Residential Mobility Interventions as Treatments for the Sequelae of Neighborhood Violence

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Abstract

Despite recent reductions in neighborhood crime and poverty, children and adults in many unsafe neighborhoods are traumatized by witnessing or living in constant in fear of violence. After reviewing the evidence on neighborhood violence and mental health, we focus on the promise of residential mobility intervention programs to reduce neighborhood-violence-related mental health problems. Most of our attention is devoted to the Moving to Opportunity (MTO) residential mobility program, which randomly assigned families living in public housing in high-poverty urban neighborhoods opportunities to move to low-poverty neighborhoods. An evaluation of adult and child outcomes four to seven years after baseline revealed substantial program-based improvements in adults' perceptions of neighborhood safety and victimization and in adults' mental health. Impacts on the violence experienced by children were much smaller than for adults and also smaller for boys than girls. Mental health improvements were also confined to girls. Evidence suggests that boys' problem behaviors may actually have worsened as the result of their families' receiving the MTO program offer to move to low-poverty neighborhoods.

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I. Introduction

Statistics on neighborhood violence and children's mental health tell a grim story (CDC 1997; AAP 2000; CDC 2000). In a national study, more than one third of girls and close to half of boys between the ages of 12 and 17 report witnessing violence (Kilpatrick et al., 2003). Prevalence estimates in local studies drawn from poor urban neighborhoods are much higher (e.g., Purugganan, Stein et al. 2000; Campell and Schwartz, 1997). As we illustrate below, qualitative studies of families living in public housing in high-crime neighborhoods corroborate these statistics with chilling personal accounts.

For children, the evidence we review suggests that witnessing neighborhood violence is associated with a host of adverse health consequences including depression, anxiety and post-traumatic stress disorder, as well as poor school performance and aggression. However, the independent contribution of neighborhood violence has rarely been established in these studies. Since families living in violent neighborhoods are more likely to exhibit partner or parent-child violence, as well as to experience socioeconomic and other disadvantageous family conditions, it is far from clear whether poor child outcomes are the product of family-specific or neighborhood-specific conditions. Moreover, since children, especially adolescent children, have considerable say in selecting peer groups and community activities, it is also unclear whether improvements in community conditions would translate into large reductions in the levels of neighborhood violence they witness and may engage in.

This chapter reviews evidence on trends in violence and studies of the links between neighborhood violence and children's mental health. However, its primary focus is on the potential of residential mobility interventions to improve health and well-being for both children and adults. Several noteworthy programs developed in the past 30 years have provided families living in crime-ridden inner-city neighborhoods opportunities to move to much safer and more affluent neighborhoods. In the case of the Chicago Gautreaux program, which was in operation between 1976 and 1997 and then again beginning in 2002, families were provided with financial and counseling assistance to move to neighborhoods that were both less poor and less segregated.

In the mid-1990s the Moving to Opportunity (MTO) program provided similar opportunities to families in five U.S. cities, but defined qualifying neighborhoods solely on the basis of income rather than race/ethnicity. MTO featured random assignment of families and an in-depth evaluation which included surveys four to seven years after baseline on the mental and physical health of both children and adults. Data from this random-assignment evaluation provide more convincing estimates of the impact on children and their families of the opportunity to move to a much safer and more affluent neighborhood.

Qualitative studies of families enrolled in both the MTO program and the 2002 Gautreaux program provide detailed accounts of families whose experiences are consistent with the quantitative evidence emerging from these studies. Kling et al. (2001) conducted open-ended interviews with a number of MTO participants living in Boston and discovered that nearly all participants viewed crime and violence as the most important reasons for enrolling in the program (Kling, Liebman et al. 2001). Popkin, Harris et al. (2001) conducted open-ended interviews with both adults and youth in all five MTO cities. Qualitative interviews with a larger and more systematic sample of MTO participants in Baltimore and Chicago are underway as this chapter is being written, as are qualitative interviews with families involved in the 2002 Gautreaux Two residential mobility program.[1]

Using pseudonyms, we present two cases from the qualitative interviews to provide some detail on families involved in these programs. We begin with Diane, a married African-American mother of two in her mid-twenties who signed up to participate in the 2002 Gautreaux residential mobility program:

Diane was eager to move from her housing development on the south side of Chicago. She felt strongly that her neighborhood was horrible for her children, Jordan, age 7, and Tiara, age 4. In the last year alone, there had been three separate incidents of shootings near and around Jordan's school and day care center. Recently, Jordan had mentioned to Diane that he wanted to take a gun to school to protect himself. This comment, as well as other behaviors and attitudes he had been exhibiting, concerned her greatly. She said: *I have to be hard on my son, because I don't want him to follow the same path. That's why it's important for me to move out of the neighborhood I'm in. Because if this is what you around, this is what you gonna know. And I see what he's learning, he come home saying, you know, different little stuff….. even gang stuff. And I feel strongly, when it*

come to that, because of what I've been through…. He told his teacher – she asked him what do he wants to be [when he grows up]. He told her, 'I wanna be a killer.' Now, that's not my son…. [But] he feel like he have to have somebody to defend himself. I guess he listen to them [the other children at the school] talking about the gang, get in this gang -- and he is only in second grade. So, I have to get him out of [here] …. He was like, 'Mom, I wanna be a killer.'

The experiences of the 4,200 families who participated in the MTO experiment are the focus of this paper. We begin Section II with a brief review of the relevant literature, followed, in Section III, by an overview of MTO and its key results. Section IV is devoted to interpreting the results with the goal of providing evidence that could be used to develop neighborhood-based interventions that are effective in addressing children's mental health sequelae of living in violent neighborhoods.

II. Background on neighborhood violence and mental health

American children and adolescents, particularly those from high-poverty urban areas, are exposed to and affected by disturbingly high levels of violence in their communities (CDC 1997; AAP 2000). Exposure to community violence has been established as a risk factor for health and socioemotional development in children and adolescents (Linares, Heeren et al. 2001; Guerra, Huesmann and Spindler, 2003). Although the US has experienced a decline in violence since the mid-1990s (CDC 1997; HHS 2001), homicide rates among American youths are still higher than in any other industrialized nation (CDC 1997), as are firearm-related deaths (CDC 2000; AAP 2000).

Levels of community crime increased dramatically in the 1980s and early 1990s: between 1985 and 1991, the homicide rate among youths aged 15-19 years increased 154%, surpassing that of all other age groups (Buka 2001). This trend reversed in the mid-1990s, and by 1999 arrest rates for violent crimes had fallen to below their 1993 levels (HHS 2001; Cole 1999). However, Rosenberg (1986) estimates that reported homicide rates reflect only a very small fraction ($1/100^{th}$) of non-fatal violence witnessed or experienced by today's youth (Rosenberg and Mercy 1986).

The declines in reported violence have paralleled decreases in both the number of people living in poverty and levels of concentrated neighborhood poverty in the 1990s. The number of

people living in neighborhoods with poverty rates of 40% or higher decreased by 24% between the 1990 and 2000 Censuses (Jargowsky 2003) and this decline occurred for all racial groups. However, another analysis of Census data demonstrated that the number of children living in "severely distressed" neighborhoods (characterized by a high poverty rate, high percentages of female-headed households and high percentages of unemployed working-age males and high school dropouts) increased by 18% in the 1990s (O'Hare and Mather 2003). These severely distressed neighborhoods are most commonly in urban metropolitan areas, and represent areas with limited resources for children and adolescents.

Despite the declines in violence in the 1990s as reflected in arrest, victimization and hospital emergency records, the number of youths' confidential reports of their own violent behavior has not declined since 1993 (HHS 2001). Self-reports of violent behavior most frequently capture aggravated assault, and arrest rates for aggravated assault remain almost 70% higher than they were in the 1980s (HHS 2001). National data show that for black males between the ages of 10 and 34, firearm injuries are the most common cause of death (CDC 2000). These facts highlight the levels of violence to which children and adolescents are still exposed in America's cities today.

This chapter will focus on an evaluation of the MTO residential mobility program conducted in each of the five MTO cities: Baltimore, Boston, Chicago, Los Angeles, and New York. As shown in Figure 1, all of our focal cities had increases in the numbers of murders per year in the 1980s but not all of experienced declines in violence during the 1990s. For example, Baltimore's rates of firearm homicides increased by 40% during the 1990s. In contrast, homicides in Los Angeles decreased by 30% between 1991 and 1996 (DOJ 2001). Chicago and New York also experienced above-average declines in homicide, with the decline in New York amounting to almost 75% in the 1990s (Corman and Mocan 2002; Skogan, Steiner et al. 2003). The overall youth violent crime arrest rates shown in Figure 2 reflect the widely reported trends in increases in violence in the late 1980s and decreases since the mid 1990s.

Youths in neighborhoods characterized by low socioeconomic status report higher levels of hazards such as crime, violence, drug use, and graffiti than those in high SES neighborhoods (Campbell and Schwartz 1997). Exposure to violence is more prevalent in boys than girls. A study using cross-sectional, convenience samples report that 87% of boys and 70% of girls had witnessed a violent act while 63% of boys but only 33% of girls had been the victim of a violent

act (Purugganan, Stein et al. 2000). Variation in the reported estimates of the prevalence of exposure to violence is in part attributable to differences in survey sample characteristics, data collection instruments, and reporting methods.

Community studies have shown that parent reports of their children's exposure to community violence are routinely lower than children's self reports (Kuo, Mohler et al. 2000; Augustyn, Frank et al. 2002). In addition, child reports of exposure to violence predict levels of behavior problems, even after controlling for parents' reports of exposure to violence (Kuo, Mohler et al. 2000; Augustyn, Frank et al. 2002). Behavior problems in early childhood are of significant concern because antisocial behavior in late childhood and early adolescence is the strongest predictor of committing violence in adolescence (Buka and Earls 1993).

In the nationally-representative Youth Risk Behavior Surveys, students in grades nine through twelve in the 1990s reported significant decreases in violent behavior. Between 1991 and 1997, the percentage of students who carried a weapon decreased 30%, the percentage of students injured in a physical fight decreased 20% and the percentage of students reporting being involved in a physical fight decreased 14% (Brener, Simon et al. 1999). The authors also report significant improvement in school safety in the 1990s: the percentage of students who carried a weapon on school property decreased 28% and the percentage of students involved in a physical fight on school property decreased 9% (Brener, Simon et al. 1999). Students are less likely to be injured, attacked or killed at school than at home or anywhere else in the community (Garbarino, Bradshaw et al. 2002). Results from qualitative interviews suggest that many boys are especially concerned about becoming victims of school violence (Pollack 2000; Garbarino, Bradshaw et al. 2002). In addition, significant ethnic disparities in exposure to violence remain, with nationally representative studies reporting that black adolescents are victimized at higher rates than whites and Hispanics (Kilpatrick, Saunders et al. 2003).

A growing literature suggests that there may indeed be important short- and long-term consequences of childhood exposure to community violence. A community-based, cross-sectional study of youth in Los Angeles found that youth who perceived greater levels of neighborhood threats were more likely to experience symptoms of depression, anxiety, oppositional defiant disorder, and conduct disorder (Aneshensel and Sucoff 1996). Investigators have recently reported associations between child exposure to violence and a vast array of adverse health consequences, including depression, withdrawal, anxiety, post-traumatic stress

disorder (PTSD), sleep disturbance, poor school performance, participating in harmful events, having negative beliefs and attitudes towards others, and aggressiveness (Dyson, 1990; Pynoos, 1987; Kendall-Tackett 2002; Buka, 2001; Augustyn 1995; Groves 1993; Richters, 1993; Garbarino et al 2002). In addition, studies have found that both boys and girls who report having witnessed community violence report higher levels of delinquent behavior and post-traumatic stress disorder (Singer, Miller et al. 1999; Kilpatrick, Saunders et al. 2003). The impact of witnessing violence can vary with age, with younger children exposed to violence more likely to report symptoms of PTSD than children over age 12 who are exposed to community violence (Garbarino et al 2002). Another study found that student reports of exposure to community violence decreased during elementary school years (Guerra, Huesmann et al. 2003).

A set of mostly cross-sectional studies have also found connections between neighborhood conditions and parenting behaviors, with parents in unsafe neighborhoods less likely to have outside sources of social support and less likely to provide supervision (Sampson and Laub 1994; Osofsky 1995; Singer, Anglin et al. 1995; Wandersman and Nation 1998; Petit, Bates et al. 1999; Ceballo and McLoyd 2002). For example, a cross-sectional study of children living in high-crime neighborhoods in Boston found that there were independent effects of maternal exposure to community violence and family violence on maternal distress, which in turn related to parenting (Linares, Heeren et al. 2001). The same study found links between child exposure to community violence and child behavior problems, even after controlling for SES and family aggression (Linares, Heeren et al. 2001). A study of elementary school children in Chicago Public Schools found that exposure to community violence increases a child's violent behavior and believes about the prevalence of aggression (Guerra, Huesmann et al. 2003). Another longitudinal community sample of adolescents in Baltimore neighborhoods found that self-reported fear of crime was related to anxiety and depression over time (Wandersman and Nation 1998).

Buka and Earls (1993) conceptualize violent behavior as the result of physical and emotional development, and of family, peer and societal influences at several points in life. The home environment and family dynamics also have major impacts on children. Much of the existing literature on children's exposure to violence tends to focus exclusively on either exposure to family violence or to neighborhood violence. A study of high school students in three cities found that having witnessed violence at home, having been a victim of a mugging,

and having been a witness to threats, knifings or shootings all contributed to a students' level of reported anxiety, stress and depression (Singer, Anglin et al. 1995). However, many of these studies are cross-sectional, community-based samples that do not focus specifically on community violence (Linares, Heeren et al. 2001; Veenema 2001). Other studies hypothesize that a child's reaction to exposure to community violence will be similar to his or her reaction to abuse or exposure to family violence (Osofsky 1995). Thus, there is a need for research that establishes the separate contributions of community and home factors to child outcomes.

III. Residential mobility programs as interventions for neighborhood violence

What might be done to alleviate the ills caused by neighborhood violence? Interventions directed at reducing crime are the first and most obvious possibility. Earlier we documented falling crime rates in most U.S. cities, although there is little consensus on the reasons for this decline (Cook and Laub 2001; Donahue and Levitt 2001; Joyce 2001; Corman and Mocan 2002).

Ridding the nation of its most crime-infested public housing has become a popular approach to combating neighborhood violence. Created in 1992, the HOPE VI program has demolished or slated for demolition 72,000 public housing units and promoted mixed-income housing and voucher subsidies. Since 1993, the U.S. Department of Housing and Urban Development has awarded nearly $5 billion for redevelopment and client services. Hope VI has replaced demolished units with 41,500 new public housing units and 15,000 homeownership units, "affordable units" for the working poor, and market-rate units.

A longer-standing Federal policy approach to solve the problem of crime-infested public housing developments is housing mobility programs, such as the U.S. Department of Housing and Urban Development's (HUD) Section 8 tenant-based rental subsidy programs. These Section 8 programs (now called "Housing Choice Vouchers") provide low-income families with a financial subsidy if they move to a private-market apartment or house that meets certain program requirements.

Currently, around 2.1 million low-income families receive housing vouchers, up from 162,000 vouchers in 1977 (HUD 2000; CBPP 2003). Housing vouchers hold some appeal for both conservatives and liberals: they rely on the private market rather than the government to provide housing services to the poor and at the same time improve housing quality for low-income families and provide them with greater choice over where they live. And yet the

increased residential mobility that housing vouchers have allowed poor families is controversial, since residents of working- and middle-class neighborhoods fear that the arrival of low-income neighbors will lower property values and increase their own children's social problems.

How successful are these programs in enabling children and adults to escape neighborhood violence and enjoy improvements in mental and physical health? A high-quality random-assignment experimental evaluation was designed to provide some answers to exactly these questions. In operation since 1994 in five cities (Baltimore, Boston, Chicago, Los Angeles and New York), the U.S. Department of Housing and Urban Development's Moving to Opportunity demonstration assigned low-income families living in public housing within high-poverty neighborhoods into one of three research groups. Families in the *control group* received no special assistance but were eligible for all programs other than Section 8. A *Section 8 group* received conventional Section 8 private-market housing subsidies with no constraints on relocation choices.

Most interesting was the *experimental group,* which consisted of families that received Section-8-type housing vouchers but could only redeem them with moves to low-poverty Census tracts (with poverty rates under 10 percent). The experimental group also received substantial counseling and search assistance from a local non-profit agency. The randomized experimental design of the program enables us to identify the causal impacts of offering families the financial resources to move to new neighborhoods, combined in the case of the experimental group with counseling assistance and relocation constraints.

Movers in both the experimental and Section 8-only groups were required to sign leases for one year. Those who moved again before the initial lease expiration date lost their eligibility for their financial subsidy, while families who wished to relocate after the first year were free to do so without restriction and were allowed to keep their subsidy. Thus, MTO requires experimental-group movers to live in low-poverty areas only for the first post-move year. The moves took place between 1994 and 1998, and an evaluation of treatment/control differences four to seven years after baseline was published in the fall of 2003 (Orr, Feins et al. 2003). We present some of our own analyses of the data but, for the most part, summarize results from Orr et al. (2003).

The MTO sample at baseline. Scattered across public housing projects in five cities, the 4,200 families in the evaluation were similar in many respects and diverse in others (Orr et al.,

2003, Appendix C). Similarities include the fact that the vast majority of families (full sample mean = 92%) were headed by women, were not employed (72%) and relied on welfare income (62%). Virtually all of the Baltimore and Chicago participants were black, while roughly equal fractions of Boston, New York and Los Angeles participants were Hispanic and black. Most families were very poor; household incomes averaged $9,300 for a median of three children.

When asked about their primary reasons for moving, more than 80% said that "getting away from drugs and gangs" was either their first or second most important motivation. Violence-related reasons were the prime motivators for families across all five cities. Both better schools and bigger or better apartments were the first or second choices of about half of the respondents.

Neighborhood conditions before and after the moves. According to the 1990 Census, the neighborhoods (i.e., Census tracts) in which MTO participants resided when they signed up for the program had poverty rates of 56%, well above the 40% threshold that William Julius Wilson (1987) and others have used to define neighborhoods of concentrated poverty. The economic boom of the 1990s dropped the average poverty rates in these same neighborhoods to 49%. The racial and ethnic isolation of these origin neighborhoods also fell somewhat between 1990 and 2000 – from 73% to 65%.

Table 1 shows neighborhood conditions at the point of the follow-up – four to seven years after baseline. For control-group families we present results for the entire group, as well as for the subsets of control-group families who did and did not move between baseline and the follow-up. Perhaps surprisingly, many more control families (917) than not (393) moved at least once during our study period. But recall that control families who volunteered for the MTO opportunity did so with the specific goal of gaining help with a move, and all controls were free to move at any point without either financial or counseling resources to facilitate their moves. In fact, all low-income families move at surprisingly high rates.[2] Table 1 shows that control families moving at least once ended up in neighborhoods with considerably lower poverty rates (34%) than controls who didn't move (51%).

To focus attention on the moves to low-poverty areas, we ignore the Section-8 treatment group (results for whom are detailed in the Orr et al., 2003 report) and focus exclusively on the "experimental" group, all of whom were offered the opportunity to move to neighborhoods with poverty rates under 10%. Among experimental families, we present results in Table 1 for the

entire group (n=1729) offered the assistance, for the subset moving under the terms of the program (n=820), and for the even smaller subset moving under the terms of the program and continuing to reside in the housing units in which they were first placed (n=261). Asterisks in these columns indicate instances where experimental-group means differed significantly from control-group means.

Table 1 documents substantial program impacts on neighborhood poverty rates. Taken as whole, the neighborhood poverty rate of all families assigned to the experimental group was 31%, which was significantly lower than the 39% rate averaged across all controls.[3] As might be expected, the mean neighborhood poverty rate (22%) was lower still for experimental families who moved under the terms of the program. And at the time of the follow-up, experimental families who continued to reside in their destination units enjoyed the lowest neighborhood poverty rates of all -- 13%.[4] The higher poverty rates for the larger set of experimental families moving under the terms of the program than for the subset of experimental families moving only once shows that the subsequent mobility of experimental families undid some of the likely advantages of their initial moves.

Table 1 also documents surprisingly small differences in neighborhood racial/ethnic composition. Only in the case of experimentals who did not move on from their program placements were fewer than 80% of neighbors either black or Hispanic. This is in sharp contrast with the Gautreaux program results, where participants' neighborhoods at placement averaged 28% black and were still only 48% black some 15 years after the initial moves (Keels et al., 2003). All five of the MTO cities had ethnic neighborhoods that met the <10% poverty criteria, and experimental-group families tended to opt to move to them. This reflects some combination of preferences on the part of MTO families and the willingness of landlords to rent to MTO families in these neighborhoods.

Police departments do not compile crime data for small geographic areas, so it is not possible to describe crime rates in the specific neighborhoods of MTO program participants. Surveys of participants provided the crime-related data shown in the middle portion of Table 1. When asked at follow-up, nearly half (45%) of MTO controls reported feeling either unsafe or very unsafe on the street near their homes at night, while a quarter had similar feelings during the day. Assignment to the experimental group cut these respective fractions to 31% and 16%. Similar improvements were found in other indicators of neighborhood safety (Orr et al., 2003,

Chapter 3). Victimization rates for experimental families were significantly lower than controls in several instances.

The neighborhoods of families in the experimental group were also richer in "collective efficacy" (Sampson et al., 1997), with the 60% of adults moving under the terms of experimental group conditions saying that that it was likely that neighbors would do something about misbehaving youth. This is almost twice as high as the corresponding fraction (37%) of control-group adults reporting that their neighbors would get involved in a similar situation. Interestingly, this higher social capital did not translate into larger or more diverse friendship networks for experimental-group families (data in Orr et al., 2003 but not shown in table).

All in all, the MTO intervention proved very successful at addressing the neighborhood crime problems that sparked most adult participants' interest in the program.

Parent mental and physical health. The follow-up survey provided a number of measures of the mental and physical health of program participants. Drawing data from Orr et al. (2003, Chapter 4), Table 2 highlights some of the experimental vs. control group differences.[5]

The most comprehensive mental health measure is depression as measured by the CIDI-SF Major Depressive Episode scale.[6] At the time of the follow-up interview, 22% of control adults reported experiencing at least one depressive episode in the 12 months prior to the interview. For all experimentals, the comparable fraction was significantly less – 18%. With some addition assumptions, these data can also be used to estimate impacts on the 47% of experimental families who moved under the terms of the program.[7] In the case of depressive episodes, the estimated impact of the MTO treatment on movers is 8 percentage points, an impact on depression that compares favorably with medical trials of best practice depression care (Wells, Sherbourne et al. 2000; Katon, Russo et al. 2002).

Mental health differences appeared in other measures as well. The fraction of items on an index of psychological distress (sample items: so sad nothing could cheer you up, nervous, everything was an effort) that adults reported experiencing in the past month was significantly higher for controls than for experimentals. Significant differences also appeared for the fraction reporting feeling "calm and peaceful" in the past 30 days. While differences in anxiety also favored experimentals, the treatment impacts were not statistically significant.

The ability of safer neighborhoods to improve mental health is readily seen in the Gautreaux program move of Diane – the mother in the opening story related in this chapter.

After several months of a concerted housing search, Diane, her two children, and her new husband Harold move to a suburb of Chicago, more than 30 miles from her origin neighborhood.

> Diane is much happier in her new neighborhood. Her sense of personal safety is markedly increased and she feels better about her children's safety. When asked how she would describe her new neighborhood to a friend back in the city, she says:
> *I'd tell them it's nice. It's almost like living in the country (laughing). But it's nice and it's quiet. And it's good because the children, they're not only playing with just black children. It's a mix, you know, so that's what I like most about it, my kids don't have a problem with going out there, playing. They're not running in, [saying], 'He beat me up.' We don't have a problem with them going out playing, and then I don't have to literally sit there and watch them. I keep checking on them because that's just ME, but they can honestly go out there and play and I really don't have no worries. So I tell them, it's a WONDERFUL neighborhood. It's wonderful.*

Residential mobility provided few significant benefits to overall health, in contrast to mental health, as measured by the respondent's self-assessment of overall health or asthma symptoms (Table 2) or by reported limits on activity or blood pressure (results not shown). The only notable exception was obesity, which was significantly lower among experimentals than controls. Given the high rate of obesity in this sample (47% of controls reported heights and weights that produced body mass indexes greater than 30), this particular health consequence is likely to be important.

Children's exposure to violence. All school-aged children spend substantial portions of their day away from home, with adolescents having the greatest latitude to choose where and with whom they spend their time. Drawn from Orr et al. (2003, Chapter 3), Table 3 summarizes results from an extensive battery of questions on children's exposure to violence that were asked of all children between the ages of 8 and 19.

Disappointingly few significant impacts emerge. Children in families assigned to the experimental group were significantly less likely to report gangs in their neighborhoods or schools or hearing gunshots recently in their neighborhoods. But no statistically significant impacts emerged in reports of witnessing drug sales, shootings or stabbings, or in the child him- or herself reporting being threatened or injured by a knife or gun. Apparent in these data is the failure of better neighborhoods (as measured by Census-based poverty and other demographic

characteristics and by their parents' interview reports of neighborhood safety) to translate into uniformly safer neighborhoods for children. We speculate on why this might be the case below.

Child mental health, physical health and behavior. Given the null to marginal improvements in neighborhood and school violence, as reported by children, it seems reasonable to expect that residential mobility programs would not have large impacts on child mental and physical health. Drawn from Orr et al. (2003, Chapter 5), Table 4 documents one of the program's most unexpected pattern of results: beneficial impacts for girls but null to detrimental impacts for boys.

The youth interviews included a number of mental health measures, all of which were reported directly by children who were between the ages of 12 and 19 at the time of the follow-up interview. Parents reported on the mental health of children age 5-11. Girls in the experimental group reported significantly fewer symptoms of psychological distress than their control-group counterparts. In the case of lifetime generalized anxiety disorder (as first developed for the Adolescent Supplement to the National Co-morbidity Survey Replication), significantly smaller fractions of girls in experimental group families reported such a condition. Reports of lifetime depression were also lower among experimental relative to control girls, but not significantly so. These results suggest that residential mobility to better neighborhoods appears to have similarly beneficial impacts on the mental health of mothers and daughters.

In contrast, experimental boys showed none of these mental health benefits relative to control-group boys. The point estimates actually indicate worse mental health for boys, although none of the differences is statistically significant. Boys in experimental families exhibited significantly worse behavior according to both self-report and parents' reports. Items in the behavior problem index include being disobedient at home or school, being withdrawn or bullying or being cruel to others. In the case of youth reports, the differences are quite large. Administrative data on arrests showed that experimental group boys (ages 15-19 at follow-up) were significantly more likely to be arrested for property but not other crimes (Orr, 2003, Exhibit 5.3; results not shown in Table 4).

In keeping with the mental health improvements, the behavior of female youth was generally more positive in the experimental relative to the control groups. For the set of results included in Orr et al. (2003, Chapter 5), results show significant less risky behavior (e.g., cigarette smoking and marijuana use) among experimental group girls relative to controls.

In terms of physical health, the favorable BMI results for adults do not appear for either boys or girls, nor were there significant differences in asthma symptoms or injury rates. Not shown in Table 4 are null results for a parent-reported measure of children's general health.

IV. Understanding the results

The Moving to Opportunity program provides a dramatic test of the consequences of moving from high-crime, high-poverty neighborhoods to much safer and more affluent ones. The experimental evaluation shows a number of favorable impacts on families, although the results are not universally positive. Despite subsequent mobility, families originally placed in low-poverty neighborhoods resided in much safer and more affluent neighborhoods four to seven years later. This appeared to translate into important improvements in the mental and physical health of mothers and thus enabled them to achieve the goals that brought them into the program.

The puzzle is why these same moves produced smaller and less consistent improvements for girls and may have worsened the problem behavior of male youth. The MTO evaluation devoted considerable effort to understanding mediational processes that might account for observed program impacts.

A first important fact is that experimental group families undertook steps that undid some of the possible advantages of moving to middle-class neighborhoods. As discussed above, subsequent moves undertaken by experimental group families put them in neighborhoods that were considerably less affluent than their original placements. Moreover, the previous section documented the fact that although experimental families moved to more affluent areas, most did not move to racially or ethnically integrated neighborhoods. Discrimination may limit the availability of high quality public services in minority neighborhoods. It appears that it may take a program like Gautreaux, which defined target neighborhoods in terms of both poverty and race, to induce permanent moves neighborhoods that are both more affluent and more integrated.

Second, the quality of the schools attended by experimental group children did not improve as much as might be expected. Orr et al. (2003, Chapter 6) show that the test-score ranking of schools attended by children in experimental-group families who moved in conjunction with the program was only the 25th percentile. While significantly higher than the 17th percentile ranking of schools attended by control-group children, it is certainly not the case that MTO led many experimental-group children to attend high-quality schools. When youth

themselves were asked to characterize the climate and resources of their schools, virtually no experimental/control group differences were found (Orr et al., 2003, Chapter 6). Evidence from a qualitative study of MTO families (Popkin et al., 2001) suggests that school choice now built into many urban school systems gave parents the choice of sending their children to schools close to their origin neighborhoods near where relatives lived, and parents took advantage of these opportunities. Perhaps they did so because they were more comfortable with their children's original schools or schools in neighborhoods with which they were familiar.

Nor did health care availability or use depend much on group assignment. About 80% of both experimentals and controls reported access to health insurance, and over 90% of both groups reported having a usual place to go for medical care (Orr et al, 2003, Exhibit E4.3).

Third, it appears that children's own choices of peers and activities maintained (for girls) or undid (for boys) some of the potential advantages of the safer and more affluent neighborhoods. Adolescent girls, but not boys, in the experimental group were significantly more likely than their control-group counterparts to participate in sports teams, engage in structured after-school activities and have good school attendance records (Orr et al., 2003, Appendix E). In contrast, experimental group adolescent boys but not girls were more likely than their control-group counterparts to have friends who use drugs.

To illustrate what might be going on with adolescent males, consider Stephen, an African-American male who lived in a housing project on Chicago's near south side for most of his early childhood. Stephen's family was assigned to the MTO experimental group in Chicago and moved in conjunction with the program. He was 16 years old when he recounted what it was like to have grown up in his housing project neighborhood and what had happened since then:

I've seen a lot of stuff I shouldn't have seen, like people getting jumped on, a lot of violence and stuff…By that being a project, you know there's going to be shooting. I heard drive-bys at night, while I was sleeping and stuff … I slept on the floor a lot, me and my sister.

Stephen has seen much violence in his life, and described numerous incidents of observing or hearing about violent incidents, but he was also actively involved in violence himself. Much of his own elementary school career was spent, as he explains, creating and holding a particular level of respect among other children. This was only accomplished through fighting. His MTO-related move did little to change this.

He fought at his neighborhood school:

In third grade summer school, I got into a fight with the teacher, because I was at a point where I was like, 'If you ain't my momma, you ain't got nothing to say to me. You can't tell me what to do.' That was my whole attitude there.

He fought at his initial MTO school:

I did school over there. I got into a lot of fights as far as school but it's like that didn't affect me at school or nothing because it's like, I never got suspended over there.

And he fought at his post-MTO move school:

[Fighting] was like, something I was known for by the teachers, the principals and stuff. I got there in my fifth grade year. By my seventh grade year, I done fight almost every male from sixth grade on up to eighth …. I fought like every male in the school, except basically like five of them.

Stephen explains that he fought for respect. Although there were some students who were involved in gangs, gangs were not the issue for him. As he saw it, if you are harassed at school, or jumped, you must defend or avenge yourself; otherwise you look soft and may be attacked again.

Although Stephen's MTO-based moves were to better neighborhoods, his behavior appeared to have changed little in his new schools.

Fourth, it appears that neighborhood advantages failed to translate into the kinds of family advantages that might have promoted children's well-being. Adults moving in conjunction with the MTO program were similar to their control-group counterparts in their employment status, welfare dependence, family income, parenting practices, and connections to their children's schools and the parents of their children's friends. A concern with much of the non-experimental literature on neighborhood influences is that it may be difficult to distinguish neighborhood effects from family influences. Perhaps something similar is operating with MTO – truly effective policies may require both neighborhood and family changes.

Here again, Diane's case is instructive. Although her move to a safer suburban neighborhood appeared to solve neighborhood-related problems, it aggravated family-related problems:

Diane's move created stress and conflict in her relationship with her husband. Harold cannot find steady work in the new neighborhood and money problems plague the family.

The stress is upsetting to her son Jordan. Jordan's biological father is in jail for homicide, and Jordan had always found it hard that his father is absent from his life. Jordon had grown to love and view Harold as his new dad, and thus Harold's disagreements with Diane are particularly stressful for him. One evening, Diane found Jordan in the bathtub under water, appearing to try to drown himself. His new teachers at his new school notice changes in his behavior as well.

The marital stress then escalated into an episode of domestic violence:

It was like a money thing, you know, all the bills was on me because he had been like back and forth with the temp service. And so the man would like give him jobs, tell him, 'oh, yeah, this is permanent,' and it would be for two weeks. You know, well, we got all these bills that need to be paid, and you know so it was like, I guess I was stressed out. He was stressed out. ...And so we got into it one day. ...He like choked me, so it scared me.

Diane called the police, Harold was arrested, and she only dropped the charges when he agreed to participating in an anger management program. Although this incident seemed to end on a positive note for Diane and Harold – Harold is going to counseling, the two of them are attending marital counseling together, and they are currently happy in their marriage – Harold's arrest was very upsetting to Jordon. When Jordan came home from school and found out that Harold was in jail, he took it very hard. As Diane relates:

He was like, 'I'm going to kill myself and I don't want to live anymore. We don't have a real family.' He was like, 'You know my real father in jail, how could you send Harold to jail? You're not going to stop me this time, you're not going to be able to find me and I'm going to put a LOT of water [in the tub]].'

Neighborhood violence and other ills may indeed contribute to the mental health problems of children growing up in impoverished, high-crime communities. But the MTO evidence suggests that dramatic changes in neighborhood quality may not produce corresponding reductions in the level of violence experienced by children and adolescents. Girls appear more responsive than boys to neighborhood-based opportunities and are more likely to enjoy the mental health benefits that these improved opportunities may provide.

Other kinds of changes may matter more for boys. It certainly did in the case of Stephen:

Upon graduation from elementary school, and five years after his family's initial move through the MTO program, everything changed for Stephen. *After my eighth grade that whole fighting and all that stuff stopped. I don't really hang with nobody, I DON'T hang with nobody.*

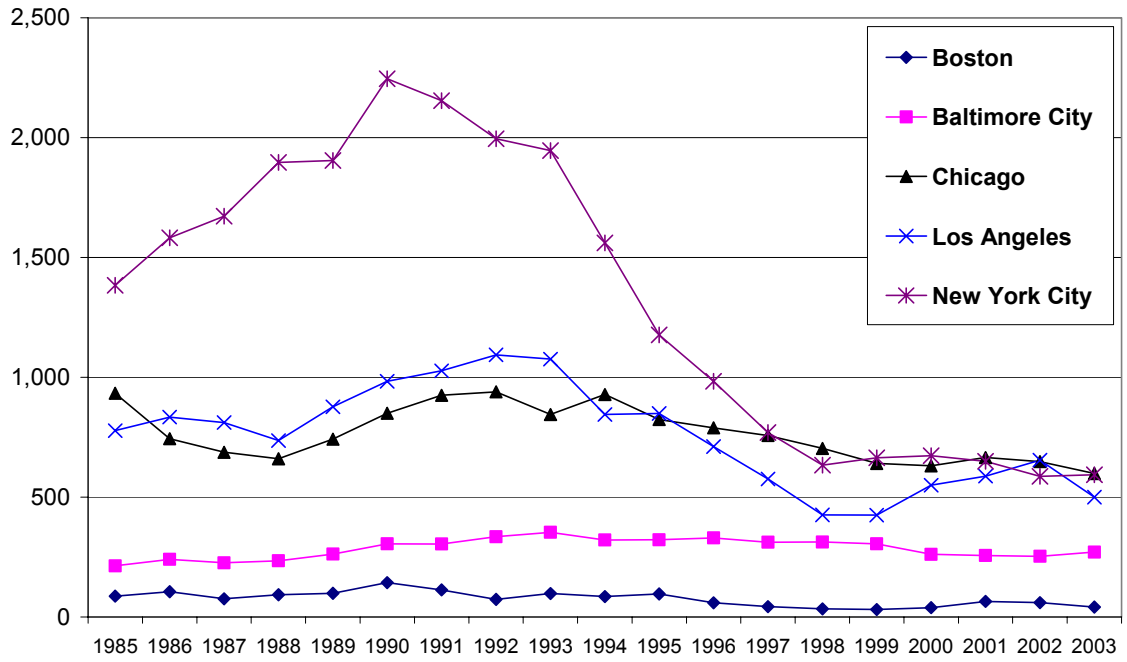
Two major events in his life occurred at this time. First, he and his mother decided that it would be better if he did not attend the local high school. This high school, Stephen explains, is so violent that he "would probably basically be in jail right now, because that's all they basically do is fight." Instead, Stephen is currently completing a mail correspondence course from home for his high school degree. Second, around this same time, he became more involved at the large church his mother attends. Stephen was asked by a youth pastor to join a church-affiliated rap club, although he was not a believer or very involved in the church at the time. This group evolved into a step fraternity, a historical African-American fraternal activity that involves dance and music. Today, his faith is strong, and he participates in this group most days of the week. He has also moved up to a level of responsibility as a student leader.

Currently, Stephen is largely disconnected from his previous networks. All of his friends are from the church, none from the local neighborhood. In addition, he stays off the neighborhood streets, as he is likely to be stopped by the police (this used to happen to him at least once a month).

In Stephen's case, the pivotal factor behind his switch to a positive trajectory was not a direct effect of his MTO move. In fact, the violence he experienced at the local schools in his MTO-qualifying neighborhood appears just as great as in the schools in his prior neighborhood.

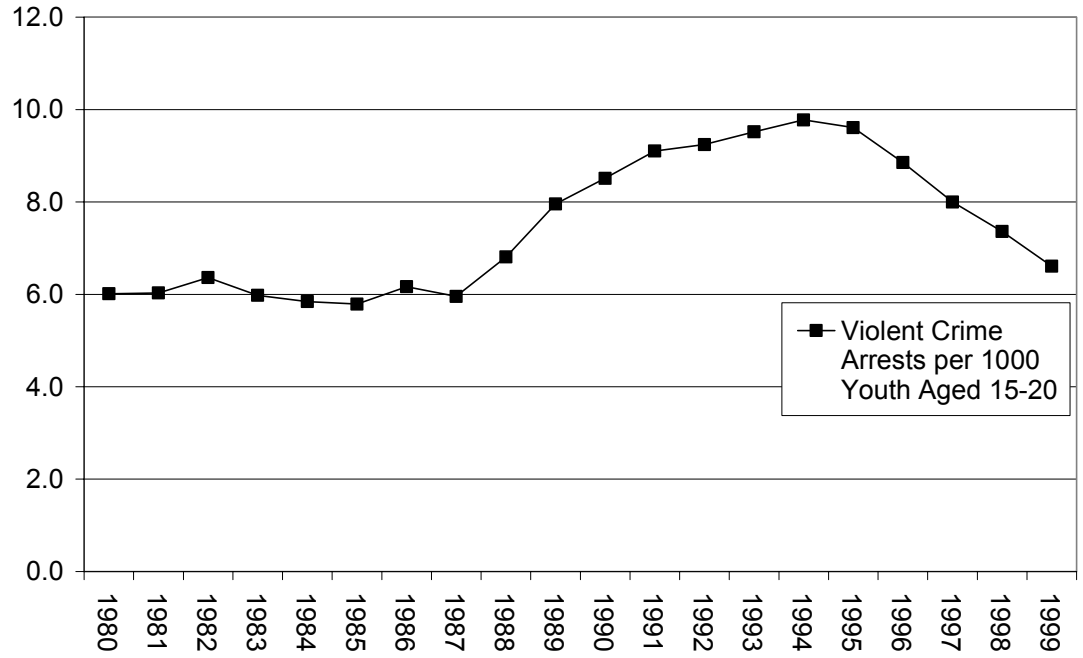
All in all, the interim results from evaluations of the MTO residential mobility program show that mobility programs are not likely to be cure-alls for the mental health problems caused by living in public housing in a high-crime neighborhood. They do indeed appear to improve adult mental health and, to a lesser extent, the mental health of female youth. For boys, there are no mental health impacts and, if anything, negative impacts on behavior. It is possible that this picture will change in the planned 10-year follow-up for MTO participants. Perhaps more likely is that an intervention focused exclusively on neighborhood rather than child, family and school factors is unable to solve the myriad health and behavior problems of children growing up in violent urban neighborhoods.

Figure 1. Number of Murders per Year in 5 U.S. Cities, 1985-2003



Note: Historical data are from the Bureau of Justice Statistics, complied from FBI Uniform Crime Reports

Figure 2. Youth Violent Crime Arrest Rates, 1980-1999



Note: Arrest rates calculated from Bureau of Justice Statistics tables compiled from FBI Uniform Crime Reports

Table 1. Neighborhood Conditions for Control and Experimental Families in the MTO Experiment

	All Controls	Controls who stayed in place	Controls who self-moved	All experimentals	Experimentals who moved	Experimentals who moved, and did not move again
Neighborhood poverty rate in 2000	39	51	34	31*	22*	13*
Neighborhood percent minority in 2000	88	94	85	85*	81*	68*
Respondent feels unsafe or very unsafe:						
On the streets near home at night	45	61	38	31*	15*	21*
On the streets near home during day	25	36	20	16*	5*	7*
Respondent or member of respondent's household:						
Had a purse snatched in the last 6 months	7	7	7	6	4	4
Beaten or assaulted in the last 6 months	10	10	9	7*	4*	4*
Experienced a break-in in the last 6 months	8	8	8	8	9	7
Experienced at least one crime in the last 6 months	21	24	20	17*	12*	12*
Social Capital:						
Respondent thinks it is likely or very likely neighbors would do something if they saw children skipping school or hanging out on the street	37	29	40	47*	60*	52*
Number of observations	*1310*	*393*	*917*	*1729*	*820*	*261*

Source: Authors' calculations based on data from the MTO experiment.
* significantly different from controls at the p<.05 level

Table 2. Adult Mental and Physical Health

	Control group mean	Experimental mean minus control group mean[a]
MENTAL HEALTH		
Adult was depressed during past year, including boundary cases	22	-4*
Adult felt psychological distress during past month	33	-3*
Adult felt calm and peaceful at least most of the time in the past month	47	-6*
Adult had anxiety[b] during past year	39	ns
PHYSICAL HEALTH		
Adult in fair or poor health	33	ns
Adult had asthma or wheezing attack in last year	21	ns
Adult is obese (BMI ≥ 30)	47	-5*

Note: Data are taken from Orr et al. (2003), Exhibit 4.2, p. 77.
* significant at the p<.05 level
[a] These represent Intent to Treat (ITT) effects, which are explained in the text.
[b] Adult experienced either "a period lasting one month or longer when most of the time he or she felt worried, tense or anxious," or "a time when he or she worried a lot more than most people would in his or her situation."

Table 3. Child Exposure to Violence and Victimization

		Control group mean	Experimental group mean minus control group mean[a]
Child reports existence of gangs in neighborhood or school			
	All 8-19	54	-6*
	Girls	52	-7*
	Boys	56	ns
Child saw people selling or using illegal drugs in neighborhood at least once a week in past month			
	All 8-19	35	-5*
	Girls	37	-10*
	Boys	34	ns
Child heard gunshots in neighborhood at least once a week in past month			
	All 8-19	12	-3*
	Girls	11	ns
	Boys	13	-4*
Child saw someone shoot or stab another person in past year			
	All 8-19	13	ns
	Girls	12	ns
	Boys	14	ns
Someone pulled a knife or gun on child in past year			
	All 8-19	9	ns
	Girls	6	ns
	Boys	12	ns
Someone cut, shot, or stabbed child in past year			
	All 8-19	4	ns
	Girls	3	ns
	Boys	5	ns

Note: Data are taken from Orr et al. (2003), Exhibit E5.5, pp. E12-E13.
* significant at the p<.05 level
[a] This represents Intent to Treat (ITT) effects, which are explained in the text.

Table 4. Child Mental and Physical Health

	Control group mean	Experimental group mean minus control group mean[a]
MENTAL HEALTH		
Youth's level of psychological distress during past month[b]		
All 12-19	26	ns
Girls	30	-5*
Boys	21	ns
Youth report of lifetime depression		
All 12-19	7	ns
Girls	10	ns
Boys	3	ns
Youth report of lifetime generalized anxiety disorder		
All 12-19	7	ns
Girls	9	-4*
Boys	4	ns
Parent report of child behavior problems[c]		
All 5-11	29	ns
Girls	25	ns
Boys	33	+4*
Youth report of behavior problems		
All 12-19	34	+4*
Girls	35	ns
Boys	34	+8*
PHYSICAL HEALTH		
Parent reports that child had asthma or wheezing attack during past year		
All 5-11	15	ns
Girls	12	ns
Boys	18	ns
Youth reports s/he had asthma or wheezing attack during past year		
All 12-19	16	ns
Girls	19	ns
Boys	13	ns
Parent reports that child had injuries requiring medical attention during past year		
All 5-11	7	ns
Girls	5	ns
Boys	10	ns
Youth reports s/he had injury requiring medical attention during past year		
All 12-19	12	ns
Girls	11	ns
Boys	14	ns
Youth's Body Mass Index is at the 95th percentile or higher		
All	17	ns
Girls	16	ns
Boys	17	ns

Note: Mental health data are taken from Orr et al. (2003), Exhibit 4.5, p. 83. Youth behavior problem data are taken from Exhibit 5.2, p. 93. Child behavior problem data are taken from

Exhibit D5.1, p. D-2. Physical health data are taken from Orr et al. (2003), Exhibits 4.3 and 4.4, pp. 81-82.
* significant at the p<.05 level
[a] This represents Intent to Treat (ITT) effects, which are explained in the text.
[b] Fraction of six distress items that the youth reported sometimes or often feeling during the past 30 days. The six distress items are feeling: nervous; hopeless; restless or fidgety; so depressed nothing could cheer you up; everything was an effort; and worthless.
[c] Fraction of 11 behavior problems sometimes or often true of child or youth. These 11 behavior problems are: difficulty concentrating; cheating or lying; bullying or being cruel or mean to others; disobedient at home; difficulty getting along with other children; restless or overactive; strong temper; withdrawn; hanging around with kids who get into trouble; disobedient at school; and trouble getting along with teachers.

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[1] The MTO qualitative study is directed by Jeffrey Kling and Kathryn Edin, while the Gautreaux Two study is directed by Edin.

[2] High rates of residential mobility are common among American families, particularly those with young children. About fifteen percent of all Americans moved between 2001 and 2002, and for households with young children, more than one-quarter moved during that time (U.S. Census Bureau (2003). General Mobility of Family Householders, by Type of Household, Race and Hispanic Origin of Householder, and Presence and Ages of Own Children Under 18: March 2001-2002. Population Division, Journey-To-Work & Migration Statistics Branch, http://www.census.gov/population/www/socdemo/migrate/cps2002.html). When mobility is considered over a longer time frame, nearly half of all Americans move at least every five years. About 43 percent of non-Hispanic whites, 49 percent of African-Americans and 56 percent of Hispanics changed residence between 1995 and 2000 (Schacter, J. P. (2003). Migration by Race and Hispanic Origin: 1995 to 2000, U.S. Census).

[3] Orr et al. (2003, Appendix D) show analogous improvements in related neighborhood-level demographic characteristics such as female headship, receipt of public assistance income, education levels and unemployment.

[4] Program compliance among experimental-group movers was quite high. Orr et al. (2003, p. 29) report that 94% of experimental movers moved to neighborhoods with poverty rates under 11%. HUD granted waivers from the 10% requirement in a small number of cases.

[5] The results in the "experimental group mean minus control group mean" column constitute estimates of "intent to treat." They are obtained from a regression-adjusted comparison of mean outcomes (e.g., neighborhood poverty rate) for all experimental and control families. Regression controls include baseline demographic characteristics.

[6] We use version 1.0 of the CIDI-SF scale. An error in survey administration leads to some ambiguity in the treatment of boundary cases. As discussed in Orr et al., 2003, pp. 72-73, results presented here reflect coding boundary cases as "depressed." Alternative treatments of boundary cases reduce the statistical significance of the experimental impacts somewhat but do not alter our conclusions.

[7] Estimates of so-called "treatment on the treated" impacts are obtained by dividing the experimental/control differences by the fraction of the experimental group (47%) who moved

under the terms of the program (see Katz et al., 2001). Significance levels of "treatment on the treated" impact estimates are identical to those of intent-to-treat estimates.