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Title: Two-Year Impacts of Opportunity NYC by Families' Likelihood of Earning Rewards

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Abstract Body

Limit 5 pages single spaced.

Background / Context:

Experimental approaches can help disentangle the impacts of policies from the effects of individual characteristics, but the heterogeneity of implementation inherent in studies with complex program designs may mask average treatment impacts (Morris & Hendra, 2009). In the case of the Opportunity NYC-Family Rewards (ONYC-Family Rewards), families earned a range of differing incentives, as a result of variation in engagement in the activities rewarded by the program. Given that the effect of ONYC-Family Rewards on key domains of interest (education, health, and employment) are thought to occur *through* such engagement (as well as the increases in income that accompany it), this heterogeneity is critical to explore.

Purpose / Objective / Research Question / Focus of Study:

In this study, we examine the extent to which effects of ONYC-Family Rewards are moderated by key family and child-level characteristics that are associated with a families' propensity to earn the rewards offered by the program. We use multiple baseline characteristics to predict the amount of dollars earned from the rewards as a means to identify theoretically important, multivariate-defined groups of children for whom program effects might be more concentrated. Specifically, we ask: (1) Does the likelihood of earning rewards moderate the impact of ONYC-Family Rewards on children's educational outcomes? (2) Are the impacts of ONYC-Family Rewards on children's educational outcomes greater among the group of children whose families are most likely to earn rewards?

Setting:

The intervention was aimed at low-income families in six of New York City's highest-poverty communities in the Bronx, Brooklyn and Manhattan.

Population / Participants / Subjects:

The sample includes 4,750 families and over 11,000 children, half of whom were eligible to receive the cash incentives if they met the required conditions. Children (50 % female; average age at time 1 = 11 yrs) were spread across 900 schools in New York City. The majority of children were attending a public or charter school (97.5 %) in the year prior to the study, while a small number were attending a private or parochial school (2.5 %). Most children were Hispanic/Latino (47.0 %) and Black, non-Hispanic/Latino (50.4 %) and were almost all born in the U.S. (93.5%). A number of children (14.9 %) were enrolled in special education, while 12.9 % of children were enrolled as an English Language Learner (ELL) in the year prior to the study.

Families recruited into the ONYC-Family Rewards study had to have at least one child in 4^{th}, 7^{th}, or 9^{th} grade at the start of the study, based on Department of Education (DOE) administrative records in the year pre-random assignment. This child was treated as the focal child in the family. If families had more than one child in the target grade, one child was randomly selected to be the focal child. From this sample of families with a target child, we created three separate analysis samples used in our impact analyses. The youngest age group was made up of families with a focal child in elementary school, expected to be in 4^{th} grade at the start of the study (N = 1451). The middle age group was made up of families with a focal child in middle school, expected to be in 7^{th} grade at the start of the study (N = 1370). The oldest age group was made up of families with a focal child in high school, expected to be in 9^{th} grade at the

start of the study (N = 1550). We will be reporting effects of ONYC on a subgroup of these families who earned the most amount of money from rewards. This sample includes 369 4th grade children, 339 7th grade children, and 389 9th grade children.

In addition, we created an external modeling sample for each age group from the subsample of all families assigned to the ONYC program who had a child in 3rd, 4th, or 5th grade who was not a focal child. For the youngest age group, our external modeling sample (N = 528) included a subsample of all families who had a child in 3rd, 4th, or 5th grade who was not a focal child. For the middle age group, the modeling sample (N = 487) included a subsample of all families who had a child in 6th, 7th, or 8th grade but who was not a focal child. For the 9th grade age group, the modeling sample (N = 370) included a subsample of families who had a child in 8th or 9th grade but who was not a focal child. Creating a modeling sample for each age group that parallels the three analysis samples ensures that the children and families in the modeling sample in each age group resemble the children and families in the analysis sample.

Intervention / Program / Practice:

Opportunity NYC–Family Rewards is a conditional cash transfer (CCT) program that ties cash rewards to a pre-specified set of activities and outcomes in the areas of children's education, family preventive health care, and parents' employment. Reflecting the important role that parents can play in their children's success in school, the incentives in this domain are intended to encourage parents to become more fully engaged with their children's education. (see detailed description in Abstract 1 in this symposium).

Research Design:

This analysis, building from a technique used in propensity score research but used here to assess subgroup impacts in experimental studies, allows us to maintain the integrity of the experiment while identifying the group of families who were most likely to earn rewards (Morris & Hendra, 2009). This technique differs from a propensity score matching approach in that we do not identify a control group for comparison purposes (Deheja & Wahba, 1999; Rosenbaum & Rubin, 1983, 1984). Instead, this approach is used to develop an index that can be used along with the randomization design to estimate how the effects of the program differ across families at differing levels of the rewards index.

Data Collection and Analysis:

The data collected spans a vast range of sources and includes administrative records on school outcomes, employment, earnings, public health insurance, welfare and food stamp payments, and housing subsidies obtained from various New York City and New York State agencies; program-related data on reward payments obtained from Seedco; and one wave of a survey in which a subset of parents in the program and control groups are interviewed 18 months after treatment began. The parent-survey, administered by the Department of Information Resources (DIR), was administered via telephone using CATI and had an overall response rate of 82 %. As part of the survey, parents were asked to report on the 4th, 7th, or 9th grade child who was previously identified as the focal child. Data on education outcomes were obtained from administrative records provided by the New York City Department of Education (DOE). These data are available for all students in the study for one year prior to study entry and for two years after study entry. School outcomes that are available from the DOE records include attendance rates, scores on annual math and English language arts (ELA) tests, performance on Regents exams, course credits earned, and school enrollment status.

In these analyses we use an external modeling sample that is subsequently removed from the analysis when estimating program impacts. Using a weighted, regression-based approach, we created an index in the modeling sample based on multiple, theoretically-derived, family and child baseline characteristics to predict the amount families earned from the rewards. The baseline characteristics included marital status, number of children in the family under 19, age, foreign born status, race, presence of a child between the ages of 0 and 2, presence of a child between the ages of 13 and 18, TANF receipt, health insurance receipt, whether or not the parent has a mental or physical problem limiting work, full-time employment status of parent and of any adult in the household, benefit or housing subsidy receipt, parents' education level, parents' earnings in the year prior to random assignment, child gender, child special education status, child math and reading achievement in the year prior to random assignment, and child attendance rate in the year prior to random assignment.

Using the index, we identified the top quartile of families on the index, in both the program and the control groups. We then estimated experimental impacts in the first two years on children and their families among this subgroup using OLS regression, as well as the moderating effects of the index on the effects of the treatment indicator. Differences in subgroup impacts were tested by conducting split sample regression analyses and estimating differences using an HT statistic. The HT statistic is the weighted sum of squares of the impact estimates for the subgroups and has a chi-squared distribution (Cooper & Hedges, 1994). Unlike more standard interaction terms, split sample approaches have the advantage of not assuming homogeneity of variance across the subgroups examined.

Findings / Results:

Recall that the core study findings showed no statistically significant benefits of the program on educational outcomes for the youngest children (see Abstract 1). Preliminary analyses conducted here find statistically significant program benefits on a number of measures of academic achievement among the youngest children whose families were likely to earn the most money from the rewards. As shown in Table 1, for this group of children, the program led to a statistically significant increase in attendance and in Math and Reading standardized test (in Year 1). There were no effects among the 7^{th} and 9^{th} grade cohorts for this same subgroup of families.

Conclusions:

Although these findings are preliminary, they suggest that the program may be improving academic outcomes for those youngest children whose families are likely to experience the greatest increase in reward income. Further analyses will explore the mediating processes underlying these effects, to gain further confidence in these results.

Appendices

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Appendix A. References

References are to be in APA version 6 format.

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Rosenbaum, P. R., & Rubin, D. (1983). The central role of the propensity score in observational studies for causal effects. *Biometrika*, 70, 41 – 55.

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Appendix B. Tables and Figures

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Table 1. Impacts on Attendance and Achievement among Families with the Highest Likelihood of Earning Rewards by Child Age Group

	4th Grade Children		7th Grade Children		9th Grade Children	
Outcome (%)	Control Group	Difference (Impact)	Control Group	Difference (Impact)	Control Group	Difference (Impact)
Attendance						
Had attendance rate of 95% or higher, Year 1	0.62	0.02	0.71	-0.05	0.62	0.03
Had attendance rate of 95% or higher, Year 2	0.53	0.10 *	0.57	-0.03	0.47	0.07
Attendance rate, Year 1	0.95	0.00 *	0.96	0.00	0.92	-0.02
Attendance rate, Year 2	0.89	0.04 *	0.92	-0.02	0.89	0.01
Achievement						
Math Scaled score, Year 1	683.00	6.00 **	668.61	0.01		
Math Scaled score, Year 2	684.73	5.52 **	674.62	-0.66		
Reading Scaled score, Year 1	658.68	5.21 **	658.68	-0.49		
Reading Scaled score, Year 2	668.34	2.92	656.07	0.18		
Took at least 2 Regents exams, Years 1					0.52	0.00
Passed at least 2 Regents exams, Years 1					0.39	-0.05
Took at least 2 Regents exams, Years 2					0.80	0.04
Passed at least 2 Regents exams, Years 2					0.50	0.04
Sample size	183 (total = 367)		175 (total = 335)		180 (total = 389)	

SOURCE: MDRC calculations using data from New York City Department of Education administrative records.

NOTES: Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent. Differences across subgroup impacts were tested for statistical significance. The high risk subgroup was determined by taking the group of families who fell in the top 25th percentile of the take up index distribution.
Sample sizes vary because of missing values.