The Effect of Microneighborhood Conditions on Adult Educational Attainment in a Subsidized Housing Intervention

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Abstract

The ACHIEVEability model of affordable housing aims to promote self-sufficiency by requiring enrollment in postsecondary education in exchange for subsidized housing. In this study, we exploit the quasi random assignment of ACHIEVEability participants ($N = 84$) to subsidized housing units to evaluate whether microneighborhood environments moderated participants' progress in postsecondary education. Participants progressed in their educational pursuits in line with program requirements, earning about 12 college credits per year. Neighborhood block group characteristics moderated this progress. Participants who were assigned to housing located in poorer, more violent, and less educated block groups earned credits at a significantly slower rate than participants assigned housing in more advantaged block groups. Our results suggest that the micro environments immediately surrounding residents of subsidized housing matter, even if they are situated within broader contexts of spatial and personal disadvantage.

Keywords

Neighborhood effects; self-sufficiency; subsidized housing

Introduction

A primary goal of affordable housing is to alleviate cost burdens for low-income households. Because of these economic benefits, some researchers and policymakers fear that subsidized housing may foster dependency, and they have experimented with how to promote self-sufficiency among residents. The ACHIEVEability model of affordable housing, which is the focus of this article, builds on existing efforts to promote self-sufficiency among subsidized households by promoting economic mobility through higher education. ACHIEVEability, a nonprofit housing organization that has offered subsidized housing in the disadvantaged community of West Philadelphia, Pennsylvania since 1983, requires employment and enrollment in a postsecondary degree program in return for subsidized

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housing. In this study, we exploit the quasi random assignment of ACHIEVEability participants to subsidized housing units to evaluate participants' progress in postsecondary education. We assess whether progress in this "subsidized housing + economic mobility" program is sensitive to the microneighborhood environments in which the subsidized housing units are located.

Background

Educational progress is influenced by a host of factors including educational aspirations, academic performance, absenteeism, and competing family and economic demands (Cairns, Cairns, & Neckerman, 1989; Ensminger & Slusarcick, 1992; Rumberger, 1987, 2004). These proximate factors are often used to explain the slower educational progress of disadvantaged youth, and they may also be important for adults and other "nontraditional" students (such as parents) who pursue additional education. The proximate factors that influence educational progress are, in turn, shaped by local neighborhood contexts, which can influence educational progress via social isolation, social organization, economic resources, and the physical environment.

Neighborhood Context and Educational Attainment

Social scientists have developed a number of theories to explain the association between neighborhood disadvantage and educational progress. The *social isolation* perspective posits that residents of poor neighborhoods are isolated from social networks and institutions that provide access to information about employment and education. In particular, they may lack access to community-based role models and educational settings that facilitate school aspirations and achievement (Jencks & Mayer, 1990; Wilson, 1987, 1996). Not only are there fewer highly educated role models and social contacts in disadvantaged neighborhoods, but residents are also more likely to face the competing influences of negative role models, who have dropped out of school or who engage in delinquent behavior (Anderson, 1999; Furstenberg, Cook, & Eccles, 1999; Harding, 2011). Although youth in poor neighborhoods report that they value education highly, they tend to have less cultural and social capital at their disposal to realize their aspirations (Harding, 2011). Most of the empirical research on neighborhood social isolation and educational progress has focused on outcomes for youth, but neighborhood social isolation could also shape adult educational progress, particularly if adults lack social support from other sources (Keene, Bader, & Ailshire, 2013; Offer, 2012).

The *social disorganization* perspective hypothesizes that disadvantaged neighborhoods limit the ability of residents to collectively monitor behavior and control crime. Neighborhood poverty has been linked to less trust, social cohesion, and collective efficacy, which in turn increases deviant behavior and criminal activity (Bursik & Grasmick, 1993; Sampson & Groves, 1989; Shaw & McKay, 1942). Despite these associations, there is considerable variation in the level of social organization across poor neighborhoods (Sampson, Raudenbush, & Earls, 1997). The link between neighborhood poverty, social disorganization, and crime has implications for educational attainment because involvement in deviant behavior can disrupt school progress (Browning, Burrington, Leventhal, &

Brooks-Gunn, 2008; Browning, Leventhal, & Brooks-Gunn, 2005), as can exposure to violent crime (Harding, 2009; Sharkey, 2010). Both the risk and the experience of victimization can cause stress and influence biological processes that affect concentration, cognitive performance, and absenteeism (Martinez & Richters, 1993; Pynoos, et al., 1987; Sauro, Jorgensen, & Teal Pedlow, 2003). Sharkey (2010) found that recent neighborhood homicides had large negative effects on youths' cognitive test scores, and these effects were stronger the more recent the homicide and the closer the homicide was to their residence, suggesting that the effects of homicide are both acute and very localized. These associations are meaningful at a population level: Harding (2009) found that neighborhood violence accounts for almost half of the association between neighborhood disadvantage and high school graduation. For adults, living in a neighborhood with a higher crime rate could affect educational performance directly via concentration and cognitive performance. It might also influence educational progress indirectly if adults must divert attention from their schooling to monitor their children who are at risk of victimization or at risk for (or already displaying) delinquent behavior.

The *resource perspective* highlights that neighborhood and school resources are closely linked due to the local funding of primary education in the United States. Poor neighborhoods tend to have lower quality schools and other locally funded institutions, undermining educational achievement and ultimate educational attainment (Brooks-Gunn, Duncan, & Aber, 1997; Small & Newman, 2001; Wilson, 1987). Neighborhood resources may be less important for adults pursuing higher education if institutions of higher education are not neighborhood-based. Under-resourced neighborhood institutions for youth may divert parents' attention away from higher education and make effective parenting more difficult, especially if parents need to take responsibility for supervision because there are fewer high-quality recreational and after-school programs or daycare centers.

Finally, the *physical environment perspective* links neighborhood disadvantage to the built environment (Crowder & Downey, 2010). Poor urban neighborhoods are more likely to have worse air quality, for example, because of proximity to industry and other environmental hazards, which affects health and, in turn, educational achievement (Ponce, Hoggatt, Wilhelm, & Ritz, 2005; Schulz et al., 2008). Housing quality is also worse in disadvantaged neighborhoods, which can affect health through exposure to allergens and structural problems that increase the risk of injury and cause stress, which are associated with greater school absenteeism (Moonie, Sterling, Figgs, & Castro, 2006). The physical environment also influences mental health, and researchers have found that poor physical conditions like neighborhood disorder and household overcrowding are associated with stress, depression, and hopelessness (Evans, 2003; Mair, Kaplan, & Everson-Rose, 2012).

Neighborhoods and the Education of Nontraditional Students

Theories of how neighborhood context influences educational achievement and attainment were developed and tested primarily on youth and focused on primary school experiences that shape the likelihood of college attendance. As we have illustrated above, however, these theories may also explain adult educational trajectories as well, either directly through the

same mechanisms that affect youth or indirectly by diverting adult attention from their own educational progress to the monitoring and care of their children.

The consideration of adult educational progress is important from a policy perspective, because rates of college attendance for less-advantaged adults are high, rates of completion are low, and a post-secondary degree improves wages substantially. The age of college students has increased steadily, and more than 40% of students are now over the age of 25 (Martinez & Day, 1999). Many older students are also parents, and returning to school after having a child is quite common. For example, following an urban birth cohort from the late 1990s, MacGregor (2007) found that 30% of married mothers, 40% of cohabiting mothers, and almost 50% of single mothers returned for additional schooling after the birth of their child. Thirteen percent of all undergraduates, and one third of all low-income undergraduates, are single parents (Goldrick-Rab & Sorensen, 2010; Miller, Gault, & Thorman, 2011).

Disadvantaged students, and other nontraditional students (like parents), often pursue more flexible college experiences, however, with higher rates of part-time attendance (O'Toole, Stratton, & Wetzel, 2003). They are more likely to pursue 2-year degrees at community colleges and other proprietary institutions and are less likely to live on the college campus than their more advantaged counterparts (Bozick, 2007; Kane & Rouse, 1999). They also tend to be more tenuously tied to their educational pursuits, because of the competing demands of parenting and working, which makes their overall progress slower and their likelihood of noncompletion higher (Bailey & Dynarski, 2011). As a result, nontraditional students may be more sensitive to adverse neighborhood conditions than traditional, younger college students.

Methodological and Policy Limitations of Past Research

Research on how neighborhood context influences educational achievement and attainment has several limitations from methodological and policy standpoints. From a methodological standpoint, the issue of selection bias is a crucial limitation of many observational studies of neighborhood effects (Harding, 2003; Kling, Liebman, & Katz, 2007; Sampson, Morenoff, & Gannon-Rowley, 2002). Families move into neighborhoods in nonrandom ways that are correlated with both the neighborhood context and their own educational prospects. Poor families, for example, are both more likely to live in poor neighborhoods and more likely to have children with lower academic achievement. In an observational study, we would observe a correlation between neighborhood poverty and academic achievement, even if the causal effect was between family poverty and schooling rather than neighborhood poverty and schooling.

Researchers have attempted to overcome the problem of nonrandom selection into neighborhoods through experimental and quasi experimental research designs. Two of the most notable are Gautreaux and Moving to Opportunity. Resulting from a racial discrimination class action lawsuit against the Chicago Housing Authority, the Gautreaux program offered public housing residents in Chicago, Illinois housing vouchers to move to city or suburban neighborhoods that were at least 70% white, and they were assigned to those neighborhoods in a quasi random fashion (see Polikoff, 2006 and Rubinowitz &

Rosenbaum, 2000 for reviews). Participants were offered the next available housing unit from a list of units based on their position in the wait list, regardless of their locational preferences (if they refused, it was unlikely they would be offered another unit). Exploiting this quasi random assignment to neighborhood to overcome systematic selection into neighborhoods, researchers found that, despite some initial difficulties acclimating to the climates and standards of suburban schools, minority youth who were relocated to low-poverty, mostly white suburbs had lower dropout rates, were more likely to be in college preparatory tracks, and were more likely to enroll in college (and in 4-year colleges) than their counterparts who relocated to higher poverty, mostly nonwhite neighborhoods within the city (Keels, Duncan, Deluca, Mendenhall, & Rosenbaum, 2005; Rosenbaum, 1995). Despite some initial improvements in self-sufficiency, long-term follow-ups revealed little change for parents in terms of employment or receipt of government assistance (DeLuca & Rosenblatt, 2010).

Inspired in part by the successful outcomes of the Gautreaux program, the Moving to Opportunity Experiment (MTO) was fielded in five cities, randomly assigning some public housing residents to receive a housing voucher to relocate to a low-poverty neighborhood and others to a control group that received no voucher (see http://www.nber.org/mtopublic/ for an overview). MTO produced few short-term educational improvements for youth (Gennetian et al., 2012; Sanbonmatsu, Kling, Duncan, & Brooks-Gunn, 2006), but did yield long-term improvements in college attendance and earnings for youth who relocated when they were young (Chetty et al., 2015). In contrast, there was little impact on the self-sufficiency of adults in terms of employment or government assistance receipt; to our knowledge, adult educational pursuits were not examined.

Despite methodological innovations to account for selection, key questions remain from a policy perspective. First, how do neighborhood effects interact with subsidized housing programs and other housing interventions? Recipients of housing subsidies are a more disadvantaged subset of the population, which means they may respond differently to neighborhood environments than other residents of poor neighborhoods. In MTO, for example, researchers hypothesized that the extreme disadvantage of the public housing participants was one reason why few adults became more self-sufficient after moving to low-poverty neighborhoods—they faced many barriers to stable employment, including single parenthood, disability, health problems, and multigenerational legacies of disadvantage (Briggs, de, Popkin, & Goering, 2010; Sampson, 2008).

Beyond the specific populations served by subsidized housing programs, neighborhood environments could influence the efficacy of housing interventions. If neighborhood conditions influence educational and employment outcomes, then housing interventions that operate in disadvantaged neighborhoods may be less effective than those located within more advantaged neighborhoods. For example, many Moving to Work (MTW) demonstration programs, which provide public housing authorities the opportunity to test interventions to boost employment and self-sufficiency, operate within the context of high-poverty neighborhoods (Massey & Kanaiaupuni, 1993). It is unclear whether attempts to boost self-sufficiency, without considering surrounding neighborhood context, render these interventions less effective than they might be otherwise.

Finally, the mixed results of the experimental and quasi experimental studies described above raise questions about *which* neighborhood conditions matter for educational progress, and *how much change* in those conditions is required to see improvement. The results of Gautreaux and MTO suggest that large changes in neighborhood racial composition, poverty, and moves to suburbs might be required to see noticeable improvements in youth educational achievement and adult self-sufficiency. Other studies, however, indicate that more modest variation in neighborhood context at very local levels, particularly neighborhood violence, could improve educational outcomes (Sharkey, 2010), suggesting that smaller scale interventions might be effective.

The Present Study

In the current study, we contribute to the theoretical literature on neighborhood effects and the policy literature on housing self-sufficiency interventions. We exploit the quasi random assignment of ACHIEVEability participants to subsidized housing units to evaluate participants' progress in postsecondary education, an indicator of progress toward self-sufficiency. We assess whether progress in this "subsidized housing + economic mobility" program is sensitive to the microneighborhood environments in which the subsidized housing units are located. Based on the prior literature, we hypothesize that residents of neighborhoods with greater social isolation, more social disorganization, fewer economic resources, and lower-quality physical environments will be associated with slower educational progress.

This study adds to our understanding of neighborhood context and subsidized housing interventions in several ways. First, we address the nonrandom selection of residents into neighborhoods by exploiting the quasi random assignment of participants in a subsidized housing program to housing units that differ in their microneighborhood contexts, which we measure as census block groups. This provides plausibly unbiased estimates of the association between microneighborhood characteristics and educational progress. Second, we test this association in a policy-relevant context, using a sample of very disadvantaged families located in a single disadvantaged community. Participants were randomly assigned to housing units within a single community area—West Philadelphia—which is largely African American and poor, but has a great deal of variation in the population composition and safety of individual block groups. This yields an implementation context with external validity for many affordable housing interventions and reveals whether the modest manipulation of block group characteristics within a single community could boost resident outcomes and improve the efficacy of housing interventions—a more modest and scalable policy proposition than the large-scale moves tested by programs like Gautreaux and MTO.

Data and Methods

The ACHIEVEability Program

The ACHIEVEability model of affordable housing promotes economic mobility through higher education. ACHIEVEability, a nonprofit housing organization that has offered subsidized housing to low-income and formerly homeless single-parent families in the disadvantaged community of West Philadelphia since 1983, requires employment and

enrollment in a postsecondary degree program in return for subsidized housing. The philosophy behind this "housing + economic mobility" model of subsidized housing is that a college degree (or equivalent vocational credential) is one of the best ways to permanently break the cycle of poverty and increase self-sufficiency. This argument is compelling given declining wages of high school graduates relative to college graduates (Goldin & Katz, 2008); full-time, low-wage workers can no longer afford private housing in many metropolitan areas (Stone, 2010).

ACHIEVEability provided eligible families one of 152 subsidized housing units, which were clustered within a 2-mile radius in West Philadelphia. The units have been financed with Low-Income Housing Tax Credit (LIHTC), Supportive Housing Program (SHP), Affordable Housing Program (AHP), Community Block Grant Program (CDBG), PennHOMES, and HOME Investment Partnerships Program (HOME) funds and are owned and managed by the ACHIEVEability nonprofit organization. Families are eligible for the ACHIEVEability program if they meet the following criteria: (a) documented unstable housing situation or homeless; (b) single parent with primary custody of at least one child; (c) monthly income between $1,200 and $1,800; (d) able to do activities of daily living; and (e) motivation to go to school and to earn a postsecondary degree.

Families typically hear about the program from former or current participants, from staff at shelters and social services agencies, or at presentations by ACHIEVEability staff at different venues. Most families come from Philadelphia, although a handful come from the surrounding suburbs and occasionally from out of state. The admissions process starts with an information session where program benefits and expectations are reviewed. Families who decide to continue with their application then submit documents to assess their basic eligibility, take the Test of Adult Basic Education (TABE) to assess their baseline reading and math skills levels, and undergo interviews to assess their motivation for and fit with the program. ACHIEVEability applicants are clearly not a random draw of people who qualify for subsidized housing: The admissions process produces a select group of motivated participants who seem willing and able to balance work, schooling, and parenting in exchange for a housing subsidy. Once a family is accepted into the program, they are offered the next available ACHIEVEability housing unit. Much like the quasi random assignment in the Gautreaux program, we show below that the assignment of ACHIEVEability units is uncorrelated with a particular family's characteristics and offered regardless of the family's preferences. ACHIEVEability participants are thus assigned to housing units (and therefore city blocks) on a quasi random basis, reducing the chance that selection bias drives any results we observe. In other words, if we find no correlation between participants' characteristics at intake and the neighborhood characteristics of the housing to which they were assigned, we can be more confident that our results are not driven by participants with greater learning motivation or aptitude self-selecting into subsidized housing located on safer or more affluent blocks.

Families must abide by the requirements of ACHIEVEability's Family Self-Sufficiency Program to remain eligible for their subsidized housing. These requirements include: (a) Timely payment of rent and compliance with lease requirements; (b) Completion of General Educational Development (GED) test (if necessary) and enrollment in at least a 2-year

college or vocational program, earning around 15 credits per year; (c) Employment of at least 30 hours per week, and wages at least $8 per hour; if unemployed, availability of employment supports and actively seek employment; and (d) Completion of structured goal plan; quarterly meetings and progress reviews with Self-Sufficiency Coaches who challenge, motivate, and otherwise support progress. Individuals "graduate" from ACHIEVEability when they complete at least a 2-year college degree or equivalent vocational credential and secure stable employment with sufficient earnings to no longer require a housing subsidy. Between fiscal years 2010 and 2013, 41 participants graduated from ACHIEVEability, but there is considerable variation in the rate of progress and ultimate success, as we document below. Of the participants in our sample, about two thirds (63%) remained in the program during our entire observation period; 8% left because they became self-sufficient; 23% left either voluntarily or involuntarily because they failed to meet the program requirements detailed above (including adequate educational progress); and the remaining 6% left for personal reasons unrelated to program requirements.

Data and Sample

ACHIEVEability collects routine quarterly information on the progress of participants and their children. Participants must submit transcripts showing the number of college credits enrolled in and completed each semester to maintain their eligibility. In addition to this information, ACHIEVEability collects detailed information from all participants and their family members at the time of intake. This includes demographic information about household members, employment and residential histories, and other risk factors such as mental health diagnoses or prior incarceration.

We drew on the administrative records of participants in the ACHIEVEability program who entered between 2007 and 2013 for our analysis.[1] This yielded an analytic sample of 84 participants. ACHIEVEability records listed the address of the subsidized housing unit to which each participant was assigned. We geocoded these addresses to identify the Census block group in which it was located. Census block groups are clusters of census blocks containing between 600 and 3,000 people. The housing units were located within 30 different block groups in West Philadelphia.

We then appended geography-specific data from the Neighborhood Information System (NIS) that is operated by the Cartographic Modeling Lab at the University of Pennsylvania (http://www.cml.upenn.edu/#!nis/c13cq). The NIS is an archive of data on the social and built environment of Philadelphia that are compiled from sources including the U.S. Census and the Philadelphia Police Department. We appended each of the housing units with variables representing geographic information for 2010 for the block group in which each housing unit was located. The geographic variables are described below.

[1]ACHIEVEability has a supplemental transitional program for formerly homeless families who are not yet prepared to meet the education and employment requirements, but we exclude these participants from our analysis because they are assigned to particular housing units in a nonrandom fashion. Records do not exist in a usable format prior to 2007, which is why we use this as the first year of our analysis.

Measures

Our key dependent variable is a time-varying measure of the number of educational credits a participant has earned. This measure was calculated by recording the number of credits completed at the end of each fall, spring, and summer semester in each year. We tracked cumulative totals in this measure over time as a function of the number of months the participant had been in the ACHIEVEability program.

We included a set of control variables measured at the intake survey for each participant: highest education degree earned; gender; number of children; employment status; age; year of entry; and measures of health and well-being including depressive symptoms, chronically homeless, drug or alcohol problems, domestic violence, criminal background, and private health insurance. ACHIEVEability coaches also evaluated the education, financial, personal development, and parenting conditions of the family at the time of intake and at subsequent quarterly assessments. They assigned the family a "continuum score" from 0 to 100, with higher numbers indicating greater well-being on that indicator. The education continuum score ranges from 0 (no GED or high school diploma, cannot pass aptitude test, and limited reading/writing skills) to 100 (has 4-year degree). The financial continuum score ranges from 0 (welfare only source of income, poor financial management skills, no savings, outstanding debt) to 100 (has stable job with no cash assistance, savings of at least $1,000, no outstanding debt). The personal development continuum score ranges from 0 (poor home management skills, poor diet, limited social support, addiction) to 100 (plan in place for permanent housing, maintaining sobriety, healthy relationships, practices preventive health care, excellent home management skills). And finally, the parenting continuum score ranges from 0 (parent is unaware of children's skill levels, children lack proper diet and hygiene, not receiving medical care, lack of parental monitoring, potential for neglect or abuse) to 100 (children earning a B average or better in school, appropriate parental monitoring and support, and adequate nutritional and medical care).

We also constructed several measures of block group characteristics from the census and crime data linked to each participant's address. First, to measure social isolation, we included a measure of the percentage of residents age 25 or older who had at least a bachelor's degree. Lower values on this measure indicate greater isolation from highly educated neighbors. To measure economic resources, we included a measure of the block group poverty rate, or the percentage of families with incomes below the federal poverty line. As a proxy for the physical environment, we included a measure of the vacancy rate— the percentage of housing units that were vacant or abandoned. And finally, as a measure of social disorganization and crime, we included measures of the violent crime rate and the property crime rate for each block group. The violent crime rate measured the number of Part 1 crimes against persons—homicide, sexual assault, robbery, aggravated assault—per 10,000 residents. The property crime rate measured the number of Part 1 crimes against property—burglary and theft—per 10,000 residents.

Method

Our analysis proceeded in two steps. First, we tested whether participants were assigned to housing units (and their corresponding block groups) in a quasi random fashion by assessing

whether the personal characteristics of respondents at the time of intake were correlated with the characteristics of the block group. If participant characteristics were correlated with block group characteristics, this would be evidence of nonrandom assignment to block groups. We tested this by regressing block group characteristics on the characteristics of participants at the time of intake.

After verifying quasi random assignment, we tracked the educational progress of participants over time as a function of their personal characteristics and the characteristics of their block groups. We do this using a hierarchical growth curve model, with multiple observations of a participant's college credits earned over time (t), nested within participants (i), who are nested within block groups (j). (The latter clustering reflects the fact that some block groups contain multiple ACHIEVEability housing units.) We estimated the following models:

$$(\text{Progress})_{tij} = \beta_{0tij} + \beta_1(\text{MonthinACHA})_{tij} + \varepsilon_{tij} \quad \text{Level 1}$$

$$\beta_{0tij} = \lambda_{0ij} + \sum_{\lambda=1}^{N} X_{ij} + \pi_{ij} \quad \text{Level 2}$$

$$\beta_{1tij} = \lambda_{1ij} + \sum_{\lambda=1}^{N} X_{ij} + \pi_{ij}$$

$$\beta_{0tij} = \lambda_{0j} + \lambda_1(\text{CrimeRate})_j + \sum_{\lambda=2}^{N} X_j + \pi_j \quad \text{Level 3}$$

$$\beta_{1tij} = \lambda_{0j} + \lambda_1(\text{CrimeRate})_j + \sum_{\lambda=2}^{N} X_j + \pi_j$$

Level 1 estimates a time-varying within-participant model that regresses educational progress—the number of educational credits earned—on the number of months in ACHIEVEability. On average, there were 5.2 observations, or semesters, for each participant. The coefficient on the Level 1 intercept β_{0tij} estimates the initial number of credits earned at the time a participant started ACHIEVEability. The coefficient for the Level 1 slope β_{1tij} shows the number of credits earned per month in ACHIEVEability. Level 2 of the model tests whether the Level 1 intercept and slope vary as a function of a vector of N participant characteristics measured at program intake, and Level 3 of the model tests whether the Level 1 intercept and slope vary as a function of a vector of M neighborhood block group characteristics.

We expect statistically insignificant associations between the neighborhood characteristics and the Level 1 intercept (educational credits earned at the time of intake), indicating quasi random assignment to neighborhoods. We expect statistically significant associations between neighborhood block group characteristics and the Level 1 slope, indicating support for our hypotheses that educational progress varies based on neighborhood conditions, with slower educational progress in neighborhoods with more disadvantaged conditions.

Results

Table 1 presents the descriptive characteristics of ACHIEVEability participants and their block groups at the time of program entry (2007–2013). Most participants (80%) had attained only a high school education through a diploma or a GED, although a handful (17%) had some postsecondary schooling when they entered ACHIEVEability. Virtually all program participants were women, and all had children, reflecting the fact that the program targets single parents. Average maternal age at intake was 27. Most (87%) were employed at the time of intake as well, in as much as employment or active job search was a program requirement. The average education, financial, personal development, and parenting continuum scores were all about 20 (on a scale from 0 to 100) at intake, but there was considerable variation around these means. Finally, coaches reported that about one tenth of participants displayed depressive symptoms, were chronically homeless, had private health insurance, or had a history of domestic violence victimization. A small number of participants (<5%) reported problems with drugs or alcohol or a criminal history.

Table 1 also presents the characteristics of the block groups containing ACHIEVEability housing units to which participants were assigned. On average, these block groups were quite disadvantaged, reflecting the disadvantage of the West Philadelphia community: the average poverty rate was 31%, fewer than 5% of adults had a bachelor's degree, 6% of housing units were vacant, the violent crime rate was 16 per 10,000 residents, and the property crime rate was 30 per 10,000 residents. These averages mask considerable variability among block groups, which can be seen in the standard deviations and ranges in Table 1. The block group poverty rates ranged from a low of 8% to a high of 55%. College attainment rates varied from 0% to 10% of the adult population. Vacancy rates varied from <1% to >20% of housing units. Violent crime rates varied from 5 to 25 incidents per 10,000 residents, and property crime rates varied from 12 to 63 incidents per 10,000 residents. Additionally, the correlations among these block group characteristics were quite modest: the poorest block groups did not necessarily have the highest vacancy rates or the highest crime rates. Appendix 1 shows the inter item correlations among block group characteristics.

Quasirandom Selection Into Housing Units

If there is quasi random assignment of participants to subsidized housing units and the block groups in which they are located, we should observe statistically insignificant associations between participant characteristics and block group characteristics. This is what we observe in Table 2, which shows the results of models that regress each neighborhood block group characteristic on participants' characteristics at program entry. No participant characteristics consistently predicted neighborhood poverty rates, college attainment rates, housing vacancy

rates, and crime rates. Given the number of significance tests estimated in these models, we would expect false-positive significant results 5% of the time, which is about what we see in Table 2; none of these are statistically significant if we employ a Bonferroni correction for multiple comparisons (see Kling et al., 2007 for a similar approach analyzing MTO data). Furthermore, no participant characteristic is a significant predictor in more than one model.

Multilevel Growth Curve Models of Educational Progress

The multi level growth curve models in Table 3 estimate a within-participant model that regresses college credits earned on the number of months in the program. The intercept estimates the number of college credits earned at month = 0, or the time of program entry. The slope reports educational progress as the rate of college credits earned (i.e., the number of credits earned per month in the program). All models include all participant-level controls listed in Table 1 (coefficients for these are not listed but are available upon request). In all models, the neighborhood and participant characteristics have been centered at their sample means, so the intercept can be interpreted as the number of educational credits earned by the average participant at the time of program entry. Consistent with the quasi random assignment of participants to block groups and the results of Table 2, the coefficients for associations between block group characteristics and intercepts are small and statistically insignificant, meaning they are unassociated with participants' number of educational credits at program entry.

The slope coefficients show that ACHIEVEability participants progressed modestly in their educational pursuits in line with the program requirements, earning about one credit per month, on average, or the equivalent of four 3-credit college courses per year. The associations between block group characteristics and the slopes reveal whether block group conditions affected educational progress. Block group poverty rate was associated with educational progress ($\beta = -0.009$, $p < .01$), with higher poverty rates yielding slightly slower educational progress. This association was statistically significant but substantively small: a 10 percentage point increase in neighborhood poverty was associated with earning credits at a rate that was 0.1 credits per month slower, translating to about a credit per year. Figure 1 uses the coefficients from Table 3 to estimate the educational progress of participants living in neighborhoods with poverty rates of 15, 30, and 45%, which correspond to about the 25th, 50th, and 75th percentiles of the poverty distribution in our West Philadelphia sample. The trajectories diverge slightly over time, reflecting the modest difference in educational trajectories across block groups with different poverty rates.

The second model of Table 3 shows results for the block-group level measure of the share of college-educated residents. A 10 percentage point increase in the number of adult neighbors with a bachelor's degree was associated with earning college credits at a rate that was 0.3 credits per month faster, translating to about 3.6 credits per year, or just over one course. Figure 2 plots the coefficients from Table 3 for participants in neighborhoods with college completion rates of 5, 8, and 12% (reflecting quartiles of the distribution), revealing slopes that diverge modestly over time. After 2 years in the program, participants in block groups with bachelor's completion rates of 5% had earned about five fewer college credits than participants in block groups with bachelor's completion rates of 12%. Finally, the third

model of Table 3 shows no significant association between housing vacancy rates and educational progression for ACHIEVEability participants.

The final two models of Table 3 follow a similar format and show the results for neighborhood violent and property crime. Effects for violent crime are statistically significant: a 10-incident per year increase in the violent crime rate is associated with a rate of credit completion that is 0.14 per month slower. This translates to about 1.7 fewer credits earned per year. Figure 3 plots educational trajectories for block groups with 5, 15, and 25 violent crimes per 10,000 residents (again reflecting quartiles of the distribution). The diverging trajectories for low- and high-crime block groups are evident. Results for property crime in Model 5 were substantively small and did not reach conventional levels of significance.

The results described above translate into divergent educational trajectories for participants who happen to be placed in poorer, more violent, and less-educated block groups. As a result, residents of such block groups were also more likely to exit the ACHIEVEability program prematurely without meeting their educational and self-sufficiency goals. Table 4 shows the log-likelihood of exiting the program without becoming self-sufficient, relative to other participants (who either remained in the program or met their self-sufficiency goals). Those who left without becoming self-sufficient resided on block groups that had higher rates of crime, and lower levels of education, than other participants.

We also examined whether the characteristics of the educational programs in which participants enrolled varied across block groups. We did not find any systematic evidence that this was the case (Model 2 of Table 4). We found few consistent differences across the different block groups in the type of college in which participants enrolled, or in the distance they had to travel to the college or to public transportation (Models 3 and 4 of Table 4). These findings suggest that differential accessibility to higher educational options across neighborhoods did not produce the divergent educational trajectories we identified.

Discussion

In this article, we capitalized on the quasi random assignment of participants to subsidized housing units in the ACHIEVEability "subsidized housing + economic mobility" program to assess whether participants' progress in higher education was sensitive to the microneighborhood environments in which their housing units were located. Participants progressed modestly in their educational pursuits in line with program requirements, earning about one credit per month on average, or the equivalent of 12 college credits per year. Immediate neighborhood conditions, measured at the block group level, moderated this progress, with participants who were assigned to poorer, more violent, and less-educated block groups earning credits at a slower rate than those assigned to more advantaged block groups. The divergent educational trajectories across neighborhood conditions were substantively important. For example, participants at the 25th percentile of the neighborhood poverty distribution (15% poverty rate) had earned an average of 27 college credits after 2 years in ACHIEVEability, compared with participants in the 75th percentile of the neighborhood poverty distribution (45% poverty rate) who had earned only 18 credits. We

found little effect of neighborhood physical environment, measured by vacant housing and property crimes, on educational progress.

These findings add to our theoretical understanding of neighborhood effects in several ways. First, our use of quasi random assignment to housing units offers an improvement over observational studies because we can be more confident that our results are not because of the selection of unusually motivated or talented participants into more advantaged neighborhoods. Second, our focus on block-group level variation within a single disadvantaged urban community reveals that microenvironments immediately surrounding residents matter, even if they are situated within a broader context of spatial disadvantage. Third, we extend the consideration of neighborhood effects to a unique and policy-relevant population and outcome: we examine the progression of higher education for disadvantaged single mothers with histories of unstable housing. Finally, our consideration of multiple neighborhood conditions—which are highly correlated at the national level but only modestly correlated within West Philadelphia—suggests that the immediate neighborhood shapes educational progress via economic resources, social isolation, and social organization.

Of course our analysis is not without limitations. Our sample is relatively small and confined to a disadvantaged area of Philadelphia, which in some ways makes the fact that we identified statistically significant effects even more compelling, but it does limit our ability to generalize findings to broader populations and hinders our ability to examine additional subgroup variation in educational progress. Although we were able to test the quasi random assignment of participants to housing units, we were only able to do so using characteristics of the participants that were collected in ACHIEVEability administrative records. It is possible that unobserved participant characteristics that are orthogonal to these observed characteristics could bias our results, although this concern is much smaller here than it is in traditional observational studies. One could also argue that block groups are too large to study effects of the immediate neighborhood environment, or that administratively defined boundaries like census block groups do not correspond well to the environments where residents actually spend their time (Basta, Richmond, & Wiebe, 2010). Finally, our results speak to educational progress that occurred within the context of a "subsidized housing + economic mobility" program that offered both stringent requirements and considerable supports to its participants; we would not expect to see such high rates of educational progress among disadvantaged residents not enrolled in this program.

The finding that neighborhood context moderates progress toward self-sufficiency in subsidized housing has a number of implications for affordable housing policy. Most simply, we find that the ACHIEVEability model of "subsidized housing + economic mobility" works. Disadvantaged, unstably housed single mothers are able to make progress toward higher education given the right combination of requirements and supports. But our results also highlight that the efficacy of housing interventions like this one may be hindered by the neighborhoods in which they are implemented. Our study location in the disadvantaged area of West Philadelphia precludes us from drawing conclusions about the efficacy of interventions that are located in advantaged communities, but we find that neighborhoods with modestly better conditions lead to measureable improvements for participants. Thus,

disadvantaged neighborhood conditions may undermine the efforts of housing policies to promote resident self-sufficiency. A more positive interpretation of these findings is that modest improvements in immediate neighborhood environments could help, and this is a fruitful direction for future policy initiatives.

These findings diverge from those of MTO and Gautreaux, which found few effects on adult self-sufficiency. The key difference between these programs and ACHIEVEability is that they were residential mobility-only interventions, offering relocation assistance but no other social or programmatic supports after relocation. In contrast, ACHIEVEability expects a lot from its participants in terms of employment and education, but also offers considerable financial and social support to achieve those self-sufficiency goals. The ACHIEVEability model suggests that poor single mothers, who are often the targets of affordable housing policy, can make progress toward self-sufficiency with a combination of subsidies, supports, and economic requirements, but neighborhood context can shape the efficacy of the intervention. This suggests that locating affordable housing and supportive services in more advantaged neighborhoods might improve resident self-sufficiency. With the right supports for residents in place, modest improvements in immediate neighborhood conditions, block by block, might also yield measurable improvements in the effectiveness of affordable housing policies, although this would require block-level interventions to boost human capital and reduce crime.

Acknowledgments

Biographies

Laura Tach is a sociologist who studies urban poverty and family life. She is currently an assistant professor of Policy Analysis and Management at Cornell University. Her mixed-methods research examines how neighborhoods and families reproduce inequality and how public policy affects these processes.

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Terry Guerra served at ACHIEVEability between 1996 and 2014, most recently as its Director of Special Projects. Between 2006 and 2011, she was also the Research Core Community Co-Director for the Philadelphia Collaborative Violence Prevention Center, an Urban Partnership Academic Center of Excellence. Her main interests are family self-sufficiency, community development, and higher education access.

Douglas Wiebe is an associate professor in the Department of Biostatistics and Epidemiology at the University of Pennsylvania. His research focuses on environmental risk factors for injury, alcohol use and availability, and the impact of daily routines on health-related behavior.

Therese Richmond is the Andrea B Laporte professor of Nursing and the associate dean for Research and Innovation in the School of Nursing at the University of Pennsylvania. Her research examines injury and violence, with a focus on groups of injured patients most likely to experience suboptimal outcomes. She also studies how to prevent violence and reduce its impact on individuals, families, and communities.

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Appendix 1

Correlations among block group characteristics ($N = 30$)

	Poverty rate	% Bachelor's degree	Vacancy rate	Violent crime rate	Property crime rate
Poverty rate	1				
% Bachelor's degree	−0.07	1			
Vacancy rate	0.35	0.06	1		
Violent crime rate	0.16	0.07	−0.17	1	

	Poverty rate	% Bachelor's degree	Vacancy rate	Violent crime rate	Property crime rate
Property crime rate	−0.10	0.26	0.10	0.21	1

Figure 1.
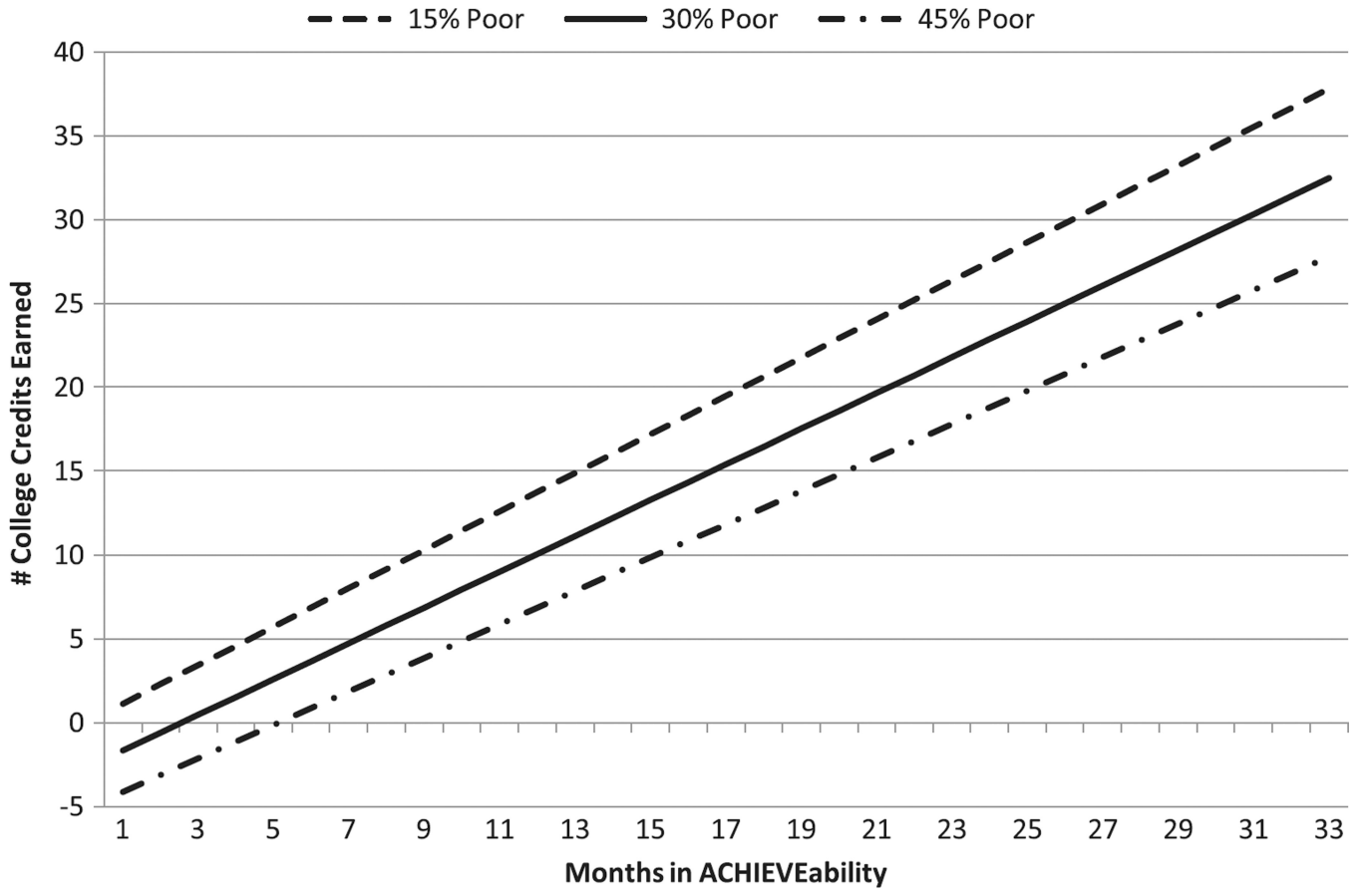
College credits earned in AC HIEVEability by block group: poverty rate.

Source: Values calculated from Table 3 with participant controls centered at baseline means.

Figure 2.
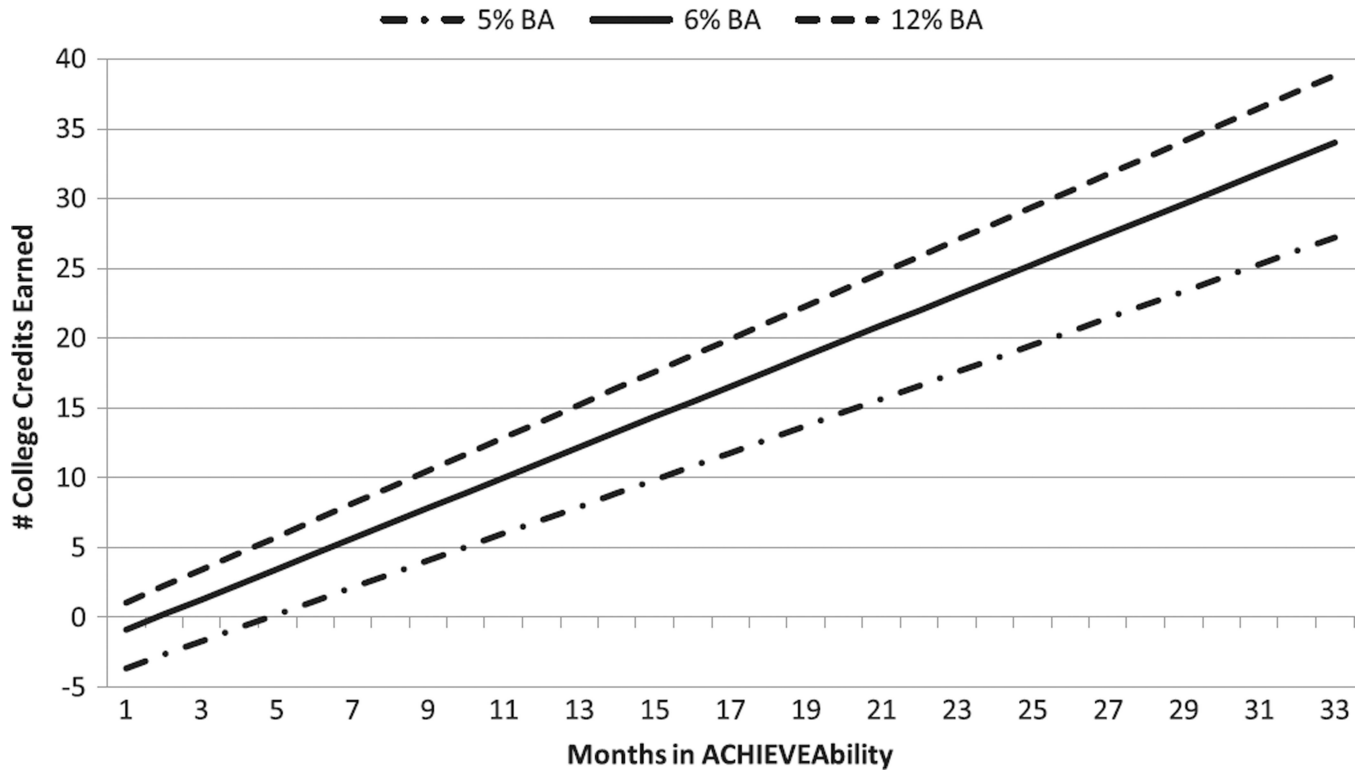College credits earned in AC HIEVEability by block group: percentage of residents with at least a bachelor's degree.

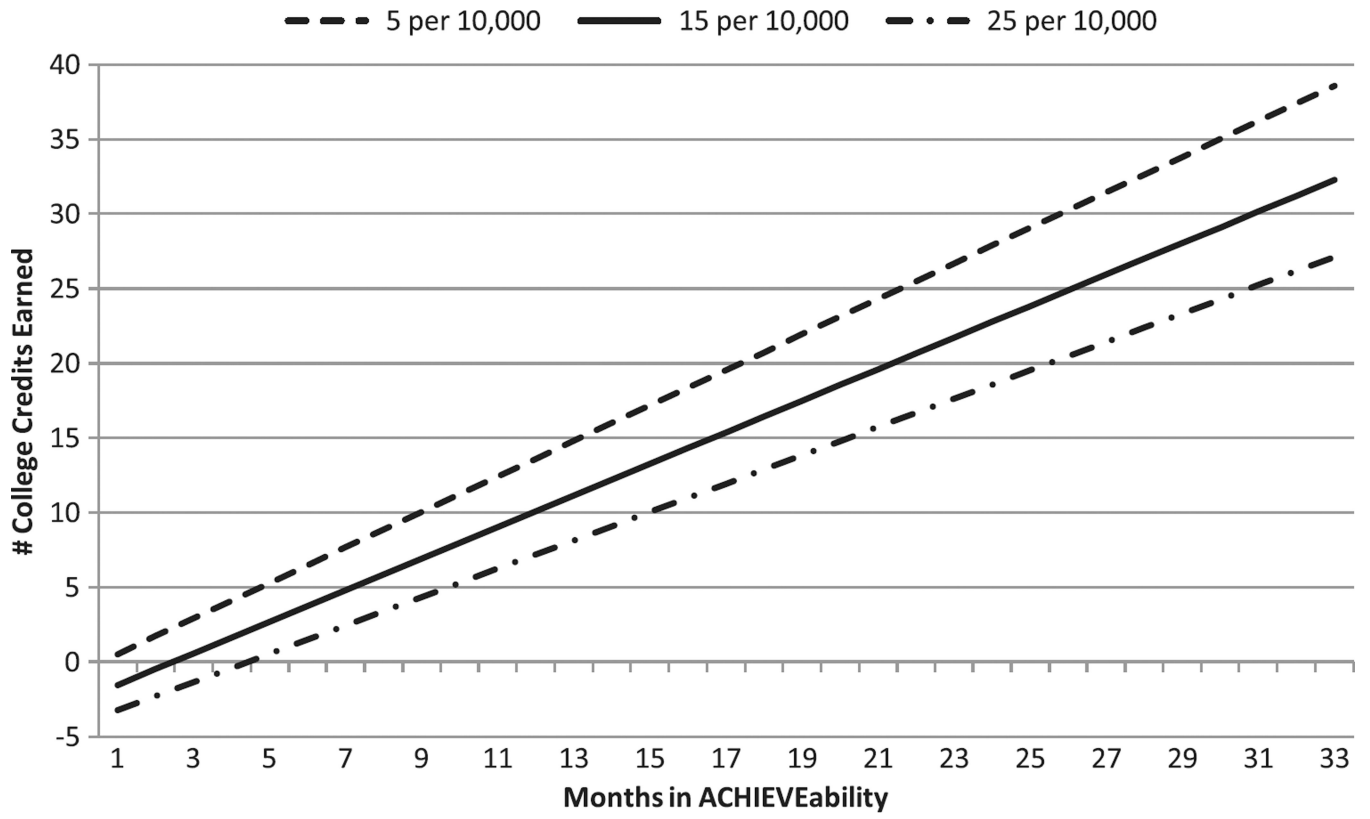*Source*: Values calculated from Table 3 with participant controls centered at baseline means.

Figure 3.

College credits earned in AC HIEVEability by block group: violent crime rate.

Source: Values calculated from Table 3 with participant controls centered at baseline means.

Table 1

Descriptive characteristics of participants and block groups at program entry (N = 84).

Characteristics	Mean/Percentage	*SD*	Min	Max
Participants				
Education				
HS Diploma or GED Only	80%			
Additional Post-HS Education	17%			
Male	2%			
Number of children				
One	56%			
Two	33%			
Three	6%			
Four or more	6%			
Employed at entry	87%			
Age at entry	26.69	5.28	19	43
Year of entry				
2007	17%			
2008	8%			
2009	23%			
2010	8%			
2011	12%			
2012	21%			
2013	10%			
Continuum scores				
Education	19.55	26.87	0	84
Financial	18.13	25.11	0	76
Personal	18.20	24.45	0	72
Parenting	17.14	23.35	0	76
Health and well-being				
Depressive symptoms	9%			
Chronically homeless	9%			
Drug or alcohol problems	2%			
Domestic violence	10%			
Criminal history	5%			
Private health insurance	10%			
Block group				
% Poor	30.88	11.11	7.97	54.67
% Bachelor's degree	4.75	2.92	0	9.85
% Vacant housing units	5.82	5.41	0.53	20.21
Violent crime rate (per 10,000)	15.60	6.38	5	25
Property crime rate (per 10,000)	30.47	19.00	11.7	62.74

Note: HS = high school; GED = General Educational Development test.

Table 2

OLS regressions of block group characteristics on participant characteristics at program entry (N = 84).

Respondent characteristics	Neighborhood characteristic				
	Poor (%)	Bachelor's degree (%)	Vacant housing units (%)	Violent crime rate	Property crime rate
Education (Ref=HS diploma/GED) additional higher education	−3.47 (3.36)	0.15 (0.88)	−1.69 (1.72)	1.91 (1.92)	2.82 (5.36)
Male	7.12 (9.19)	0.27 (2.40)	−2.59 (4.71)	5.59 (5.24)	13.98 (14.67)
Number of children	−2.58 (1.66)	0.31 (0.43)	−0.82 (0.85)	−0.00 (0.95)	2.04 (2.65)
Employed at entry	−5.94 (3.93)	0.48 (1.03)	−0.07 (2.02)	−2.20 (2.24)	6.54 (6.28)
Age at entry	−0.04 (0.26)	0.07 (0.07)	−0.07 (0.13)	0.06 (0.15)	0.24 (0.42)
Year of entry	1.64 (1.07)	0.41 (0.28)	0.86 (0.55)	−0.16 (0.61)	2.38 (1.71)
Continuum scores					
Education	0.10 (0.16)	0.12** (0.04)	−0.06 (0.08)	0.07 (0.09)	0.29 (0.26)
Financial	0.04 (0.17)	0.01 (0.04)	0.04 (0.09)	0.01 (0.010)	0.43 (0.27)
Personal	−0.18 (0.27)	−0.03 (0.07)	−0.02 (0.14)	−0.11 (0.15)	−0.04 (0.45)
Parenting	0.07 (0.28)	−0.08 (0.07)	0.07 (0.14)	0.02 (0.16)	−0.56 (0.45)
Health and well-being					
Depressive symptoms	6.04 (4.99)	−0.20 (1.30)	−1.10 (2.56)	1.10 (2.85)	−12.30 (7.98)
Chronically homeless	−6.43 (4.57)	−0.66 (1.19)	−0.93 (2.34)	−5.72* (2.61)	−6.65 (7.29)
Drug or alcohol problems	4.16 (9.28)	1.64 (2.42)	−3.21 (4.76)	8.54 (5.30)	−6.74 (14.82)
Domestic violence	−0.13 (4.47)	−0.13 (1.16)	0.81 (2.29)	0.87 (2.54)	4.59 (7.13)
Criminal history	−4.53 (7.25)	0.87 (1.89)	−0.77 (3.71)	3.63 (4.13)	18.58 (11.57)

Neighborhood characteristic

Respondent characteristics	Poor (%)	Bachelor's degree (%)	Vacant housing units (%)	Violent crime rate	Property crime rate
Private health insurance	0.92 (4.96)	−0.18 (1.29)	−0.21 (2.54)	−6.24* (2.83)	−9.43 (7.91)
Constant	33.39*** (5.25)	3.04 (1.36)	4.39 (2.69)	18.21*** (2.99)	17.52 (8.37)

Note: OLS = ordinary least squares; HS = high school; GED = General Educational Development test.

*
$p < .05$;

**
$p < .01$;

***
$p < .001$.

Table 3

Multilevel growth curve regressions of number of college credits on time in ACHIEVEability and block group characteristics ($N = 84$).

	Coeff. (SE)
Model 1. Block group poverty	
Intercept	−1.685
	(5.609)
Block group % poor	−0.023
	(0.134)
Months in AC HIEVEability	1.090 ***
	(0.027)
*Block group % poor	−0.009 **
	(0.003)
Model 2. Block group education	
Intercept	−1.853
	(5.688)
Block group % bachelor's degree	−0.108
	(0.514)
Months in AC HIEVEability	1.120 ***
	(0.027)
*Block group % bachelor's degree	0.030 **
	(0.010)
Model 3. Block group vacant housing	
Intercept	−2.389
	(5.584)
Block group % housing vacant	−0.019
	(0.274)
Months in AC HIEVEability	1.094 ***
	(0.028)
*Block group % housing vacant	−0.010
	(0.009)
Model 4. Block group violent crime	
Intercept	−2.345
	(5.556)
Block group violent crime rate	−0.168
	(0.227)
Months in AC HIEVEability	1.086 ***
	(0.027)
*Block group violent crime rate	−0.014 **
	(0.004)
Model 5. Block group property crime	
Intercept	−4.375
	(5.722)
Block group property crime rate	−0.081
	(0.083)
Months in AC HIEVEability	1.099 ***
	(0.027)
*Block group property crime rate	−0.002 +
	(0.001)

Note: All models include controls for all participant characteristics from Table 1. All covariates are centered at their baseline sample means.

[+]
$p < .1$;

[*]
$p < .05$;

[**]
$p < .01$;

[***]
$p < .001$.

Table 4

Regressions of program outcomes and educational characteristics on block group characteristics ($N = 84$).

Block group characteristic	Model 1	Model 2		Model 3	Model 4
	Program exit reason	**Type of institution**		**Distance**	**Distance**
	not self-sufficient	Online/for profit	4-Year	to university	to subway
% Poor	−0.010 (0.024)	−0.039 (0.035)	−0.040 (0.028)	−0.022 (0.056)	−0.002 (0.003)
% Bachelor's degree	−0.236* (0.098)	−0.183 (0.137)	0.005 (0.102)	0.423* (0.205)	−0.029** (0.009)
% Vacant housing	0.047 (0.044)	0.009 (0.065)	−0.058 (0.066)	0.068 (0.113)	−0.009 (0.005)
Violent crime rate	0.006 (0.041)	−0.024 (0.059)	0.030 (0.047)	−0.047 (0.096	−0.009* (0.004)
Property crime rate	0.035+ (0.019)	−0.008 (0.022)	0.002 (0.016)	−0.002 (0.033)	−0.007* (0.003)

Note: Standard errors in parentheses. Omitted reference category in Model 1 is remaining in program or meeting self-sufficiency goals. Omitted reference category in Model 2 is community college. Distance in Models 3 and 4 is measured in miles.

$p < 0.05$;

**
$p < 0.01$.