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# Do cognitive skills moderate the influence of neighborhood disadvantage on subsequent educational attainment?\*\*



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#### ABSTRACT

This paper examines how neighborhood quality affects young adults' educational outcomes, and whether neighborhood effects are moderated by cognitive test scores and other proxies for investments during childhood. The empirical results imply that high cognitive test scores help young adults overcome the effects of having lived in a disadvantaged neighborhood during adolescence with respect to attainment of a high school diploma and enrollment in a two- or four-year college. The results are robust to using alternative proxies for investments in children, such as mother's highest grade completed and measures of non-cognitive skills.

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#### 1. Introduction

This paper uses the National Longitudinal Survey of Youth 1997 (NLSY97) to study the relationship between neighborhood quality, measured during the adolescent years, and educational attainment in young adulthood. The paper tests whether the relationship between neighborhood quality and educational attainment differs by cognitive test scores and other proxies for earlier investments in the adolescent, with all proxies for investment measured in Round 1 of the data when the adolescents are ages 12–17. We view the investment proxies as capturing investments made by families, schools, and neighborhood environment up to the time when the proxies are measured, as well as cognitive ability (Todd & Wolpin, 2003).

Young adults from disadvantaged neighborhoods have significantly lower educational attainment than their peers from more advantaged neighborhoods (Aaronson, 1998, Crowder & South, 2003, Patterson, 2008). Understanding whether the relationship between neighborhood disadvantage and educational attainment varies across individuals is important for understanding the persistence of poverty within neighborhoods and families (see Wilson, 1987, for example).

A large and growing literature describes the importance of investments in early childhood on later outcomes (see, for example, Almond and Currie (2011) and Cunha, Heckman, Lochner, and Masterov (2006) for summaries). A recent series of papers by Cunha and Heckman (2007, for example) posit that early investments in children are particularly advantageous because they can have multiplier effects on investments in later childhood. They note that these effects help to explain why the return to early investments in disadvantaged children is so high. A variable that captures childhood investments may permit us to test whether the educational attainment of young adults who received high levels of resources from their families during childhood, but live in

 $<sup>\,^{\,\,\</sup>text{th}}$  The views expressed are those of the authors and do not reflect the policies of the BLS or the views of other BLS staff members. All errors are our own

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disadvantaged neighborhoods during adolescence, are harmed by negative neighborhood effects.

Households with incomes below the poverty line reside in neighborhoods with varying levels of advantage and disadvantage, although they are less likely to reside in more advantaged neighborhoods. Data from the American Community Survey (2006–2010) show that 6.9% of people in households with income below the poverty line live in relatively advantaged neighborhoods (those with census-tract poverty rates less than 13.8%) and 16.7 live in mid-level neighborhoods (13.8–19.9% poverty rate) (Bishaw, 2011). The Census Bureau defines "poverty areas" as those census tracts with poverty rates of 20% or more. However, the majority of people living in poverty areas are not poor. Of people who live in neighborhoods with a 20-39% poverty rate, 72.7% are in households that are not in poverty. Even in highly disadvantaged neighborhoods with poverty rates of 40% or more, 51% of people reside in households with incomes above the poverty line.

Researchers have advanced a number of theories to explain why neighborhood quality can impact children and adolescents. Jencks and Mayer (1990), in reviewing the literature on neighborhoods effects, categorize theories of neighborhood effects into four main groups based on the mechanisms by which neighborhood quality is thought to affect the individuals. The first category is epidemic or contagion theories, which emphasize the role of peers in causing neighborhood effects. Kalil (2013) notes that habituated behaviors, which may include delinquency, truancy, drug use, and participation in religious services or extra-curricular activities, are influenced by neighborhood and peers; they often occur at the same time and place and often with the same people. In addition, habits can arise when behavior is modeled on the repeated behavior of others. For example, the relative desirability of staying in school may be higher when one's peers are also staying in school (Harding, 2009). If dropping out of high school is an accepted norm in disadvantaged neighborhoods, it may be more difficult to stay the course. A setback that would not derail a student from a middle-class neighborhood may cause her counterpart in a more disadvantaged environment to leave high school without attaining a diploma.

The second category consists of theories of collective socialization, in which adults in the neighborhood serve as role models and monitor youth behaviors. One conduit for role model effects of neighborhoods is the limited observations on the gains from higher levels of schooling in poorer communities (Patterson, 2008). Because fewer adults in disadvantaged neighborhoods obtain bachelor's degrees, young adults in disadvantaged neighborhoods may not have good information about college costs or the types of jobs and earnings those with a college degree can obtain. Thus, they may make less informed decisions about their future education than young adults in more advantaged neighborhoods. An intervention designed by Hoxby and Turner (2012) demonstrates that providing good information about college costs affects the behavior of high-achieving, low-income students. These students are generally not reached by typical college outreach methods because they live in poorer neighborhoods and attend high schools with few high-achieving students. By sending information about college costs and providing waivers for college application fees to these students, the intervention not only increased the probability of college attendance, but also increased the selectivity of colleges students applied to and attended.

Institutional theories, the third category, emphasize the role of neighborhood institutions such as schools and social services. For example, large differences in per pupil educational expenditures exist in the United States (see, for example, Murray, Evans, & Schwab, 1998). As Durlauf (2004) points out, although the relationship between school spending per pupil and educational quality is tenuous, schools in poor neighborhoods often lack resources, which can lead to lower human capital investments in children and adolescents from disadvantaged neighborhoods.

Finally, the fourth category consists of theories of social competition, in which neighbors compete for scarce neighborhood resources. Unlike the prior three theories, this category predicts more difficulties in advantaged neighborhoods, particularly for poorer families, who may not have the resources to obtain a slot in good quality day care or advocate for their children to participate in better academic programs or extra-curricular activities. If poorer children are more likely to be marginalized or left behind in a more advantaged neighborhood, it could decrease their human capital accumulation relative to what it would have been had they lived in a less advantaged neighborhood.

Over the years, various interventions have tried to help children overcome the disadvantages of living in a poor neighborhood. A recent example is the Harlem Children's Zone in New York City, which combines charter schools with various social and community services to provide a supportive environment both in and out of school for children from birth to college. Dobbie and Fryer (2011) find an increase in elementary and middle school achievement test scores for students who attended the charter school component of the program. Another example is a new federal program called Promise Neighborhoods, which is modeled on the Harlem Children's Zone. The goal of the program is to improve the educational and developmental outcomes of children in distressed communities by providing social and educational support from the early years of childhood through college.<sup>1</sup>

In contrast to programs such as the Harlem Children's Zone and Promise Neighborhoods, which seek to provide within-neighborhood improvements to institutions and the social environment, other programs have moved families out of disadvantaged neighborhoods in an attempt to improve children's outcomes. The Moving to Opportunity randomized mobility experiment offered families in severely distressed housing projects in five cities housing vouchers to move into lower-poverty neighborhoods. In a summary piece, Gennetian et al. (2012) examine long-term effects of the program on adolescent and young adult outcomes. Though the experiment generated large reductions in neighborhood poverty and increased assessments of neighborhood safety for the experimental group, they find no longer-term effect of the experiment on achievement test scores or educational attainment. They note that the schools that the children and adolescents in the experimental and control groups attended differed only modestly, with both groups

 $<sup>^{1}</sup>$  See http://www2.ed.gov/programs/promiseneighborhoods/index.html (accessed 6/25/14).

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