow for unbiased estimates of the effect of a treatment that can vary over time, such as exposure to neighborhood disadvantage, while controlling for a full set of observed

confounders that also vary over time. Marginal structural models is the label given to the set of methods developed by biostatistician James Robins and collaborators that makes it possible to generate estimates of the effects of exposure to neighborhood disadvantage (or any other treatment of interest) at different time points in a child's life with the presence of confounders at each time point (Robins 1998, Robins et al. 2000). The development of the method has allowed the empirical literature on neighborhood effects to move closer toward alignment with the theoretical literature on how neighborhoods are experienced over the life course.

Wodtke et al. (2011) used marginal structural models to estimate the effect of persistent exposure to concentrated disadvantage over the duration of childhood. They found that exposure to concentrated disadvantage over the course of childhood reduces the probability of high school graduation by 20 percentage points for black youth, and 10 percentage points for all other youth. The magnitude of this effect is much larger than in previous studies that do not consider the stability of neighborhood poverty over time. Using a similar approach but looking back further into families' histories, Sharkey & Elwert (2011) found that exposure to neighborhood poverty over consecutive generations reduces children's performance on tests of cognitive skills by between 8 and 9 points, more than half of a standard deviation. A formal sensitivity analysis demonstrated that the effect of multigenerational neighborhood poverty is robust to potential bias arising from unobserved selection processes, even if the degree of bias is substantial.

The most consistent finding from this emerging strand of research is that the effect of neighborhood disadvantage on cognitive and academic outcomes is more severe if disadvantage is persistent, experienced over long periods of a family's history.<sup>4</sup> This conclusion may be particularly relevant for interpreting the find-

ings from residential mobility programs such as MTO, an experiment that brought about a sharp change in families' residential environments, but one that was not sustained over time. Ten to 15 years after families in MTO were initially assigned to the experimental or control groups, intent-to-treat estimates reported in Ludwig et al. (2012, p. 1507) show that families in the experimental group were living in neighborhoods in which the poverty rate was just 3 percentage points lower than the poverty rate in the neighborhoods of the control group. Considered from a life course perspective, these findings suggest that the change induced by the MTO intervention could be viewed as a short-term "shock" that allowed families to experience a temporary departure from a long-term, multigenerational experience of life in high-poverty communities (see also Sampson 2008). The focus on duration of exposure to disadvantaged neighborhoods may offer an important clue as to why MTO did not produce larger effects on academic and cognitive outcomes for all subgroups of children (Clampet-Lundquist & Massey 2008, Sharkey & Elwert 2011, Turner et al. 2012, Wodtke et al. 2011).

The long-term perspective on neighborhood inequality also carries implications for research on child development that focuses on the relative importance of the family and neighborhood contexts. One of the frequent conclusions made in reviews of the literature on neighborhood effects is that the influence of the neighborhood environment is weaker than the influence of the family environment (Ellen & Turner 1997, Leventhal & Brooks-Gunn 2000). This claim is based on studies that attempt to separate family effects from neighborhood effects by controlling for measures of family characteristics and neighborhood characteristics simultaneously, or by decomposing variance in child outcomes into family, neighborhood, and school components (Altonji & Mansfield 2011, Duncan et al. 2001, Page & Solon 2003, Solon et al. 2000).

A multigenerational perspective on neighborhood effects suggests that the attempt to isolate and distinguish neighborhood effects from

<sup>4</sup>For international examples of related research see Hedman et al. (2012), Musterd et al. (2012).

family (or school) effects is conceptually misleading (Sharkey & Elwert 2011; see also Mare 2011). The influence of individuals' residential environments does not disappear when they enter adulthood and form their own households, but lingers on to affect various dimensions of their adult lives, with consequences that extend to the next generation. This insight is important for observational studies of neighborhood effects, which commonly attempt to identify the effect of neighborhood disadvantage after controlling for a range of family and individual characteristics. Sharkey & Elwert (2011) argue that this approach has the potential to generate estimates of neighborhood effects that are substantially biased toward zero because many of the dimensions of the family environment that are important for child development, from parental mental health to family income, are likely to be influenced by parents' childhood neighborhood environments (see also Kohen et al. 2008, Sampson et al. 2002). Estimating neighborhood effects after controlling for family or school characteristics ignores the ways in which the family and school settings are influenced by the types of communities in which families have lived over time.

This does not mean that researchers should end their efforts to determine whether, for instance, the effect of changing a family's residential context leads to different effects on children when compared to changing a family's school context or home environment. Research designed to assess the effects of shocks that produce a change in one context and not the others provides valuable information for policy makers (e.g., Dobbie & Fryer 2011). However, we argue that the more common analytic approaches that have been used to isolate the influence of the neighborhood from other developmental contexts are inappropriate and lead to misleading conclusions. By attempting to isolate the effect of neighborhoods from the effect of other relevant social contexts such as families and schools, researchers ignore that these contexts are tightly linked together in ways that extend over time and across generations of family members (Entwisle 2007).

## HETEROGENEITY IN RESIDENTIAL CONTEXT EFFECTS

The conceptual model put forth by Harding et al. (2011) carries implications for the scale at which salient residential contexts are studied, for the duration and timing of exposure to contexts, and for heterogeneity in the influence of residential contexts on the individuals within them. The last element of this model, which considers the differential vulnerability of youth to the effects of the residential environment, leads directly to our last question: For whom do neighborhoods matter?<sup>5</sup> To this point, the literature has focused primary attention on whether neighborhood effects are stronger for certain subsets of the population categorized by demographic characteristics like age, race/ethnicity, or gender. With some important exceptions, much of this research is descriptive and exploratory in nature, without a clear alignment between the empirical assessment of effect heterogeneity and a theoretical basis for why the residential environment is likely to be experienced differently by specific segments of the population.

We begin with age. In their review of the literature through the mid-1990s, Ellen & Turner (1997) hypothesized that different neighborhood processes may become more or less relevant to an individual across stages of the life course. Infants and preschool children, for example, are likely to be most affected through parents, whereas schools become the more influential setting for elementary school children. The residential setting may become more salient in the adolescent years through processes related to peer influence, along with growing engagement with institutions such as schools and the police. For adults, neighborhood effects likely operate most directly through access to institutions providing services and information (see also Leventhal & Brooks-Gunn 2000).

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<sup>5</sup>The same question is addressed directly in reviews conducted by Ellen & Turner (2003) and Sampson (2008).

Although there is a persuasive theoretical basis for heterogeneity in neighborhood effects by age, there is not coherent evidence. Specific studies have found age interactions, but the direction of those interactions varies depending on the particular feature of the residential context under study. In a study of the effect of local job losses on reading and math scores in North Carolina, Ananat et al. (2011) found that the negative effects of local job loss on reading and math test scores were stronger for eighth graders than for younger children in the fourth grade. The authors suggested that this pattern could be driven by the ability of parents to shield younger children from stress arising from local or familial economic conditions. Wodtke et al. (2012) reported a similar age interaction in their analysis of the influence of cumulative exposure to concentrated disadvantage on the likelihood of high school graduation. Their analysis of national data from the Panel Study of Income Dynamics showed that exposure to the most disadvantaged neighborhoods was particularly detrimental for adolescents. Alternatively, Sharkey et al. (2013) found that the effects of exposure to local violent crime had a larger effect on the standardized test scores of younger students in the New York City public school system (third through fifth grades) than for older children (sixth through eighth grades). The authors speculated that differences in school attendance boundaries for elementary and middle schools in New York City may help explain this finding. Elementary school attendance zones are much smaller than middle school attendance zones in New York City, which may mean that incidents of violence occurring on the residential block are more likely to be brought into the daily conversations and interactions in elementary schools, where most students come from the same neighborhoods.

These examples do not provide support for any overarching theory of effect heterogeneity by age, and suggest that variation in the effects of local contexts for different age groups is likely to be contingent on the specific mechanism for context effects. The study of neighborhood ef-

fects by race/ethnicity has produced similar descriptive findings showing race interactions, but has not produced a clear theoretical explanation for why residential contexts might be more or less influential for children from different racial or ethnic groups. Part of the difficulty in analyzing racial/ethnic differences in context effects stems from the severe racial and ethnic stratification of urban neighborhoods. Studying the effects of exposure to concentrated disadvantage in Chicago, Sampson et al. (2008) showed that there is virtually no overlap between the level of concentrated disadvantage in the neighborhoods of black Americans and the level of disadvantage in the neighborhoods of Latinos or whites within the city. As a consequence, it is not possible to analyze the differential effects of exposure to highly disadvantaged residential settings for black children compared to other groups because in cities such as Chicago children from different racial and ethnic backgrounds occupy entirely different types of communities (see also Sampson 2012).

The reality of racial stratification in urban communities makes it difficult to identify and to explain heterogeneity in neighborhood effects by race and ethnicity. As an example, Sanbonmatsu et al. (2006) analyzed data from the MTO experiment and found that non-Hispanic black children were the only subset of the experimental group to show an increase in reading scores compared to the control group. Because the strong effects for black children were present only in two of the five sites (Baltimore and Chicago), the authors urged caution in interpreting this interaction as causal. However, subsequent research from Burdick-Will et al. (2011) suggested that the finding may be explained by the fact that black families from these two cities originated in neighborhoods that had extraordinarily high levels of concentrated disadvantage and violence, even when compared to the high-poverty neighborhoods of the other MTO sites. The apparent racial interaction effect may instead represent a nonlinear neighborhood effect—in other words, black children in Chicago and Baltimore may have been the

only groups to demonstrate substantial benefits of moving to lower-poverty communities because these were the only groups exposed to severe levels of concentrated disadvantage. In general, evidence for racial heterogeneity in context effects may have less to do with any unique characteristics or responses of black Americans, and instead may reflect different features of the residential environments in which black Americans live (see also Crosnoe 2009, Crowder & South 2003, Turley 2003).

Perhaps the most coherent base of evidence on treatment effect heterogeneity has emerged from the MTO experiment and focuses on gender. One of the strongest findings from the study is that girls in families that moved to lower-poverty neighborhoods fared better in school, showed compelling improvements in mental health, and were less likely to participate in risky behavior than girls in the control group. Conversely, boys in the experimental group experienced no benefits from moving to lower-poverty neighborhoods, and showed higher rates of some criminal activity than boys in the control group (Kling et al. 2005, Sanbonmatsu et al. 2006).

This set of findings has been illuminated by several ethnographic studies conducted in the various MTO sites. Clampet-Lundquist et al. (2011) interviewed 86 teenagers from MTO families in the Baltimore and Chicago sites and found variation between boys and girls across several domains: friendship networks, peer behavior, fitting in, and the use of space. Whereas girls and boys in the control group had similar peer networks, girls in the experimental group were more likely than boys to make friends with peers from their new schools and were much less likely to report having friends who had engaged in illegal activities. Boys in the experimental group also were more likely to report hanging out outside and being harassed by police, whereas girls were more likely to congregate in homes or indoor public spaces such as malls and movie theaters. Popkin et al. (2008) argued that disadvantaged neighborhoods present unique challenges for women and girls, such as harassment, domestic vio-

lence, sexual assault, and the pressure to engage in sexual activity at an early age (see also Elliott 2001, Miller 2008, Zuberi 2012). The authors found that female MTO movers in Boston, Los Angeles, and New York City experienced a dramatic reduction in these gender-specific “female fears.”

The combination of quantitative assessments of interaction effects and intensive ethnography has provided similar insights into the ways that families can moderate the influence of the neighborhood environment on children. Several studies have found that families with high social/economic status can utilize financial or social resources to buffer children from risks in the residential environment or take advantage of opportunities within and outside the immediate neighborhood (for evidence on effect heterogeneity by social and economic status see Ananat 2011, Casciano & Massey 2012, Wodtke et al. 2012). These findings are supported by evidence focusing specifically on how caregivers adapt their parenting styles in poor neighborhoods. Furstenberg et al. (1999) provided evidence on the ways that family management practices interact with neighborhood context to affect the development of children. Robin Jarrett and Stephanie Jefferson (2004) interviewed women living in public housing in a community marked by poverty and violence in order to explore the challenges of parenting within highly disadvantaged contexts. The authors found that some families are able to protect children from the dangers present in the surrounding environment through strategies of avoidance and danger management, imposing curfews, and focusing family life in the home (see also Anderson 1999, Choby et al. 2012).

The work on gender and parenting describes how potentially dangerous neighborhood spaces are navigated and managed in different ways by parents and children. In this way, the strategies employed by families living in disadvantaged neighborhoods are both a consequence of their surroundings as well as a pathway through which local context potentially affects children. We argue that this ethnographic research needs to be sup-

plemented with different forms of evidence on families' space and time use in order to develop a more refined understanding of how children and families interact with their environments. As an example, Matthews et al. (2005) combined GIS techniques with ethnography in what they called geo-ethnography in order to get a more complete picture of how low-income families and their children navigate and interact with their neighborhood. Zenk et al. (2011) tracked the movement of study participants for a week to understand how individuals' interactions with various environmental features were related to dietary and physical activity behaviors. These newly emerging methods demonstrate promising approaches to developing more refined measures of exposure to the environment and a more refined understanding of differential vulnerability to the environment.

## BEYOND THE DICHOTOMOUS PERSPECTIVE

Two basic claims provide the basis for the study of residential context effects. The first claim is that the American system of stratification is organized, in part, along spatial lines. The second claim is that the spatial dimension of American inequality plays an important role in the maintenance and reproduction of inequality across multiple dimensions (Dreier et al. 2004, Massey 2007, Peterson & Krivo 2010, Sampson 2012, Sharkey 2013). We argue that the literature on context effects should be designed to provide theory and evidence on how this process works, and on the consequences for individuals' and families' lives and life chances. The literature we have reviewed relates to the second claim about the effects of residential contexts, and suggests that progress in understanding the consequences of neighborhoods for individuals and families requires an expanded research agenda focused on the questions of where, when, why, and for whom do residential contexts matter.

This approach to the study of residential context effects begins with a flexible conception and measurement of residential contexts.

The research described in this review indicates that no single definition of the neighborhood and no specific operationalization of this concept are sufficient to capture the ways that residential contexts affect the lives of individuals within them. Mechanisms that involve interaction, such as studies of peer effects and neighborly social support, require scales that are specific to the types of interactions most salient for the individuals being studied (e.g., Conley & Topa 2002, Grannis 2005, Sastry et al. 2002). Mechanisms that relate to exposures, such as the research on exposure to violence or pollution, require a more local focus on the immediate environments in which individuals spend the most time (e.g., Ransom & Pope 1992, Sharkey 2010). Mechanisms that focus on institutions, such as the research on school quality, suggest a focus on the unit of analysis most relevant for the specific institution, such as the school attendance zone (e.g., Dobbie & Fryer 2011, Schwartz 2010). Instead of seeking an answer to the elusive question of what defines a neighborhood and how to measure it, we argue for a broader focus on the salient social processes that operate within individuals' residential settings, and the consequences for the individual.

The second dimension of our proposed approach is a flexible conception of the relevant timeframe for the study of context effects. A clear conclusion that has emerged in the literature is that the importance of residential contexts cannot be understood without adopting a life course perspective (Elder 1998, Mare 2011, Sharkey 2013). A recent set of studies argues that neighborhood inequality is characterized by continuity, both at the neighborhood level and the family level (Sampson 2012, Sharkey 2008). Individuals' residential environments are not experienced at a single point in time and then erased from their lives. Rather, there is strong evidence that the influence of the residential environment persists and accumulates, with consequences that extend over long periods of time and generations of families (Sampson et al. 2008, Sharkey & Elwert 2011, Wodtke et al. 2011). More research is now needed on the timing



of context effects operating through different mechanisms (Sampson 2013), on the importance of duration of exposure to disadvantaged and advantaged environments over extended periods of time, and on the connection between day-to-day events in individuals' environments and their impact on long-term developmental and academic trajectories (Sharkey et al. 2013).

Third, we argue for a research agenda that assumes heterogeneous responses to the residential environment (Small & Feldman 2012). To this point the most powerful evidence on effect heterogeneity has not come from simple interactions in quantitative work, but rather from ethnographic accounts of how individuals and families respond to the environment that surrounds them. The literature exploring the responses of boys and girls to changes in the residential environment shows that girls often face unique challenges within violent, high-poverty contexts and may benefit more than boys from moving to less-disadvantaged neighborhoods (Clampet-Lundquist et al. 2011, Kling et al. 2005, Popkin et al. 2008, Sanbonmatsu et al. 2006). Moving forward, we believe there is a tremendous need for an expanded research agenda that explores how the residential setting is experienced by different groups of youth. This agenda will require a move beyond the boundaries of sociology to incorporate new theories of how individuals respond to their environments in ways that vary based on individual susceptibility, genetic background, and social cognitive responses to the environment (Bandura 1997, Boardman et al. 2013, Conley 2009, Ellis et al. 2011). An agenda focused on context effect heterogeneity also will require advances in data collection on space and time use, providing more complete evidence designed to capture the lived experience of individuals as they navigate their residential environments over time (Almeida 2005).

Embedded within the discussion of where, when, and for whom do contexts matter is the question of why contexts matter. Perhaps the most important conclusion from our review is the need for progress in theorizing, measuring, describing, and analyzing the operation of sys-

tems that generate inequality in individuals' residential environments and the ways that these contexts affect the individuals within them. The best examples of major research projects that respond to this need continue to be the Project on Human Development in Chicago Neighborhoods (PHDCN) and the MTO experiment. These two projects approach the study of contexts in distinct ways. The PHDCN provides evidence on the stable operation of neighborhood stratification through advances in theory, measurement, data collection, and analysis (Sampson & Raudenbush 1999, Sampson et al. 1997, Raudenbush & Sampson 1999). MTO provides evidence on the operation of neighborhood stratification in the lives of families by exploiting an experimental shock to families' environments, and then describing how this shock is experienced through ethnographic evidence as well as quantitative analysis. The experimental design demonstrates the power of research designs that allow for strong causal inferences, and the ethnographic component to the study has generated new insights into the ways that caregivers manage risks and opportunities for their children, and the unique ways that boys and girls navigate interactions in different residential environments (Clampet-Lundquist et al. 2011, Popkin et al. 2008).

These studies should be thought of as complementary projects that respond to different pieces of the conceptual model put forth by Harding et al. (2011), which argues for rigorous theory and evidence on different features of residential contexts, differential exposure to contexts, and differential vulnerability to contexts. A new set of empirical studies are designed in ways that will provide data on all three of these components, thereby generating direct evidence on the mechanisms underlying context effects. To measure salient dimensions of residential contexts beyond their compositional characteristics, researchers are utilizing data on institutional concentration from administrative licensing records (Small & Stark 2005), data on violence and crime from police records (Sharkey et al. 2013), data on visible physical disorder from Google Street

View (Odgers et al. 2012, Rundle et al. 2011), and data on air quality and pollution from public records (Downey & Van Willigen 2005, Pope et al. 2002). To measure exposure to the environment, researchers are not only using geocoded addresses from surveys and public sources, but also data on space use, time use, network composition and social interactions from mobile phone data collection (Almeida 2005, Kwan 2009), time use diaries, and novel measures of peer networks from administrative sources and survey data (Entwisle et al. 2007, Papachristos et al. 2012). To measure vulnerability to the environment, researchers are using ethnographic methods and survey methods to understand how caregivers adjust parenting styles in highly violent or disadvantaged settings (Furstenberg et al. 1999, Jarrett & Jefferson 2004) and data collection

on genetic background and the physiological responses to stressors in the environment (Lee et al. 2013), along with new methods assessing how different types of youth come together in situations that make criminal or violent activity more or less likely (Wikström et al. 2012).

In calling attention to this emerging research, we reiterate a basic challenge put forth by Robert Sampson in his 2012 presidential address to the American Society of Criminology. Sampson did not call for research that will provide an answer to the question of whether neighborhoods matter. Instead, he called for researchers to “relentlessly focus on context” (Sampson 2013, p. 4). To advance our understanding of the effects of individuals’ residential environments requires that sociologists continue to respond to this challenge.

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