Moving to Opportunity: an Experimental Study of Neighborhood Effects on Mental Health

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Objectives. The health consequences of neighborhood poverty are a public health problem. Data were obtained to examine links between neighborhood residence and mental health outcomes.

Methods. Moving to Opportunity was a randomized, controlled trial in which families from public housing in high-poverty neighborhoods were moved into private housing in near-poor or nonpoor neighborhoods, with a subset remaining in public housing. At the 3-year follow-up of the New York site, 550 families were reinterviewed.

Results. Parents who moved to low-poverty neighborhoods reported significantly less distress than parents who remained in high-poverty neighborhoods. Boys who moved to less poor neighborhoods reported significantly fewer anxious/depressive and dependency problems than did boys who stayed in public housing.

Conclusions. This study provides experimental evidence of neighborhood income effects on mental health. (*Am J Public Health.* 2003;93:1576–1582)

During the past few decades, increasing attention has been drawn to the neighborhoods in which families with children live and interact. Policymakers' concerns have focused on large urban centers where high concentrations of poor families reside; many of these families dwell in public housing.[1,2] In addition to poverty, these neighborhoods have been marked by high unemployment rates, large numbers of families receiving welfare, and pervasive crime and violence. However, no experimental evidence exists for links between neighborhood residence and health and behavior, because families have some choice, albeit limited in the case of low-income families, about the neighborhoods in which they live (resulting in problems of selection bias[3–5]).

In 1994, the US Department of Housing and Urban Development (HUD) launched a novel social experiment, the Moving to Opportunity for Fair Housing Demonstration (MTO), in 5 sites (Baltimore, Boston, Chicago, Los Angeles, and New York City). The MTO is a randomized housing mobility experiment in which families with children who lived in public housing in high-poverty neighborhoods were given the opportunity to move to less poor neighborhoods. This program was motivated by evidence from existing housing relocation programs that rental assistance combined with housing counseling can help low-income families move to private housing in low-minority-concentration or low-poverty neighborhoods and possibly increase their educational and employment opportunities.[6,7] These studies did not, however, use randomized designs or consider noneconomic outcomes.

Beyond possible economic benefits, residential mobility programs such as MTO are likely to have consequences for morbidity. Evidence from nonexperimental studies indicates that residence in a low-income neighborhood is associated with unfavorable physical and mental health.[3] Thus, moving from a high-poverty neighborhood to a less poor neighborhood may improve health.

This study focused on the short-term impact of the MTO program in New York City. The consequences of moving from high-rise public housing in high-poverty neighborhoods to either private housing in similar neighborhoods or private housing in low-poverty neighborhoods for parents' and children's mental health were investigated. Outcomes were examined approximately 2 years after families who received vouchers had moved (3 years since baseline and random assignment).

METHODS

The selection of participants, design, and methods of the national MTO evaluation have been described in detail elsewhere[8,9] and are briefly summarized here.

Design and Description of MTO Program

The MTO is a housing relocation program in which families who resided in public housing or received project-based assistance under the Section 8 program and who had at least 1 child younger than 18 years were eligible to participate. Housing projects from which participants were recruited were located in census tracts with poverty rates in excess of 40%, as measured by the 1990 US Census. A randomized controlled design was used such that families who volunteered for the program were assigned to 1 of 3 groups: (1) the experimental, or treatment, group, whose members received Section 8 housing vouchers and special assistance to move only to low-poverty neighborhoods (<10% poor according to the 1990 US Census); (2) the comparison group, whose members received Section 8 housing vouchers under the regular, geographically unrestricted program (Section 8 group); or (3) the control group, whose members did not receive vouchers but continued to receive project-based assistance (in-place control group). The Section 8 program allocates vouchers for rent subsidies to purchase approved housing in the private market. The special assistance received by experimental families was provided by local nonprofit organizations and varied across sites. In general, these services entailed assisting families with finding units and overcoming obstacles to obtaining housing in low-poverty neighborhoods, as well as working with landlords unfamiliar with the Section 8 program or unaccustomed to renting to families from public housing. Random as-

signment was conducted by means of specially designed software for the MTO program; assignment to each condition was based on an expected treatment compliance (or take-up) rate of 25% at each site.

Families that volunteered for the program were more disadvantaged than their public housing counterparts who did not join MTO; MTO families were more likely than nonparticipating families to receive welfare and to be headed by women who were young and unemployed.[9]

Abt Associates Inc., under contract with HUD, conducted baseline interviews with heads of households from 1994 to 1999, before random assignment and relocation of movers. The structured interviews focused on demographic information, with limited data obtained for each household member, including children. HUD contracted different teams of researchers to conduct site-specific follow-up evaluations.[10]

TABLE 1—Baseline Parental and Family Characteristics by Treatment Group: MTO Demonstration, New York City, 1994–1999

	Experimental (n = 220)	Section 8 (n = 181)	In-Place Control (n = 149)	Total (n = 550)
Mean parental age, y (SD)	35.77 (10.13)	35.43 (9.13)	34.96 (9.67)	35.44 (9.67)
Sex, % female	91.3	96.1	92.6	93.2
Parental race/ethnicity, %				
African American	48.6	50.5	51.0	49.9
Latino/Latina	48.6	45.1	45.6	46.6
Other	2.8	4.4	3.4	3.5
Parent is high school graduate/GED, %	66.5	67.4	58.4	64.6
Parent is married, %	12.1	7.7	12.3	10.7
Parent is employed, %	22.3	26.6	28.1	25.3
Main reason want to move, %				
Better schools for children	16.8	18.6	18.6	17.9
Get away from drugs and gangs	49.5	48.5	53.6	50.3
Get bigger/better apartment	29.5	31.7	25.0	29.0
Other	4.2	1.2	2.9	2.8

Note. MTO = Moving to Opportunity for Fair Housing Demonstration; GED = graduate equivalency diploma. Descriptive statistics are weighted by date of random assignment because the assignment ratio for the 3 groups changed throughout the randomization period. No significant group differences were found.

New York City MTO Evaluation

We report on a follow-up evaluation of the New York City MTO site (n=794). Three years after baseline interviews were completed, we hired field staff from Schulman, Ronca, and Bucuvalas, Inc. to conduct in-home follow-up interviews with primary caregivers and up to 2 randomly selected children per household (in sampling, priority was given to children who lived in the household at baseline and to children who were 3 years of age and older). For the small subset of families who had moved out of the metropolitan area, telephone interviews were conducted with a parent and 1 randomly selected child 11 years of age or older per household (n=14 families). The parents' interviews were administered in English or Spanish, and the children's interviews were administered in English only. Given the nature of the program, the interviewers were not blind to the group assignments of the participants. In total, 550 families were interviewed as part of this follow-up evaluation between 1998 and 2000, for a 69% response rate. In general, families that participated in the follow-up did not significantly differ from those that did not participate (not shown; data available from the authors).

Information was obtained on an average of approximately 1.5 children per household (n=806). On average, children were 10.72 (SD=4.15) years of age at follow-up (range 1.15–19.35).

Overall, 40% of families used the randomly assigned treatment (vouchers) they were offered to move to new neighborhoods (42% of the experimental group and 38% of the Section 8 group). Across all 5 sites, the compliance rate for the experimental group was 47% and for the Section 8 group was 60%, which was higher than the expected rate of 25%.[9]

Sample Description

Table 1 displays the groups' baseline parent and family characteristics. Overall, randomization yielded comparable experimental, Section 8, and control groups (all baseline differences among groups were insignificant). At the time of baseline interviews, the parents were in their mid-30s, and approximately two thirds had a high school degree or the equivalent. Approximately half of the sample was African American, and the remainder was Latino/Latina (a small number reported "other" for race/ethnicity). Most households were headed by unmarried parents, and in most cases, mothers were interviewed. When asked the primary reason for wanting to move from their current neighborhood, a majority of parents reported getting away from drugs and gangs (this sentiment was consistent with results at other MTO sites[9]).

This study focuses on 512 children who were 8 to 18 years of age at follow-up (mean=12.62, SD=2.74). The sample was split evenly by the sex of the children.

At follow-up, families resided in 170 census tracts, with an average of 3.24 (SD=5.48) families per neighborhood. Although it was still relatively low, clustering within neighborhoods was highest among in-place controls (mean=2.98, SD=3.32), followed by experimental (mean=2.37, SD=2.67) and then Section 8 (mean=1.87, SD=1.87) families.

Measures

The major outcome of interest at follow-up was mental health; all measures assessed subclinical problems and therefore did not permit diagnostic classifications but are known to be correlated with clinical status and receipt of psychosocial treatment.[11–14] We also consid-

ered neighborhood conditions and family economic well-being, because they were the primary targets of the MTO program.

Neighborhood Economic and Social Conditions. Characteristics of neighborhoods in which families resided at follow-up were assessed. Neighborhood demographic characteristics were measured by 1990 US Census data. Neighborhood physical and social disorder was measured by parental ratings of the size of problems (trash, graffiti, public drinking, public drug use or dealing, and abandoned buildings) in their neighborhoods from "not a big problem" (1) to "a big problem" (3); total mean scores were calculated, with higher scores reflecting greater disorder (range 1–3). Parents also reported level of satisfaction with their neighborhoods, rated from "very satisfied" (1) to "very dissatisfied" (5); we reverse coded scores, so higher scores represent greater satisfaction. Interviewer observations characterized the quality of the immediate external environment of respondents' homes; interviewers rated the condition of the housing and street and the presence of garbage and drugs/alcohol (M.B. Selner-O'Hagan, T. Leventhal, J. Brooks-Gunn, J.B. Bingenheimer, and F. Earls, 2002, unpublished data). All 4 items were coded dichotomously, and total raw scores were calculated (range 0–4). Higher scores signify lower-quality environments.

Parents' Mental Health. Depressive (Depressive Mood Inventory[11]) and distress or anxiety (Hopkins Symptom Checklist[12]) symptoms were assessed. For both scales, parents reported how often each symptom was present during the past month, on a 5-point scale from "not at all" (1) to "all of the time" (5). Total scores were calculated as mean item scores; higher scores indicate poorer health (range 1–5).

Children's Mental Health. Behavior problems were assessed with the Behavior Problems Index, a 28-item scale widely used in national health surveys.[13,14] Children reported how true each behavior was of them during the past 6 months, on a 3-point scale from "not true" (0) to "often true" (2); in keeping with past work,[14] the scores were recoded to reflect whether behavior was reported as either not true (0) or as sometimes or often true (1).[14] Subscale scores were calculated for anxious/depressive (e.g., unhappy, sad, or depressed; too fearful or anxious; range 0–5), dependency (e.g., need to be near adults; cry a lot; range 0–4), headstrong (e.g., argue a lot; strong/hot temper; range 0–5), and antisocial (e.g., lie and cheat; tease others a lot or cruel/mean to others; range 0–6) problems. Total raw scores were used as outcomes, with higher scores indicating more problems.

Family Economic Well-Being. These outcomes, reported by parents, include current parental employment status as well as welfare receipt and income for the past year. Reported household size was used to calculate per-person income.

Analytic Strategy

The purpose of all analyses was to compare (1) the experimental group and in-place controls and (2) the Section 8 group and in-place controls. Analysis of variance was employed to evaluate group differences in neighborhood socioeconomic conditions and quality. Overall group differences were tested and post hoc pairwise comparisons of differences were examined. All pairwise mean comparisons were Bonferroni-adjusted ($\alpha/3$). Ordinary least squares regression analyses, similar to those used for parental outcomes, were used to estimate the program's effects on parent-reported neighborhood disorder and satisfaction.

Regression was employed to evaluate the program's effects on parents' and children's mental health and family economic well-being according to randomization status, regardless of whether families complied with the assigned treatment (i.e., intention-to-treat [ITT] analyses); ordinary least squares regression was used for continuous outcomes and logistic regression for bivariate outcomes. All analyses included 2 indicator variables for the treatment status, 1 for the experimental group and another for the Section 8 group; the in-place control group served as the referent. Analyses of parents controlled for the following baseline characteristics: sex, race/ethnicity, age, education, employment status, marital status, and number of children in the household. Analyses of children controlled for children's age and sex and all baseline characteristics, with the exception of parental sex; analytic procedures also accounted for multisibling households.

To supplement these regression analyses, which in all likelihood represent an underestimation of the program's effects because of the relatively low take-up rate, treatment-on-treated (TOT) effects were estimated with 2-stage least squares regression or instrumental variable analysis.[15,16] The first model used random assignment status as an instrument (plus baseline covariates) to predict program compliance for the experimental and Section 8 groups (separate models); the subsequent models used the predicted compliance variable for the respective group (plus baseline covariates) to estimate the program's effects on each outcome. These analyses provide a relatively unbiased estimate of the program's effects among those who received treatment.

All statistics were weighted to reduce biases associated with differential ratios of random assignment to the 3 conditions throughout the randomization period. All analyses of parents were estimated with SPSS 8.0 for Windows (SPSS Inc, Chicago, Ill), and all analyses of children were estimated with Stata 6.0 for Windows (Stata Corp, College Station, Tex).

RESULTS

Neighborhood Conditions

Table 2 presents characteristics of the neighborhoods in which families resided at follow-up. According to all neighborhood indicators, experimental families lived in the most advantaged neighborhoods. As measured by the 1990 US Census, experimental families' neighborhoods had significantly higher median incomes and significantly fewer poor residents and rental units than did in-place control families' neighborhoods. Experimental families' neighborhoods did not significantly differ from in-place control families' neighborhoods in terms of the percentage of Blacks, but did differ with respect to the percentage of Latinos and Whites. Experimental parents reported significantly less physical and social disorder and significantly greater satisfaction with their neighborhoods compared with in-place control parents. Interviewers also rated the external environments of experimental families' homes as significantly higher in quality than those of in-place control families' homes.

TABLE 2—Neighborhood Characteristics at Follow-Up by Treatment Group: MTO Demonstration: New York City, 1998–2000

	Experimental (n = 220)	Section 8 (n = 181)	In-Place Control (n = 149)	Difference: Experimental vs Control[a]	Difference: Section 8 vs Control[a]
1990 US Census[b]					
Median family income, $	23 277 (14 684)	17 922 (9283)	14 808 (6531)	+8469†	+3114**
Fraction poor	0.34 (0.20)	0.40 (0.14)	0.45 (0.12)	−0.11†	−0.05**
Fraction rental units	0.82 (0.25)	0.92 (0.15)	0.94 (0.15)	−0.12†	−0.02
Fraction Black	0.45 (0.25)	0.40 (0.24)	0.41 (0.21)	0.04	−0.01
Fraction Latino	0.41 (0.25)	0.48 (0.23)	0.51 (0.20)	+0.10†	−0.03
Fraction White	0.12 (0.21)	0.09 (0.18)	0.06 (0.16)	+0.06**	+0.03
Parental report[c]					
Disorder[d]	2.05 (0.73)	2.17 (0.65)	2.38 (0.56)	−0.33†	−0.21***
Satisfaction[e]	3.07 (1.42)	2.83 (1.33)	2.58 (1.39)	+0.49†	+0.25*
Interviewer observation[b]					
Poor external environment[f]	2.27 (1.40)	2.45 (1.31)	2.72 (1.16)	−0.45***	−0.27

Note. MTO = Moving to Opportunity for Fair Housing Demonstration. Means (SDs) are weighted by date of random assignment because the assignment ratio for the 3 groups changed throughout the randomization period.
[a]Significance levels indicate significant difference compared with in-place controls.
[b]Test statistic computed via analysis of variance, with mean comparisons Bonferroni-adjusted.
[c]Means adjusted for baseline characteristics: parental sex, race/ethnicity, age, education, employment status, marital status, and number of children in household; missing baseline characteristics were imputed to the mean of the nonmissing sample. Test statistics were computed via ordinary least squares regression.
[d]Parents reported "how big a problem" 5 types of events in the neighborhood were, on a 3-point scale from "a big problem" (3) to "not a big problem" (1). For disorder scale, range = 1–3.
[e]For satisfaction, range = 1–5.
[f]Interviewer observed the street block on 4 attributes, and items were recoded dichotomously, with higher scores reflecting lower quality (range 0–4).
*$P < .10$; **$P < .05$; ***$P < .01$; †$P < .001$.

The neighborhoods of Section 8 families also appeared to be superior to the origin neighborhoods of in-place control families, but differences were about half the size of those found for experimental families. Section 8 families lived in neighborhoods with significantly higher incomes and fewer poor residents than did in-place controls, but these families' neighborhoods did not significantly differ in terms of renters or racial/ethnic composition. Section 8 parents also reported significantly less disorder than did in-place control parents. No significant differences between Section 8 and in-place control families were found in neighborhood satisfaction or the quality of the external environment.

Parents' Mental Health

Table 3 displays the groups' total symptom scores; the first column presents predicted means for in-place controls and the following columns presents ITT and TOT effects for the experimental and Section 8 groups, respectively. For the ITT analyses, a significant group difference was found for distress symptoms; experimental parents were less likely than in-place control parents to report distress symptoms. For the TOT analysis, this effect was significant, suggesting that experimental parents who complied with treatment (i.e., moved) were less likely than in-place controls to report distress symptoms. This TOT effect represented an additional 20% reduction in symptoms compared with control parents (e.g., $[0.55 - 0.21 = 0.34]/1.68$). A trend-level ITT effect was found for depressive problems, and the TOT effect was significant.

Children's Mental Health

Table 4 presents group comparisons of subscale scores in the same format used for parents' mental health. All analyses were run for the full sample and separately by children's sex and age.

Full Sample. For the ITT analyses, experimental children were significantly less likely than in-place control children to report anxious/depressive problems, and results were also significant for the TOT analyses. Section 8 children, on the other hand, were only marginally less likely than in-place controls to report dependency and headstrong problems. No significant group differences were found for antisocial problems.

Sex Subgroups. Results varied by the children's sex. Experimental boys were significantly less likely to report anxious/depressive problems than were in-place control boys. For the TOT analyses, this effect was substantially larger than the ITT effect—39% additional reduction in problems—but only marginally significant. Both experimental and Section 8 boys had fewer dependency problems than did in-place control boys, and for boys whose families complied with the program, there was a more than 60% further reduction in these problems compared with in-place controls. For boys, no significant group differences were found for headstrong and antisocial problems, and for girls, no significant group differences were found for any subscale scores.

Age Subgroups. Results also varied by children's age. Among children aged 8 to 13 years, Section 8 children were significantly less likely than in-place controls to have headstrong problems, and the corresponding TOT effect was significant. For anxious/depressive problems, a marginally significant treatment effect was found for experimental children aged 8 to 13 years, and for dependency problems, marginally significant program effects were found for both experimental and Section 8 children aged 8 to 13 years. No significant group differences were seen for antisocial problems or for youths aged 14 to 18 years.

Family Economic Well-Being

No significant program effects were found for employment, welfare receipt, household size, household income, or per-person income for either the ITT or the TOT analyses (Table 3).

DISCUSSION

MTO was the first study to use experimental data to demonstrate links between neigh-

TABLE 3—Summary of Unstandardized Regression Coefficients (Standard Errors) for MTO Program Effects on Parental Mental Health and Family Economic Well-Being at Follow-Up: New York City, 1998–2000

	In-Place Control (n = 149), Predicted Mean	Experimental[a] (n = 220)		Section 8[a] (n = 181)	
		Intent-to-Treat	Treatment-on-Treated	Intent-to-Treat	Treatment-on-Treated
Parental mental health					
Depressive symptoms[b]	2.37	–0.19 (0.11)*	–0.49 (0.25)**	–0.01 (0.11)	0.00 (0.30)
Distress/anxiety symptoms[b]	1.68	–0.21 (0.09)***	–0.55 (0.21)***	–0.12 (0.09)	–0.28 (0.24)
Family economic well-being					
Parent employed	0.47	0.04 (0.24)	0.02 (0.13)	0.30 (0.25)	0.14 (0.14)
Receive welfare	0.70	0.16 (0.24)	0.08 (0.11)	–0.14 (0.25)	–0.07 (0.14)
Household income, $	12 477	287.41 (994.72)	704.19 (2352.44)	146.26 (1035.83)	521.32 (1030.24)
Per person income, $	4 423	573.28 (385.59)	1 347.10 (1013.21)	6.53 (401.53)	147.01 (997.04)

Note. MTO = Moving to Opportunity for Fair Housing Demonstration. Models adjust for parental sex, race/ethnicity, age, education, employment status, marital status, and number of children in household and apply weights by date of random assignment because the assignment ratio for the 3 groups changed throughout the randomization period. Missing baseline characteristics were imputed to the mean of the nonmissing sample.

[a]Significance levels indicate significant difference compared with in-place controls.

[b]Parents reported "how much they were bothered or troubled" during the past month with each symptom, on a 5-point scale from "not at all" (1) to "all of the time" (5); scale scores are averages.

*P < .10; **P < .05; ***P < .01.

borhood residence and mental health by providing families the opportunity to move (via randomization) from public housing in high-poverty neighborhoods into private housing in less poor neighborhoods. The experimental design addressed the fundamental problem of selection bias in neighborhood research. Neighborhood effects on mental health were found for parents and children. Because children reported on their own mental health, no confounding of reporters was present.

The most significant benefits of the MTO program were noneconomic. Experimental parents who moved to low-poverty neighborhoods displayed superior mental health, as evidenced by their reporting fewer distress and depressive symptoms than in-place control parents who remained in high-poverty neighborhoods. Experimental parents showed moderate relative improvements in mental health ranging from 8% to 33% for ITT and TOT effects, respectively.

The mental health impacts of the MTO program were larger for children than for parents. Program effects were most pronounced for boys and for children aged 8 to 13 years. Among boys, moving to private housing in low-poverty neighborhoods resulted in a 25% reduction in depressive/anxiety and dependency problems, on average, relative to in-place controls, and effects increased threefold for boys whose families complied with the program by using vouchers to move to advantaged neighborhoods.

Similar results for dependency problems were found for Section 8 boys who moved out of public housing but remained in relatively poor neighborhoods. In addition, Section 8 children aged 8 to 13 years displayed fewer headstrong problems compared with in-place control peers.

The general lack of findings for girls may owe to girls' differential exposure to neighborhood contexts. Parents and school officials may provide boys greater access to neighborhood influences, whereas girls' exposure may be more restricted.[17,18] The absence of findings for youths aged 14 to 18 years may result from their ability to travel back to their old high-poverty neighborhoods or from disruption of peer networks, which are salient during adolescence. In fact, research on residential mobility indicates that instability created by moving and subsequent school changes (independent of accompanying economic changes) may have negative health effects, likely owing to disturbance of social networks.[19–22] Finally, younger children may benefit more from their parents' superior mental health than older children, given the prominence of the family context for this age group.[23]

Although our measures did not permit examination of clinical disorders, the program's impact on mental health, particularly the large effects for children, may have clinical as well as public health benefits. For instance, the favorable results reported correspond with other MTO site evaluations, particularly reductions in male youths' arrests for violent crime and improvements in children's health for incidents necessitating medical intervention.[24,25] In addition, results partially concur with findings from recent welfare-to-work studies suggesting that both parents and their children are affected by antipoverty programs.[27] Although several studies report modest beneficial effects of antipoverty programs on parents' mental health, effects for their children are mixed, with possibly more pronounced effects for children and potentially adverse effects for adolescents' well-being. No such negative effects were found in the MTO program.

The absence of program effects on family economic well-being—parental employment, welfare receipt, and income—may owe to several factors. First, the MTO program coincided with historic changes in welfare legislation, which promoted entrance into the workforce and made cash assistance contingent on employment as well as time-limited. Second, the program was initiated during a

TABLE 4—Summary of Unstandardized Regression Coefficients (Standard Errors) for MTO Program Effects on Children's Mental Health at Follow-Up: New York City, 1998–2000

	In-Place Control (n = 146), Predicted Mean	Experimental[a] (n = 195)		Section 8[a] (n = 171)	
		Intent-to-Treat	Treatment-on-Treated	Intent-to-Treat	Treatment-on-Treated
Anxious/depressed (total)[b]	2.02	–0.32 (0.16)**	–0.85 (0.41)**	–0.16 (0.17)	–0.45 (0.48)
Boys	2.02	–0.42 (0.21)**	–1.20 (0.65)*	–0.33 (0.24)	–1.12 (0.73)
Girls	2.02	–0.23 (0.23)	–0.64 (0.56)	–0.03 (0.24)	–0.09 (0.65)
Aged 8–13 y	2.15	–0.39 (0.21)*	–0.90 (0.49)*	–0.26 (0.23)	–0.74 (0.62)
Aged 14–18 y	1.80	–0.20 (0.22)	–0.67 (0.68)	0.01 (0.23)	–0.04 (0.71)
Dependent (total)[b]	1.58	–0.16 (0.14)	–0.47 (0.35)	–0.28 (0.15)*	–0.73 (0.43)*
Boys	1.75	–0.53 (0.20)***	–1.61 (0.66)***	–0.64 (0.21)†	–1.74 (0.69)***
Girls	1.42	0.17 (0.19)	0.35 (0.49)	0.04 (0.20)	0.19 (0.54)
Aged 8–13 y	1.80	–0.29 (0.18)*	–0.77 (0.41)*	–0.33 (0.20)*	–0.83 (0.53)*
Aged 14–18 y	1.21	0.07 (0.21)	0.22 (0.63)	–0.18 (0.21)	–0.56 (0.68)
Headstrong (total)[b]	2.64	–0.08 (0.18)	–0.25 (0.46)	–0.32 (0.19)*	–0.94 (0.54)*
Boys	2.58	–0.02 (0.27)	0.04 (0.78)	–0.43 (0.27)	–1.40 (0.84)*
Girls	2.69	–0.11 (0.26)	–0.41 (0.64)	–0.24 (0.26)	–0.63 (0.72)
Aged 8–13 y	2.58	–0.04 (0.23)	–0.13 (0.52)	–0.55 (0.20)**	–1.32 (0.65)**
Aged 14–18 y	2.73	–0.10 (0.29)	–0.25 (0.88)	–0.06 (0.30)	–0.27 (0.94)
Antisocial (total)[b]	1.69	0.29 (0.20)	0.78 (0.53)	0.01 (0.20)	0.02 (0.56)
Boys	1.79	0.34 (0.29)	1.08 (0.84)	0.34 (0.31)	0.88 (0.92)
Girls	1.61	0.27 (0.28)	0.80 (0.72)	–0.31 (0.28)	–0.87 (0.76)
Aged 8–13 y	1.60	0.19 (0.25)	0.45 (0.61)	–0.05 (0.25)	–0.16 (0.66)
Aged 14–18 y	1.85	0.46 (0.33)	1.53 (1.04)	0.07 (0.35)	0.21 (1.07)

Note. MTO = Moving to Opportunity for Fair Housing Demonstration. Models adjust for children's age and sex (full sample only) and baseline parental characteristics (race/ethnicity, age, education, employment status, marital status, and number of children in the household) and apply weights by date of random assignment (because the assignment ratio for the 3 groups changed throughout the randomization period). Missing baseline characteristics were imputed to the mean of the nonmissing sample. Standard errors adjust for multisibling households.

[a]Significance levels indicate significant difference compared with in-place controls.

[b]Children reported "how true of them" behaviors were during the past 6 months, on a 3-point scale, and the scale was recoded to reflect "not true" (0) or "sometimes/often true" (1); scale scores are sums.

*P < .10; **P < .05; ***P < .01; †P < .001.

period of general economic growth, which improved the labor market prospects for most sectors of the population.[27] Third, low- to medium-skill jobs were not necessarily more plentiful in New York suburbs compared with cities such as Atlanta and Boston.[28,29] Fourth, transportation issues, such as inadequate public transportation and lack of access to cars, may have impeded entrance into the workforce for suburban movers. Finally, moving may have disrupted existing job networks.

Because this study used an experimental design, we cannot disentangle the processes that might underlie the effects of the program; however, a range of neighborhood and family economic conditions was examined. At baseline, the prevalence of neighborhood crime and violence in families' lives was clear from the fact that escaping drugs and gangs was their primary reason for volunteering for the program. By and large, mover families, particularly experimental families, acquired considerably improved neighborhood conditions, which included higher median incomes and less reported disorder relative to the baseline neighborhoods of in-place control families. In addition to improved neighborhoods, another possible explanation for the program's effects is enhanced family economic well-being[30,31]; however, as noted, no significant group differences were found. Finally, an alternative hypothesis is that more advantaged neighborhoods provide better health and social resources—such as quality health services, schools, and housing, as well as youth programs, parks, and sport facilities—than poor neighborhoods.

A major limitation of this study is that only approximately 70% of New York MTO families were seen at follow-up. However, the present sample does not significantly differ from nonparticipants in baseline characteristics. In addition, the MTO program is based on voluntary participation, which suggests that beneficial effects of the program may be due, at least in part, to unmeasured family characteristics that led to self-selection into MTO. Nonetheless, more advantaged and motivated families did not appear to volunteer for MTO, as indicated by the fact that participating MTO families were more socioeconomically disadvantaged than families that declined participation.[9] Finally, the absence of repeated measures on outcomes, as a result of restricted baseline measures, did not allow examination of within-group change by means of before-and-after comparisons; it is unclear whether the program's effects are over- or underestimated by failure to consider within-group differences.

One policy implication of this study is that neighborhood residence is a possible source of socioeconomic differentials in health. Neighborhood disorder and associated conditions in high-poverty communities also may contribute to high rates of emotional distress.[32,33] Our findings suggest that moving out of public housing in high-poverty neighborhoods had positive effects on mental health, although the effects varied for parents and their children, depending on the nature of the relocation. High-density public housing located in distressed communities is being dismantled in several large cities. Our study suggests potential mental health benefits from this policy, especially for families that relocate to low-poverty neighborhoods. Public health efforts to monitor the mental health of families in high-poverty neighborhoods are merited, as are policies to increase the mobility options of low-income families. ■

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Contributors

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