The Effect of Early Childhood Education on Social Preferences

Alexander Cappelen  
Norwegian School of Economics  

John List  
University of Chicago & NBER  

Anya Samek*  
University of Southern California  

Bertil Tungodden  
Norwegian School of Economics  

May 20, 2018

Abstract

We present results from the first study to examine the causal impact of early childhood education on the social preferences of children. We compare children who, at 3-4 years old, were randomized into either a full-time preschool, a parenting program with incentives, or a control group. We returned to the same children when they reached 6-8 years of age and conducted a series of incentivized experiments to elicit their social preferences. We find that early childhood education has a strong causal impact on social preferences several years after the intervention. More specifically, we find that attending preschool makes children more egalitarian in their fairness views and that the parenting program enhances the importance children place on efficiency relative to fairness. Our findings highlight the importance of taking a broad perspective when designing and evaluating early childhood educational programs, and provide evidence of how differences in institutional exposure may contribute to explain individual heterogeneities in social and economic outcomes.

JEL classification: C93 J23 J33

Keywords: field experiment, social preferences, child experiment

*Corresponding Author: John List, 5757 S University Ave, Chicago, IL 60637, jlist@uchicago.edu.

We thank the editor James J. Heckman, four anonymous referees, Björn Bartling, Jordi Brandts, Edie Dobrez, Armin Falk, Ernst Fehr, Mira Fischer, Alannah Hoefler, Ola Kvåøy, Fabian Kosse, Ingvild Sharpeid, Kevin Sokal, Gaute Torvik, Kristin Troutman, and Mina Zhang for extremely useful comments and suggestions and staff at the Chicago Heights Early Childhood Center and FAIR-The Choice Lab for excellent research assistance. This work was made possible through support of a grant to the Science of Philanthropy Initiative from the John Templeton Foundation and of the Research Council of Norway through its Centres of Excellence Scheme, FAIR project No 262675. The opinions expressed in this publication are those of the authors and do not necessarily reflect the views of the John Templeton Foundation or the Research Council of Norway.
1 Introduction

Early childhood education has become a touchstone issue in the world of public education. In the past, data from programs such as the High/Scope Perry Preschool (Schweinhart et al., 1993, 2005; Heckman et al., 2010) and the Abecedarian Project (Campbell et al., 2002) have been used to measure the impact of early education on cognitive achievement and non-cognitive skills (Heckman, 2000; Heckman et al., 2006). Yet, the impact of early childhood education may extend well beyond human capital formation as currently defined. Importantly, it may also shape individuals’ moral views, including their social preferences. At least since Adam Smith, economists, philosophers and other social scientists have been aware that social preferences matter for individual choices and may affect market outcomes and social and political institutions (Fehr and Schmidt, 1999; Bolton and Ockenfels, 2000; Konow, 2000; List, 2006; Cappelen et al., 2007; Andreoni and Miller, 2002; Fisman et al., 2007), but little is known about the causal processes shaping these preferences.

In this paper, we present results from the first study to examine the causal impact of early childhood education on social preference formation in children. Early childhood is a period of rapid social preference development and appears to be formative for an individual’s social preferences in adulthood (Piaget, 1965; Kohlberg, 1984; Fehr et al., 2008; Almås et al., 2010; Sutter and Kocher, 2007; Harbaugh et al., 2007; Bauer et al., 2014; Ben-Ner et al., 2015; Angerer et al., 2015a). We take advantage of a unique, large-scale educational intervention and compare children who, at 3-4 years old, were randomized into either a full-time preschool, a parenting program or a control group (Fryer et al., 2015). The preschool and parenting program leverage two very different approaches to human capital formation. In the former, children are taught directly by our program. In the latter, children do not receive any education directly from us and the educational intervention is administered through the parents. In this way, our design is novel in that it allows us to explore how two different approaches to educational investment affect social preferences.

A further novelty of our study is that we focus on longer term effects of the interventions. We returned to the same children more than two years after the intervention had ended, when they were 6-8 years old, and conducted a series of incentivized experiments to elicit their social preferences. On the basis of these experiments, we can

1Related work has also explored the childhood development of risk and time preferences (Bettinger and Slonim (2007); Castillo et al. (2011); Sutter et al. (2015); Angerer et al. (2015b)) and competitiveness preferences (Gneezy and Rustichini (2004); Andersen et al. (2013); Samak (2013); Buser et al. (2014)).
study both whether an early childhood intervention has a causal impact on individual preferences and whether the content of the intervention is important in and of itself.

We find that early childhood education has a strong causal impact on the social preferences of children several years after the intervention. More specifically, we find that attending preschool makes children more egalitarian in their fairness views and that the parenting program enhances the importance children place on efficiency relative to fairness. We also find evidence suggesting that social learning is the underlying mechanism driving these effects, where children appear to internalize egalitarian preferences from teachers at preschool and efficiency preferences from parents. We do not find any evidence of the childhood interventions affecting the selfishness of the children.

Beyond their import for understanding the development of social preferences at an early age, our findings highlight a methodological point: when considering the design and evaluation of early childhood programs, the analyst should take a broad perspective in the measurement of outcomes. In addition, our results point to the significance of institutional exposure at an early age, and how differences in institutional exposure potentially contribute to explain individual heterogeneities in social preferences. Finally, our results shed light on the production technologies involved in human capital formation and the temporal durability of social preferences.

The remainder of our note proceeds as follows. The next section discusses the experimental design. Section 3 reports the experimental results. Section 4 summarizes the mechanisms that appear to govern the data, and Section 5 concludes.

2 Experimental Design

We begin by providing an overview of the main elements of the early childhood education intervention (Fryer et al., 2015), and of the social preference experiments.

The Early Childhood Education Intervention

We study the behavior of children who took part in the Chicago Heights Early Childhood Center (CHECC) project, a unique, large-scale field experiment implemented in a prototypical low performing urban school district in Chicago Heights, Illinois. Nearly 80% of the population of Chicago Heights is black or Hispanic and average per capita (pre-tax) income is $17,546 (US Census, 2010). We recruited households with children aged 3-4 years to participate in the experiment between 2010 and 2012. Recruitment included a large marketing campaign within the Chicago Heights school district and
also in neighboring districts.\textsuperscript{2} Households were randomized (at the household level) to one of three treatment groups:

- **Preschool:** A 9-month full day preschool for the child, but no direct intervention for the parents.

- **Parent Academy:** A 9-month incentivized parenting program for the parents to learn how to teach the child at home, but no direct intervention for the child.

- **Control:** The child and their parents did not receive any treatment interventions.

In the Preschool treatment, the child interacted with teachers and other children in a school environment for most of the day, five days a week. A main aim of this treatment was to promote social-emotional skills and incorporate small group interactions and partnered activities.\textsuperscript{3} In the Parent Academy treatment, the educational intervention was administered through the parents, who attended 90 minute sessions every two weeks and were given homework to facilitate teaching the same curriculum to the child at home. Hence, unlike in the Preschool program, children in the Parent Academy neither attended school nor interacted with peers in the program. Families that participated could earn up to $7,000 per year per child based on the parents’ attendance at the lessons and performance on the homework assignments and on the child’s performance on tests.\textsuperscript{4}

Families participated in these programs for one to two years, depending on the child’s age at enrollment and the year of enrollment. The children who were 3 years old and enrolled in 2010 participated for two years, while the children who were 4 years old at enrollment or those who enrolled in the second year of the program participated for one year. A majority of the participants assigned to a treatment group attended

---

\textsuperscript{2}All households in the area with children aged 3-4 years were eligible to participate, as long as the child did not have a learning difficulty that the program would be unable to address.

\textsuperscript{3}The children were randomly assigned either to the **Literacy Express** supplemented with **PreK Math** curriculum or to the **Tools of the Mind** curriculum. **Literacy Express** with **PreK Math** has a stronger focus on academic skills (i.e., reading, writing, math), while **Tools of the Mind** has a stronger focus on non-cognitive functions (i.e., self-regulation, working memory, cognitive flexibility). For more information about the two programs, see http://ies.ed.gov/ncee/wwc/interventionreport (**Literacy Express**) and https://ies.ed.gov/ncee/wwc/EvidenceSnapshot/519 (**Tools of the Mind**).

\textsuperscript{4}The curriculum for the Parent Academy combined elements from the **Literacy Express** and **Tools of the Mind**. The parents received $100 per session attendance, $100, $60, or $30 or $0 for an A, B, or C on homework assignments, and up to $3,400 based on their child’s performance on tests. The parents were randomly assigned to receive performance incentives either as cash or deposited into an account that could not be accessed until parents provide proof that the child was enrolled in full-time postsecondary education. The average annual per capita of the parents in this program is about $17,500.
the program: on average, the children randomized to Preschool attended 81.5% of the instruction days, while the parents randomized to Parent Academy attended 69% of the lessons. The control group did not receive any treatment interventions, but their parents received incentives to attend program evaluations several times per year.\footnote{They received $25 to come to the pre-assessment and between $25 and $100 to attend the post-assessment.}

\textit{Social Preference Experiments}\\
We returned to the CHECC children in the spring of 2014 (May 3 - 21), when they were in 1st-2nd grade, and conducted a series of incentivized social preference experiments. On average, the social preference experiment took place about 3.5 years after the child had started the CHECC program (2.7 - 3.7 years, standard deviation of 0.4 years). We targeted the subsample of children who were enrolled at the Chicago Heights school district elementary schools (9 schools) because we had a prior agreement with these schools to conduct long-term follow-up. Children attend one of these schools if their home address is within the attendance area.\footnote{We have conducted a chi-squared test of whether there is a disproportionate number of children from any treatment in any of the nine schools: \( p > 0.10 \) for all pairwise comparison of the control group and the two treatment groups.} We reached all the children that were enrolled in this school district at the time of the social preference experiment, which means that we have no attrition based on selection into the experiment.\footnote{Most of the children completed the experiment in school, but some children completed the experiment on evenings or weekends to reduce school burden. Our sample also contains 21 children who were part of a different school district and attended one of our out-of-school assessments. As a robustness check, we show in Appendix A, Table A1 and Table A2 that the results are robust to excluding these 21 children.} Attrition can therefore only be a problem if families moved in and out of the district conditional on treatment assignment, which appears unlikely since families could be part of CHECC even if they lived outside of the district. Furthermore, as shown in Table 1, the absence of selective attrition is substantiated by the fact that the children are balanced across treatments with respect to observable characteristics, including attendance in the social preference experiment. In total, we had 302 children taking part in the social preference experiment: 38.4% of the Preschool group (84 children), 38.4% of the Parent Academy group (89 children), and 34.7% of the Control group (129 children).\footnote{In an earlier version of this paper, we reported 303 children; however, one of the children who participated had been randomized to multiple CHECC programs in error and is therefore dropped from this version.}
Each child took part in four social preference experiments, where they made decisions either as a stakeholder, distributing income between themselves and another child, or as a spectator, distributing income between two other children. Each part of the experiment was voluntary. In total, 296 of the 302 children completed all four experiments.

The aim of the experimental design was to elicit the children’s social preferences in terms of three primary motives that have been shown to be essential for understanding distributive choices: self-interest, fairness, and efficiency (Konor, 2000; Cappelen et al., 2007, 2013; Almás et al., 2016), as captured by the utility function:

$$V(y_i) = y_i - \beta_i (y_i - m_i)^2 - \alpha_i (X_i - maxX)^2,$$

where $y_i$ is what the child allocates to herself, $m_i$ is what the child considers fair to keep, $X_i$ is the sum of income to the two children which depend on the decision of child $i$, and $maxX$ is the maximal sum of resources that can be distributed if the child chooses the most efficient alternative. The weight attached to fairness relative to self-interest is captured by $\beta_i$, the weight attached to fairness relative to efficiency is captured by $\beta_i/\alpha_i$, and the child’s fairness view is captured by $m_i$. Within this framework, an early childhood interventions may shape the social preferences of the child in three ways: i) in the weight she attaches to fairness relative to self-interest ($\beta_i$) ii) in the weight she attaches to fairness relative to efficiency ($\beta_i/\alpha_i$) and iii) in what she views as a fair distribution ($m_i$). By comparing the distributive decisions of the Preschool children and the Parent Academy children with the decisions of the Control children in the CHECC intervention, we can study how the early childhood education programs causally affect these fundamental dimensions of the children’s social preferences.\(^9\)

To study whether the early childhood programs affected the weight that the children place on fairness relative to self-interest $\beta_i$, we conducted a real-effort ‘dictator’ experiment in which participants acted as stakeholders in a distributive situation. Participants first completed a real-effort task in which they sorted pieces of white paper into one bin and pieces of colorful paper into another bin. Afterwards, participants were told that together with another anonymous child, who had completed the same task, they had earned ten coins, which they could exchange for small prizes at the end of the experiment. The coins were placed in a row in front of the participants.

\(^9\)Note that we here assume that there exists a utility function that represents the social preferences of the child (Krause et al., 2001). The present experimental design does not allow us to test whether the children have consistent preferences or whether the early-childhood education programs affected children’s economic rationality.
Participants were asked to decide how many coins they wanted to take for themselves (by placing them on a plate they were told was their own plate) and how many coins they wanted to give to the other child (by placing them on a plate they were told was the other child’s plate), with no cost of redistribution ($X_i = \text{max} \{X\}$ for all possible decisions of the child). The real-effort dictator experiment thus placed the child in a distributive situation in which she faced a trade-off between self-interest (taking everything for herself) and fairness (splitting the rewards “fairly,” as described later), where the interior optimal solution of the model is given by $y_i = m_i + 1/2\beta_i$. The fact that both children in the pair had completed the same task makes it reasonable to assume that they in this experiment would consider it fair to divide the earnings equally ($m_i = \text{max} \{X\}/2$), and thus any difference in choice behavior in the dictator experiment between the control group and the treatment groups would identify a causal effect of the early childhood education on the weight attached to fairness relative to self-interest, $\beta_i$.

In the remaining three experiments, participants acted as spectators, making distributive decisions for two other anonymous children (who did not participate in the social preference experiment), rather than for themselves (Cappelen et al., 2013). For these choices, the first term in the utility function, $y_i$, is always zero, and the second term is defined for the spectator’s preferences over the income of one of the two stakeholders in the pair. In the ‘efficiency’ experiment, participants were asked to choose between two alternative allocations of stickers illustrated in a picture: one allocation gave two stickers to each child; the other allocation gave one sticker to one child and six stickers to the other child.

We assume that the children viewed an equal allocation of stickers between the two children as fair in this situation, since neither of the children had any special claim to the stickers. Yet, the equal distribution is the inefficient alternative; the unequal distribution is the efficient alternative since it maximizes the total number of stickers received by the two children. The efficiency experiment thus placed the child in a distributive situation with a trade-off between efficiency and fairness, where it is optimal to choose the efficient alternative if the weight attached to fairness relative to

\footnote{To ensure that all participants made a distributive decision in the dictator experiment, the participants were asked to do the sorting task a second time and another child determined the distribution of earnings for this task. The children did not learn about the outcome of the dictator experiment in which they were a recipient until all the experiments were completed.}

\footnote{As noted by an anonymous referee, the interpretation of this choice may change if society is considered a repeated game: repeatedly choosing the efficient alternative may Pareto dominate repeatedly choosing the equal alternative if the two individuals alternate positions. See Binmore (1994) for an extensive discussion of the relationship between morality and fairness in a repeated game theory framework.}
efficiency is below a threshold, in the model $\beta_i / \alpha_i \leq 1.4$. Any increase in the share of children choosing the efficient alternative in the treatment groups would thus identify a positive causal effect of the early childhood education on the share of children with a relative weight on fairness below the threshold value.

In the dictator experiment and in the efficiency experiment, we assume that the children consider it fair to divide equally. It is well established, however, that people do not view all inequalities as unfair and that there is significant heterogeneity in whether people find inequalities due to merit or luck to be fair or unfair (Cappelen et al., 2007, 2013). To identify how the early childhood intervention shaped the children's fairness views $m_i$, specifically their willingness to accept inequalities due to merit or luck, we conducted two spectator experiments that we refer to as the 'merit' and the 'luck' experiments.

In the merit and the luck experiments, participants made decisions as spectators in a real distributive situation in which two other anonymous children had unequal initial earnings of stickers. The experiments differed with respect to the source of the inequality in earnings. In the merit experiment, participants were informed that two other children had completed a memory task and that one child had done well and earned eight stickers, while the other child had not done as well and earned two stickers. Each child's earnings was indicated by placing the stickers the child had earned on the table in front of the plate that the participant was told belonged to this child. The participant was then asked to determine the final allocation of stickers by moving the stickers from the table to either of the children's plates. In the luck experiment, participants were presented with a situation in which the inequality was the result of luck rather than merit. The initial allocation of earnings between the two children was in this experiment determined by the flip of a coin done by the experimenter in front of the participant. The 'lucky' child earned ten stickers while the 'unlucky' child earned no stickers. The earnings of the 'lucky' child were indicated by placing ten stickers in front of the 'lucky' child's plate. Again, participants determined the final distribution of stickers by moving stickers from the table to the 'lucky' child's plate or to the 'unlucky' child's plate.

In the merit and the luck experiments, we placed participants in distributive situations in which there were no self-interest or efficiency concerns. The model thus implies that participants implement what they view as a fair allocation, which means that their choices identify whether they consider inequalities due to merit or luck to be fair. A treatment difference in the merit or luck experiments would thus identify a

---

12Note that the initial allocations purposely differ between the merit and luck experiments. We did
causal effect of the early childhood education on the fairness views of the children, \( m_i \), which we illustrate in the analysis by estimating treatment effects on the prevalence of the three most prominent fairness types in the literature (Cappelen et al., 2013): egalitarians, meritocrats, and libertarians.

Table 2 summarizes the four experiments.\(^{13}\) The experiments were conducted one-on-one, always in the same order, with the experimenter reading the instructions aloud. Participation took 15-20 minutes. After the experiments, we implemented the participant’s stakeholder and spectator decisions.

Table 2 about here

3 Results

Figure 1 provides a summary of the decisions made by the children in each of the four experiments. The average share given to the other child in the dictator game was 42%, which is similar to what is found in previous dictator experiments conducted with children in this age group (Fehr et al., 2008; Engel, 2011). We observe a spike at the 50/50 distribution: 67% of the children chose to share exactly half of the coins. Only 7% of the children kept everything for themselves. Very few children gave more than half of the coins to the other child. In the efficiency experiment, we observe that 49% of the participants preferred the efficient, but unfair, allocation, while 51% of the participants chose the inefficient, but fair, allocation.

Figure 1 about here

In the two fairness view experiments, we observe spikes at the 50/50 allocation: 47% of the children in the merit experiment and 49% of the children in the luck experiment chose an equal distribution. Interestingly, many of the children found it fair that one child receives more stickers than the other child when their initial earnings differed and very few children gave more stickers to the child with the lower initial earnings.

In the main analysis, we focus on how much inequality the children implement in each of the experiments. We measure inequality by the absolute difference in the units (coins or stickers) received by the two children in the pair divided by the total number of units (which is equivalent to the Gini coefficient in the present distributive situations), and relate the findings to the parameters in the social preference model.

\(^{13}\) Complete instructions are provided in Appendix B.
As shown in Table A3 in Appendix A, we observe positive and significant correlations of inequality implemented across the experiments, which is suggestive of $\beta_i$, $\alpha_i$, and $m_i$ being correlated. We find the strongest correlation between the merit and the luck experiment, in line with individuals being characterized by a fairness view in these choices. Yet, we also observe a positive correlation between the level of inequality implemented in the dictator game and in each of the three spectator experiments.

Our main interest is in how choice behavior relates to treatment assignment. Figure 2 summarizes the mean implemented inequality by treatment status across the four experiments, while Table 3 reports the corresponding regression analysis: ordinary least squares (OLS) regressions in which dummy variables for Preschool and Parent Academy are regressed on the inequality that children implement in each of the four experiments, with and without demographic controls. All regressions control for time of day and experimenter fixed effects (not reported). The regressions provide intent-to-treat estimates of the causal effect of the early childhood interventions on the social preferences of the children, since not all parents and children attended all parts of the programs. We note that for all the regressions, the estimated treatment effects are almost the same with and without background variables.

Taken together, Figure 2 and Table 3 offer three main findings. First, from the upper-left panel of Figure 2, we observe that there is no evidence of the early childhood education interventions affecting the selfishness of the children, as captured by $\beta_i$ in the social preference model. The Preschool children and the Parent Academy children give away 3.1% and 2.3% less than the Control group children. The inequality implemented in the dictator experiment by the children from the Preschool group and the Parent Academy group is therefore very similar to the inequality implemented by the children in the Control group (p=0.829 for Preschool and p=0.501 for Parent Academy. All p-values reported are from comparing the estimated coefficients for the treatments in the corresponding regression with control variables in Table 3). Children in the Preschool and Parent Academy groups also do not differ in the level of selfishness (p=0.664), and an F-test of joint significance of the dummy variables confirms the absence of an effect on selfishness (p = 0.78).

The second main finding, shown in the upper-right panel of Figure 2, is that the children in the Parent Academy program are significantly more likely to choose the efficient but unequal split than the children in the Control group (57.3% versus 42.2%; difference
in mean inequality is 0.12, corresponding to 0.32 standard deviations, $p=0.027$). The Parent Academy program thus caused the children to place more weight on efficiency relative to fairness in their distributive decisions, which caused a larger share to have a $\beta_i/\alpha_i$ below the critical threshold value making the efficient alternative optimal in this experiment. The Preschool children, on the other hand, are not statistically different from the Control group children in how they make the trade-off between efficiency and fairness (48.9% versus 42.2%; difference in mean inequality is 0.03, $p=0.602$). Comparing the two childhood interventions, we find that the difference in the likelihood of choosing the efficient option is marginally significant ($p = 0.099$), and an F-test of joint significance of the treatment dummy variables also shows that the early childhood interventions affected the trade-off between efficiency and fairness ($p = 0.077$).

Finally, the third main finding is shown in the lower two panels of Figure 2, where we observe that the Preschool children are more egalitarian in their fairness views than children in the Control group. In the luck experiment, the Preschool children chose to implement 33% less inequality than the children in the Control group (0.33 versus 0.22, $p=0.037$). In the merit experiment, the Preschool children implemented 21% less inequality than children in the Control group (0.28 versus 0.22, $p=0.138$). Combining the luck and the merit experiments, we find that the Preschool children implemented 29% less inequality than the Control group children in the two fairness experiments (0.31 versus 0.22, corresponding to 0.28 standard deviations, $p=0.038$). In contrast, we find less evidence of the Parent Academy affecting the children’s fairness views. The Parent Academy children implemented slightly less inequality in the luck experiment and slightly more inequality in the merit experiment than the children in the Control group, but these differences are not statistically significant at conventional levels (luck: 0.33 versus 0.28, $p=0.372$; merit: 0.28 versus 0.30, $p=0.672$; combined: 0.31 versus 0.29, $p=0.700$). Overall, however, there is some evidence that Parent Academy children are significantly less egalitarian than the Preschool children and implement more inequality in the merit and the luck experiments (combined: 0.22 versus 0.29, $p = 0.094$).

To provide further understanding of how the early childhood interventions affected the fairness views of the children, $m_i$, we estimate the share of the three most prominent fairness types in the literature: egalitarians, meritocrats, and libertarians. We classify a participant as egalitarians if she divides equally in both the luck and merit experiments. She is defined as a meritocrat if she implements more inequality in favor of the child who performed well versus the child who was lucky. And, as a libertarian if she implements at least as much inequality in favor of the child who was lucky versus the child who performed well. The participants who implement inequality in favor of the child with
less earnings are classified as having other fairness ideals.

Figure 3 provides an overview of the classification by treatment, where we find some interesting differences. We observe a significantly larger share of egalitarians among the Preschool children, compared both to the Control group children (42.2% versus 31.7%, $p = 0.059$) and the Parent Academy children (42.2% versus 25.0%, $p = 0.012$), where the F-test of joint significance of the two treatment indicator variables is statistically significant ($p = 0.039$). At the same time, we observe a significantly larger share of meritocrats among the Parent Academy children compared to the Control group children (28.4% versus 20.5%, $p = 0.038$). We also find suggestive evidence of a larger share of meritocrats among the Parent Academy children as compared to the Preschool children. This difference is not statistically significant at conventional levels (28.4% versus 20.5%, $p = 0.129$), and the F-test of joint significance of the two treatment indicator variables is also not significant ($p = 0.108$).

In Appendix A, we show that our main findings are robust to a number of robustness checks, including clustering at the school level (Table A4), using a binary variable for whether the child implemented an equal distribution or not (Table A5), and using probit and tobit regressions (Table A6). In Table A7 of Appendix A, we also show with inverse probability weighted regressions that the findings generalize to the full CHECC sample. As such, there is a good deal of evidence suggesting that the CHECC interventions play an important role in shaping the social preferences of the children. More concretely, the Parent Academy program has made the children more efficiency-oriented and the Preschool program has made them more egalitarian in their distributive choices.

4 Mechanisms

While the data patterns several years after treatment point to interesting treatment effects, the channels through which early childhood education shapes social preferences are largely unknown. We focus on two popular mechanisms: cognitive development theory and social learning theory. They each suggest paths in which the two interven-

---

14Our study does not have the statistical power to compare the different versions of the Preschool programs and the Parent Academy programs. We still note that the reported main results apply to the subprograms. First, for none of the subprograms do we observe a statistically significant effect on selfishness. Second, for both the preschool programs do we observe more egalitarian behavior in the merit and the luck experiments; the effect is only statistically significant for the Preschool-Literacy program, but the estimated difference between the two subprograms is not statistically significant ($p = 0.567$). Third, for both the Parent Academy programs do we observe a statistically significant effect in the efficiency experiment, with no estimated difference in effect ($p = 0.985$).
tions in our study might have affected the children’s social preferences.

Cognitive development theory emphasizes the link between cognitive and moral development in children (Piaget, 1932; Kohlberg, 1984; Killen and Smetana, eds., 2013), and there is evidence suggesting that with age (as a proxy for cognitive ability) children become more egalitarian and more efficiency oriented (Fehr et al., 2008; Almás et al., 2010). We also observe a weak association between age and egalitarian behavior in our experiment (Table 3). Hence, a possible mechanism could be that the programs improved the cognitive skills of the children, which in turn shaped their social preferences.

There is mixed evidence on the impact of the CHECC programs on cognitive skills, however. Fryer et al. (2015) finds an impact of the Parent Academy program on cognitive skills only for certain sub-groups, and Fryer et al. (2017) finds an impact of the Preschool program on cognitive skills that fades out by 1st grade. For our experimental sample, we observe positive, but statistically insignificant effects of the programs on a cognitive test scores at the time of the social preference experiment (see Table A8 in Appendix A). Further, as we show in Table A9 in Appendix A, our main results are robust to the inclusion of cognitive test scores in the regressions, which we interpret as suggestive of cognitive development not being the main driver of the observed changes in social preferences.

Social learning theory argues that children’s social environment, in particular their interaction with different role models, shapes their moral development (Bandura, 1977; Killen and Smetana, eds., 2013). A possible mechanism of change could therefore be that the early childhood interventions introduced new role models to the children or changed the behavior of existing role models and that these changes contributed to shape the social preferences of the children.

In the Preschool group, the children were introduced to teachers who were likely to become their role models. In particular, they observed how teachers resolved conflicts between children in the preschool, and may have internalized the social norms expressed in the conflict resolution. Such conflicts in preschool are often handled in an egalitarian manner (e.g., through taking turns, sharing, not cutting in line), which may contribute to explain why Preschool group children made more egalitarian choices in our experiment.

Exploring this particular pathway in a deeper manner, we examine siblings as potential moderators of this effect (we thank an anonymous reporter for this suggestion). The hypothesis is that children without siblings should be unduly affected since they have less experience in conflict resolution among siblings within the home. Table A10
in Appendix A offers some evidence supporting this hypothesis, by showing that the egalitarian effect of Preschool is mainly driven by the children who do not have siblings.

In the Parent Academy group, the children did not experience new role models as a direct result of the intervention. It is, however, likely that the parents changed their behavior towards the children in the program as a result of the intervention. In particular, it is likely that parents focused more of their resources on the child in the program since parent earnings were based on spending more time with the treated child.\textsuperscript{15} If the parents in the Parent Academy program justified an unequal allocation of resources among their children by appealing to efficiency considerations, then it appears likely that such efficiency-oriented reasoning was internalized by their children. While speculative, this mechanism could in turn explain why the children in the Parent Academy group were significantly more willing to accept inequality to achieve a more efficient outcome in the experiment. Clearly, such a mechanism can only operate in families with siblings, and it is therefore interesting to observe from Table A10 in Appendix A that the efficiency effect of the Parent Academy is mainly driven by children with siblings.\textsuperscript{16} We also note that the meritocratic nature of the Parent Academy program, where parents were rewarded based on the performance of the children, may explain our finding of an increase in meritocrats among the Parent Academy children, where again it appears plausible that the underlying mechanism is social learning through a change in parents’ behavior.

In sum, while we view our evidence as only a first step toward uncovering the underlying mechanism at work, our data are suggestive of social learning being an important mechanism for understanding how the early childhood interventions shape social preferences of children. The Preschool intervention introduced the children to teachers and egalitarian conflict resolutions, while the Parent Academy intervention changed how parents allocated resources within the family. These changes in role model behavior appear to have been internalized by the children and expressed in the distributive behavior in the social preference experiments. In line with these mechanisms, we find

\textsuperscript{15}There is other field evidence suggesting that this type of interventions may cause reallocation of intra-household resources in favor of a specific child in the family and may, potentially, be welfare reducing for other household members. Barrera-Osorio et al. (2008, 2011) find that a randomized conditional cash transfer program in Colombia caused parents to shift resources away from non-targeted siblings to concentrate on the schooling of targeted siblings. Del Carpio and Macours (2008) analyze a Nicaraguan program which provided cash transfers conditional on the school enrollment and attendance of primary school children. While the program improved school attendance and decreased child labor for targeted children, older sisters compensated for the reduction in labor of younger sisters by working longer hours.

\textsuperscript{16}This finding also suggests that the effect of the Parent Academy is not driven by an income effect for the parents taking part in this program, since it appears unlikely that the income effect primarily should affect families with several children.
that the Preschool effect is primarily driven by children without siblings, while the Parent Academy effect is primarily driven by children with siblings. More research is certainly warranted.

5 Concluding remarks

Our results provide novel evidence of early childhood education having an impact on social preferences several years after the children took part in the programs. We also find that the content of the childhood intervention matters: the Parent Academy makes children more efficiency oriented, while the Preschool makes children more egalitarian.

The results contribute to our understanding of how education influences human capital formation (Becker, 2009). There has been an increasing focus on the importance of taking a broader view on human capital formation, including the role of non-cognitive or 'soft skills' in childhood development (Heckman, 2000; Heckman et al., 2006; Heckman, 2006). The present study demonstrates that early childhood education is also crucial for the formation of social preferences, which implies that the normative perspective on social preferences should be an integral part of any discussion of the optimal design of such institutions. Empirical results also remind us of the possibility of strategically using educational institutions to shape people’s preferences, as shown by Cantoni et al. (2014), who find that changes to curricula in Chinese schools led to changed views on political participation and democracy in China.

Interestingly, our study does not find any effect of the early childhood education programs on selfishness, in contrast to a recent novel study by Kosse et al. (2016). They demonstrate that random assignment to a childhood mentoring program has a positive causal effect on children’s level of pro-sociality. Their intervention targets older children (7 years old) and focuses on informal one-on-one learning (a volunteer meets with the child once per week and engages in joint activities, e.g., visiting the zoo, museum, or playground), which may contribute to explain the differences in effects. In particular, it appears plausible that one-on-one interaction does not highlight fairness and efficiency considerations to the same extent as the activities in Preschool and Parent Academy, but rather draws attention to the pro-social aspect of the volunteer’s contribution. Yet, we should point out that the two studies reinforce each other by showing that interventions in childhood have implications for childhood development and by providing evidence for social learning as a key mechanism shaping children’s social preferences.

More broadly, our results contribute to a better understanding of how social pref-
erences develop in childhood and shed light on a possible explanation for the observed heterogeneity in social preferences within and across societies: differences in institutional exposure can result in lasting differences in social preferences. Previous work has documented that there are significant changes in social preferences throughout childhood (e.g., Fehr et al. (2008); Almås et al. (2010)), and we complement this literature by showing that educational institutions play a key role in causally shaping social preferences at a young age. This finding suggests that the educational institutions in a society are important for the cultural transmission of social preferences (Bisin and Verdier, 2010).

We hope that our study inspires further research on how early childhood institutions causally affect a broad range of dimensions in childhood development. More work is needed to establish a robust picture of how different institutions shape children’s preferences at large, and in turn how these preferences affect the many choices that individuals make in childhood and adolescence. An interesting extension of our research would be to study the extent to which early childhood institutions causally affect the rationality of individual decision-making, which would require a different experimental design where children make a large number of decisions in an economic environment that allows for classical testing of economic rationality (Krause et al., 2001; List, 2003; Fisman et al., 2007; List and Millimet, 2008). Finally, it is of great importance to enhance our understanding of the underlying mechanisms driving the causal effects of early childhood institutions. The present study has highlighted the role of social learning, but a number of other mechanisms are most likely also at work in the childhood years. A better understanding of these mechanisms and their long-term effects are crucial for how society should design institutions that are optimal for children’s human capital formation.
References


Figure 1: Overview of decisions

Note: The figure shows histograms of the choices made by the children in each of the four experiments.
Figure 2: Effect of early education

Dictator game

Efficiency game

Luck game

Merit game

Note: The figure shows for the Control group, the Preschool group and the Parent Academy group, how the mean inequality chosen by children in each treatment differs from the mean inequality chosen by all participants. Inequality is calculated as the absolute difference in the units (coins or stickers) received by the children divided by the total number of units. This number is zero if the child chose an equal distribution and one if the child gives everything to one of the children. The standard error of the mean is indicated.
Figure 3: Classification of fairness types

Note: The figure shows the distribution of the different fairness types (egalitarian, meritocrats, libertarians, others) by treatment and for all treatments combined.
Table 1: Balance Table

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>Parent Academy</th>
<th>Preschool</th>
<th>Total</th>
<th>F-test</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>7.569</td>
<td>7.582</td>
<td>7.663</td>
<td>7.602</td>
<td>0.645</td>
</tr>
<tr>
<td></td>
<td>(0.0590)</td>
<td>(0.0643)</td>
<td>(0.0689)</td>
<td>(0.0368)</td>
<td></td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td>0.441</td>
<td>0.481</td>
<td>0.539</td>
<td>0.484</td>
<td>0.536</td>
</tr>
<tr>
<td></td>
<td>(0.0518)</td>
<td>(0.0573)</td>
<td>(0.0576)</td>
<td>(0.0319)</td>
<td></td>
</tr>
<tr>
<td><strong>Black</strong></td>
<td>0.151</td>
<td>0.182</td>
<td>0.224</td>
<td>0.183</td>
<td>0.616</td>
</tr>
<tr>
<td></td>
<td>(0.0373)</td>
<td>(0.0442)</td>
<td>(0.0481)</td>
<td>(0.0247)</td>
<td></td>
</tr>
<tr>
<td><strong>Hispanic</strong></td>
<td>0.785</td>
<td>0.766</td>
<td>0.697</td>
<td>0.752</td>
<td>0.391</td>
</tr>
<tr>
<td></td>
<td>(0.0428)</td>
<td>(0.0485)</td>
<td>(0.0530)</td>
<td>(0.0276)</td>
<td></td>
</tr>
<tr>
<td><strong>White</strong></td>
<td>0.0645</td>
<td>0.0519</td>
<td>0.0526</td>
<td>0.0569</td>
<td>0.987</td>
</tr>
<tr>
<td></td>
<td>(0.0256)</td>
<td>(0.0255)</td>
<td>(0.0258)</td>
<td>(0.0148)</td>
<td></td>
</tr>
<tr>
<td><strong>Time of Experiment</strong></td>
<td>9.828</td>
<td>10.18</td>
<td>9.829</td>
<td>9.939</td>
<td>0.677</td>
</tr>
<tr>
<td></td>
<td>(0.247)</td>
<td>(0.195)</td>
<td>(0.212)</td>
<td>(0.129)</td>
<td></td>
</tr>
</tbody>
</table>

*Note:* The table reports the background characteristics of the participants, by treatment group and pooled. "Age" is the average age in years; "Female" is the share of girls; "Black", "Hispanic" and "White" are the shares of children belonging to each of these categories, respectively; and "Time of day" is the average time of day when the child took part in the experiment using a 24-hour clock. Standard errors in parentheses. The \( p \)-value reported in the last column is from an F-test of joint significance. We also do not find any statistically significant differences if we conduct pairwise comparisons, \( p > 0.01 \) for all pairwise tests.

Table 2: Experimental Design

<table>
<thead>
<tr>
<th>Experiment</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dictator</td>
<td>Stakeholder</td>
<td>Allocate coins between self and another child.</td>
</tr>
<tr>
<td>Efficiency</td>
<td>Spectator</td>
<td>Choose between an unfair and efficient allocation or a fair and inefficient allocation of stickers for two other children.</td>
</tr>
<tr>
<td>Merit</td>
<td>Spectator</td>
<td>Allocate stickers between a child who did well and a child who did not do well.</td>
</tr>
<tr>
<td>Luck</td>
<td>Spectator</td>
<td>Allocate stickers between a lucky child and an unlucky child.</td>
</tr>
</tbody>
</table>

*Note:* The table provides an overview of the four experiments the children took part in. In the stakeholder experiment, the participants made a decision that affected their own payoff as well as the payoff of another child. In the spectator experiments, the participants made decisions that affected the payoff of two other children. The experiments were conducted in the following order for all subjects: Dictator, Merit, Luck and Efficiency.
### Table 3: Regressions

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
<th>(9)</th>
<th>(10)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dictator</td>
<td>Dictator</td>
<td>Efficiency</td>
<td>Efficiency</td>
<td>Luck</td>
<td>Luck</td>
<td>Merit</td>
<td>Merit</td>
<td>M+L</td>
<td>M+L</td>
</tr>
<tr>
<td>Preschool</td>
<td>0.01</td>
<td>0.01</td>
<td>0.03</td>
<td>0.02</td>
<td>0.11**</td>
<td>-0.10*</td>
<td>0.06</td>
<td>0.06</td>
<td>0.09**</td>
<td>-0.08**</td>
</tr>
<tr>
<td></td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.04)</td>
</tr>
<tr>
<td>Parent Academy</td>
<td>0.03</td>
<td>0.03</td>
<td>0.12**</td>
<td>0.11**</td>
<td>-0.05</td>
<td>-0.04</td>
<td>0.02</td>
<td>0.02</td>
<td>-0.02</td>
<td>-0.01</td>
</tr>
<tr>
<td></td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.04)</td>
</tr>
<tr>
<td>Age</td>
<td>-0.10</td>
<td>-0.09</td>
<td>-0.07</td>
<td>-0.09</td>
<td>-0.08</td>
<td>0.03</td>
<td>0.03</td>
<td>0.03</td>
<td>0.03</td>
<td>0.03</td>
</tr>
<tr>
<td></td>
<td>(0.17)</td>
<td>(0.29)</td>
<td>(0.24)</td>
<td>(0.23)</td>
<td>(0.23)</td>
<td>0.03</td>
<td>(0.03)</td>
<td>(0.03)</td>
<td>(0.03)</td>
<td>(0.03)</td>
</tr>
<tr>
<td>Female</td>
<td>0.01</td>
<td>0.05</td>
<td>0.00</td>
<td>0.06*</td>
<td>0.03</td>
<td>0.03</td>
<td>0.03</td>
<td>0.03</td>
<td>0.03</td>
<td>0.03</td>
</tr>
<tr>
<td></td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.03)</td>
<td>(0.03)</td>
<td>(0.03)</td>
<td>(0.03)</td>
</tr>
<tr>
<td>Black</td>
<td>0.16***</td>
<td>0.27***</td>
<td>0.00</td>
<td>0.05</td>
<td>0.03</td>
<td>0.03</td>
<td>0.03</td>
<td>0.03</td>
<td>0.03</td>
<td>0.03</td>
</tr>
<tr>
<td></td>
<td>(0.06)</td>
<td>(0.09)</td>
<td>(0.10)</td>
<td>(0.08)</td>
<td>(0.07)</td>
<td>(0.07)</td>
<td>(0.07)</td>
<td>(0.07)</td>
<td>(0.07)</td>
<td>(0.07)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.12**</td>
<td>0.17**</td>
<td>0.01</td>
<td>0.05</td>
<td>0.02</td>
<td>0.02</td>
<td>0.02</td>
<td>0.02</td>
<td>0.02</td>
<td>0.02</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.08)</td>
<td>(0.08)</td>
<td>(0.08)</td>
<td>(0.08)</td>
<td>(0.08)</td>
<td>(0.08)</td>
<td>(0.08)</td>
<td>(0.08)</td>
<td>(0.08)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.20***</td>
<td>0.58*</td>
<td>0.24***</td>
<td>0.41</td>
<td>0.33***</td>
<td>1.18***</td>
<td>0.28***</td>
<td>0.70**</td>
<td>0.31***</td>
<td>0.95***</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.31)</td>
<td>(0.06)</td>
<td>(0.39)</td>
<td>(0.06)</td>
<td>(0.39)</td>
<td>(0.05)</td>
<td>(0.32)</td>
<td>(0.05)</td>
<td>(0.32)</td>
</tr>
<tr>
<td>Observations</td>
<td>301</td>
<td>301</td>
<td>301</td>
<td>301</td>
<td>298</td>
<td>298</td>
<td>301</td>
<td>301</td>
<td>297</td>
<td>297</td>
</tr>
<tr>
<td>R2</td>
<td>0.164</td>
<td>0.188</td>
<td>0.109</td>
<td>0.148</td>
<td>0.125</td>
<td>0.151</td>
<td>0.172</td>
<td>0.195</td>
<td>0.160</td>
<td>0.189</td>
</tr>
<tr>
<td>p-value PA=PK</td>
<td>0.664</td>
<td>0.712</td>
<td>0.116</td>
<td>0.099</td>
<td>0.239</td>
<td>0.281</td>
<td>0.056</td>
<td>0.062</td>
<td>0.083</td>
<td>0.094</td>
</tr>
</tbody>
</table>

**Note:** The table reports ordinary least squares (OLS) regressions of a participant’s chosen level of inequality in the four experiments and for the merit and luck experiments combined. "Preschool" is an indicator variable taking the value one if the child was in the Preschool group and "Parent Academy" is an indicator variable taking the value one if the child was in the Parent Academy group. "Age" is the child’s average age in years; "Female" is a dummy for the child being a girl; "Black" and "Hispanic" are dummies for the child belonging to each of these categories, respectively. Included, but not reported, are controls for the time of day when the child took part in the experiment and experimenter fixed effects. Participation was voluntary and some children did not complete all of the experiments: one child did not complete the merit experiments, four children did not complete the luck experiment, one child did not complete the dictator experiment and one child did not complete the efficiency experiment. Standard errors in parentheses, * \( p < 0.1 \), ** \( p < 0.05 \), *** \( p < 0.01 \).
6 Appendix A
Table A1: Table 2 in paper, School District Subsample

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>Parent Academy</th>
<th>Preschool</th>
<th>Total</th>
<th>F-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>7.552</td>
<td>7.588</td>
<td>7.643</td>
<td>7.590</td>
<td>0.553</td>
</tr>
<tr>
<td></td>
<td>(0.0518)</td>
<td>(0.0613)</td>
<td>(0.0675)</td>
<td>(0.0342)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>0.450</td>
<td>0.494</td>
<td>0.519</td>
<td>0.484</td>
<td>0.632</td>
</tr>
<tr>
<td></td>
<td>(0.0474)</td>
<td>(0.0533)</td>
<td>(0.0559)</td>
<td>(0.0299)</td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>0.153</td>
<td>0.169</td>
<td>0.222</td>
<td>0.178</td>
<td>0.451</td>
</tr>
<tr>
<td></td>
<td>(0.0343)</td>
<td>(0.0399)</td>
<td>(0.0465)</td>
<td>(0.0229)</td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.820</td>
<td>0.775</td>
<td>0.704</td>
<td>0.772</td>
<td>0.167</td>
</tr>
<tr>
<td></td>
<td>(0.0366)</td>
<td>(0.0445)</td>
<td>(0.0511)</td>
<td>(0.0251)</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>0.0270</td>
<td>0.0562</td>
<td>0.0494</td>
<td>0.0427</td>
<td>0.565</td>
</tr>
<tr>
<td></td>
<td>(0.0155)</td>
<td>(0.0245)</td>
<td>(0.0242)</td>
<td>(0.0121)</td>
<td></td>
</tr>
<tr>
<td>Time of Experiment</td>
<td>9.820</td>
<td>10.15</td>
<td>9.864</td>
<td>9.936</td>
<td>0.434</td>
</tr>
<tr>
<td></td>
<td>(0.194)</td>
<td>(0.176)</td>
<td>(0.203)</td>
<td>(0.111)</td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>129</td>
<td>89</td>
<td>84</td>
<td>302</td>
<td></td>
</tr>
</tbody>
</table>

Note: The table reports the background characteristics of the participants, by treatment group and pooled, excluding 21 children who were not in school district 170. "Age" is the average age in years; "Female" is the share of girls; "Black", "Hispanic" and "White" are the share of children belonging to each of these categories, respectively; and "Time of day" is the average time of day when the child took part in the experiment using a 24-hour clock. Standard errors in parentheses. The p-value reported in the last column is from an F-test of joint significance. We also do not find any statistically significant differences if we conduct pairwise comparisons, $p > 0.01$ for all pairwise tests.
Table A2: Table 3 in paper, School District Subsample

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
<th>(9)</th>
<th>(10)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dictator</td>
<td>Dictator</td>
<td>Efficiency</td>
<td>Efficiency</td>
<td>Luck</td>
<td>Luck</td>
<td>Merit</td>
<td>Merit</td>
<td>M+L</td>
<td>M+L</td>
</tr>
<tr>
<td>Preschool</td>
<td>0.01 (0.04)</td>
<td>0.02 (0.05)</td>
<td>0.03 (0.05)</td>
<td>0.03 (0.05)</td>
<td>-0.10* (0.05)</td>
<td>-0.10* (0.05)</td>
<td>-0.06 (0.05)</td>
<td>-0.07 (0.05)</td>
<td>-0.08* (0.04)</td>
<td>-0.08* (0.04)</td>
</tr>
<tr>
<td>Parent Academy</td>
<td>0.03 (0.05)</td>
<td>0.04 (0.05)</td>
<td>0.12** (0.05)</td>
<td>0.12** (0.05)</td>
<td>-0.04 (0.06)</td>
<td>-0.04 (0.06)</td>
<td>0.02 (0.04)</td>
<td>0.01 (0.04)</td>
<td>-0.01 (0.04)</td>
<td>-0.01 (0.04)</td>
</tr>
<tr>
<td>Age</td>
<td>-0.09 (0.17)</td>
<td>-0.13 (0.29)</td>
<td>-0.09 (0.25)</td>
<td>-0.09 (0.25)</td>
<td>-0.10 (0.05)</td>
<td>-0.10 (0.05)</td>
<td>-0.10 (0.05)</td>
<td>-0.10 (0.05)</td>
<td>-0.10 (0.05)</td>
<td>-0.10 (0.05)</td>
</tr>
<tr>
<td>Female</td>
<td>0.01 (0.04)</td>
<td>0.07 (0.04)</td>
<td>0.01 (0.24)</td>
<td>0.01 (0.24)</td>
<td>0.07 (0.06)</td>
<td>0.07 (0.06)</td>
<td>0.04 (0.06)</td>
<td>0.04 (0.06)</td>
<td>0.04 (0.06)</td>
<td>0.04 (0.06)</td>
</tr>
<tr>
<td>Black</td>
<td>0.17*** (0.06)</td>
<td>0.27** (0.11)</td>
<td>0.03 (0.11)</td>
<td>0.03 (0.11)</td>
<td>0.08 (0.05)</td>
<td>0.08 (0.05)</td>
<td>0.06 (0.05)</td>
<td>0.06 (0.05)</td>
<td>0.06 (0.05)</td>
<td>0.06 (0.05)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.15*** (0.05)</td>
<td>0.16* (0.09)</td>
<td>0.01 (0.10)</td>
<td>0.01 (0.10)</td>
<td>0.07 (0.05)</td>
<td>0.07 (0.05)</td>
<td>0.04 (0.05)</td>
<td>0.04 (0.05)</td>
<td>0.04 (0.05)</td>
<td>0.04 (0.05)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.20*** (0.06)</td>
<td>0.52 (0.32)</td>
<td>0.23*** (0.06)</td>
<td>0.52 (0.32)</td>
<td>0.33*** (0.07)</td>
<td>1.17*** (0.07)</td>
<td>0.30*** (0.05)</td>
<td>0.70** (0.05)</td>
<td>0.31*** (0.05)</td>
<td>0.95*** (0.05)</td>
</tr>
<tr>
<td>Observations</td>
<td>280</td>
<td>280</td>
<td>281</td>
<td>281</td>
<td>280</td>
<td>280</td>
<td>280</td>
<td>280</td>
<td>280</td>
<td>280</td>
</tr>
<tr>
<td>R2</td>
<td>0.147</td>
<td>0.169</td>
<td>0.110</td>
<td>0.152</td>
<td>0.103</td>
<td>0.128</td>
<td>0.155</td>
<td>0.182</td>
<td>0.134</td>
<td>0.166</td>
</tr>
<tr>
<td>p-value PA=PK</td>
<td>0.711</td>
<td>0.765</td>
<td>0.117</td>
<td>0.096</td>
<td>0.232</td>
<td>0.257</td>
<td>0.066</td>
<td>0.070</td>
<td>0.089</td>
<td>0.092</td>
</tr>
</tbody>
</table>

Note: The table reports ordinary least squares (OLS) regressions of a participant’s chosen level of inequality in the four experiments and for the merit and luck experiments combined, excluding 21 children who were not in school district 170. "Preschool" (PK) is an indicator variable taking the value one if the child was in the Preschool group and "Parent Academy" (PA) is an indicator variable taking the value one if the child was in the Parent Academy group. “Age” is the child’s average age in years; “Female” is a dummy for the child being a girl; "Black" and "Hispanic" are dummies for the child belonging to each of these categories, respectively. Included, but not reported, are controls for the time of day when the child took part in the experiment and experimenter fixed effects. Standard errors in parentheses, *p < 0.1, **p < 0.05, ***p < 0.01.
Table A3: Correlations between experiments

<table>
<thead>
<tr>
<th></th>
<th>Dictator</th>
<th>Efficiency</th>
<th>Luck</th>
<th>Merit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dictator</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Efficiency</td>
<td>0.131*</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Luck</td>
<td>0.117*</td>
<td>0.210***</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Merit</td>
<td>0.268***</td>
<td>0.287***</td>
<td>0.495***</td>
<td>1</td>
</tr>
</tbody>
</table>

*Note: The table reports the correlation between the average level of inequality implemented in the four experiments. * \( p < 0.1 \), ** \( p < 0.05 \), *** \( p < 0.01 \).
Table A4: Table 3 in paper, with clustering at school level

<table>
<thead>
<tr>
<th></th>
<th>(1) Dictator</th>
<th>(2) Dictator</th>
<th>(3) Efficiency</th>
<th>(4) Efficiency</th>
<th>(5) Luck</th>
<th>(6) Luck</th>
<th>(7) Merit</th>
<th>(8) Merit</th>
<th>(9) M+L</th>
<th>(10) M+L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preschool</td>
<td>0.01</td>
<td>0.01</td>
<td>0.03</td>
<td>0.02</td>
<td>-0.11**</td>
<td>-0.10*</td>
<td>-0.06</td>
<td>-0.06</td>
<td>-0.09**</td>
<td>-0.08**</td>
</tr>
<tr>
<td></td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.04)</td>
</tr>
<tr>
<td>Parent Academy</td>
<td>0.03</td>
<td>0.03</td>
<td>0.12**</td>
<td>0.11**</td>
<td>-0.05</td>
<td>-0.04</td>
<td>0.02</td>
<td>0.02</td>
<td>-0.02</td>
<td>-0.01</td>
</tr>
<tr>
<td></td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.04)</td>
</tr>
<tr>
<td>Age</td>
<td>-0.10</td>
<td>-0.09</td>
<td>-0.07</td>
<td>-0.07</td>
<td>-0.09</td>
<td>-0.09</td>
<td>-0.08</td>
<td>-0.08</td>
<td>-0.08</td>
<td>-0.08</td>
</tr>
<tr>
<td></td>
<td>(0.23)</td>
<td>(0.27)</td>
<td>(0.27)</td>
<td>(0.27)</td>
<td>(0.22)</td>
<td>(0.22)</td>
<td>(0.21)</td>
<td>(0.21)</td>
<td>(0.21)</td>
<td>(0.21)</td>
</tr>
<tr>
<td>Female</td>
<td>0.01</td>
<td>0.05</td>
<td>-0.00</td>
<td>0.06</td>
<td>0.06</td>
<td>0.06</td>
<td>0.03</td>
<td>0.03</td>
<td>0.03</td>
<td>0.03</td>
</tr>
<tr>
<td></td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.03)</td>
<td>(0.03)</td>
<td>(0.03)</td>
<td>(0.03)</td>
</tr>
<tr>
<td>Black</td>
<td>0.16*</td>
<td>0.27***</td>
<td>0.00</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
<td>0.03</td>
<td>0.03</td>
<td>0.03</td>
<td>0.03</td>
</tr>
<tr>
<td></td>
<td>(0.09)</td>
<td>(0.10)</td>
<td>(0.10)</td>
<td>(0.10)</td>
<td>(0.10)</td>
<td>(0.10)</td>
<td>(0.09)</td>
<td>(0.09)</td>
<td>(0.09)</td>
<td>(0.09)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.12</td>
<td>0.17*</td>
<td>-0.01</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
<td>0.02</td>
<td>0.02</td>
<td>0.02</td>
<td>0.02</td>
</tr>
<tr>
<td></td>
<td>(0.08)</td>
<td>(0.09)</td>
<td>(0.09)</td>
<td>(0.09)</td>
<td>(0.08)</td>
<td>(0.08)</td>
<td>(0.08)</td>
<td>(0.08)</td>
<td>(0.08)</td>
<td>(0.08)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.20***</td>
<td>0.58*</td>
<td>0.24***</td>
<td>0.41</td>
<td>0.33***</td>
<td>1.18***</td>
<td>0.28***</td>
<td>0.70</td>
<td>0.31***</td>
<td>0.95**</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.33)</td>
<td>(0.06)</td>
<td>(0.39)</td>
<td>(0.06)</td>
<td>(0.39)</td>
<td>(0.07)</td>
<td>(0.47)</td>
<td>(0.06)</td>
<td>(0.39)</td>
</tr>
<tr>
<td>Observations</td>
<td>301</td>
<td>301</td>
<td>301</td>
<td>301</td>
<td>298</td>
<td>298</td>
<td>301</td>
<td>301</td>
<td>297</td>
<td>297</td>
</tr>
</tbody>
</table>

Note: The table reports ordinary least squares (OLS) regressions of a participant’s chosen level of inequality in the four experiments and for the merit and luck experiments combined, with clustering at school level using the Moulton method. "Preschool" (PK) is an indicator variable taking the value one if the child was in the Preschool group and "Parent Academy" (PA) is an indicator variable taking the value one if the child was in the Parent Academy group. “Age” is the child’s average age in years; “Female” is a dummy for the child being a girl; "Black" and "Hispanic" are dummies for the children belonging to each of these categories, respectively. Included, but not reported, are controls for the time of day when the child took part in the experiment and experimenter fixed effects. Clustered standard errors adjusted for the Moulton factor in parentheses, * p < 0.1, ** p < 0.05, *** p < 0.01.
Table A5: Table 3 in paper, using 0/1 measure of equality

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
<th>(9)</th>
<th>(10)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dictator</td>
<td>Dictator</td>
<td>Efficiency</td>
<td>Efficiency</td>
<td>Luck</td>
<td>Luck</td>
<td>Merit</td>
<td>Merit</td>
<td>M+L</td>
<td>M+L</td>
</tr>
<tr>
<td>Preschool</td>
<td>-0.02</td>
<td>-0.03</td>
<td>-0.04</td>
<td>-0.03</td>
<td>0.16**</td>
<td>0.16**</td>
<td>0.05</td>
<td>0.04</td>
<td>0.14*</td>
<td>0.14*</td>
</tr>
<tr>
<td>Parent Academy</td>
<td>-0.08</td>
<td>-0.09</td>
<td>-0.16**</td>
<td>-0.16**</td>
<td>0.03</td>
<td>0.02</td>
<td>-0.07</td>
<td>-0.07</td>
<td>-0.05</td>
<td>-0.05</td>
</tr>
<tr>
<td>Age</td>
<td>0.14</td>
<td>0.13</td>
<td>0.11</td>
<td>0.09</td>
<td>0.17</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>0.03</td>
<td>-0.08</td>
<td>-0.05</td>
<td>-0.03</td>
<td>-0.07</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>-0.18</td>
<td>-0.38***</td>
<td>0.06</td>
<td>-0.06</td>
<td>-0.04</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>-0.12</td>
<td>-0.24**</td>
<td>0.09</td>
<td>-0.10</td>
<td>-0.03</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.59***</td>
<td>-0.03</td>
<td>0.67***</td>
<td>0.43</td>
<td>0.47***</td>
<td>-0.56</td>
<td>0.40***</td>
<td>0.13</td>
<td>0.24***</td>
<td>-0.52</td>
</tr>
</tbody>
</table>

| Observations | 301  | 301  | 301  | 301  | 298  | 298  | 301  | 301  | 297  | 297  |
| R2           | 0.126 | 0.142 | 0.109 | 0.118 | 0.118 | 0.139 | 0.140 | 0.146 | 0.120 | 0.138 |
p-value PA=PK | 0.383 | 0.424 | 0.116 | 0.099 | 0.092 | 0.096 | 0.150 | 0.170 | 0.011 | 0.012 |

**Note:** The table reports ordinary least squares (OLS) regressions on the share of participants who choose to equalize completely in the four experiments and for the merit and luck experiments combined with clustering. "Preschool" (PK) is an indicator variable taking the value one if the child was in the Preschool group and "Parent Academy" (PA) is an indicator variable taking the value one if the child was in the Parent Academy group. "Age" is the child’s average age in years; "Female" is a dummy for the child being a girl; "Black" and "Hispanic" are dummies for the children belonging to each of these categories, respectively. Included, but not reported, are controls for the time of day when the child took part in the experiment and experimenter fixed effects. Standard errors in parentheses, * p < 0.1, ** p < 0.05, *** p < 0.01.
<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
<th>(9)</th>
<th>(10)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dictor</td>
<td>Dictor</td>
<td>Efficiency</td>
<td>Efficiency</td>
<td>Luck</td>
<td>Luck</td>
<td>Merit</td>
<td>Merit</td>
<td>M+L</td>
<td>M+L</td>
</tr>
<tr>
<td>Preschool</td>
<td>0.04</td>
<td>0.04</td>
<td>0.10</td>
<td>0.10</td>
<td>-0.21**</td>
<td>-0.21**</td>
<td>-0.08</td>
<td>-0.08</td>
<td>-0.13**</td>
<td>-0.13***</td>
</tr>
<tr>
<td></td>
<td>(0.12)</td>
<td>(0.12)</td>
<td>(0.20)</td>
<td>(0.20)</td>
<td>(0.10)</td>
<td>(0.10)</td>
<td>(0.07)</td>
<td>(0.07)</td>
<td>(0.06)</td>
<td>(0.06)</td>
</tr>
<tr>
<td>Parent Academy</td>
<td>0.13</td>
<td>0.13</td>
<td>0.43**</td>
<td>0.43**</td>
<td>-0.06</td>
<td>-0.06</td>
<td>0.04</td>
<td>0.04</td>
<td>-0.00</td>
<td>-0.00</td>
</tr>
<tr>
<td></td>
<td>(0.12)</td>
<td>(0.12)</td>
<td>(0.19)</td>
<td>(0.19)</td>
<td>(0.09)</td>
<td>(0.09)</td>
<td>(0.07)</td>
<td>(0.07)</td>
<td>(0.05)</td>
<td>(0.05)</td>
</tr>
<tr>
<td>Age</td>
<td>-0.27</td>
<td>-0.27</td>
<td>-0.39</td>
<td>-0.39</td>
<td>-0.14</td>
<td>-0.14</td>
<td>-0.13</td>
<td>-0.13</td>
<td>-0.13</td>
<td>-0.13</td>
</tr>
<tr>
<td></td>
<td>(0.68)</td>
<td>(0.68)</td>
<td>(0.98)</td>
<td>(0.98)</td>
<td>(0.54)</td>
<td>(0.54)</td>
<td>(0.40)</td>
<td>(0.40)</td>
<td>(0.31)</td>
<td>(0.31)</td>
</tr>
<tr>
<td>Female</td>
<td>-0.02</td>
<td>-0.02</td>
<td>0.22</td>
<td>0.22</td>
<td>0.03</td>
<td>0.03</td>
<td>0.08</td>
<td>0.08</td>
<td>0.05</td>
<td>0.05</td>
</tr>
<tr>
<td></td>
<td>(0.10)</td>
<td>(0.10)</td>
<td>(0.16)</td>
<td>(0.16)</td>
<td>(0.08)</td>
<td>(0.08)</td>
<td>(0.06)</td>
<td>(0.06)</td>
<td>(0.05)</td>
<td>(0.05)</td>
</tr>
<tr>
<td>Black</td>
<td>0.40</td>
<td>0.40</td>
<td>1.11***</td>
<td>1.11***</td>
<td>-0.04</td>
<td>-0.04</td>
<td>0.09</td>
<td>0.09</td>
<td>0.04</td>
<td>0.04</td>
</tr>
<tr>
<td></td>
<td>(0.25)</td>
<td>(0.25)</td>
<td>(0.42)</td>
<td>(0.42)</td>
<td>(0.18)</td>
<td>(0.18)</td>
<td>(0.14)</td>
<td>(0.14)</td>
<td>(0.11)</td>
<td>(0.11)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.29</td>
<td>0.29</td>
<td>0.74*</td>
<td>0.74*</td>
<td>-0.06</td>
<td>-0.06</td>
<td>0.11</td>
<td>0.11</td>
<td>0.03</td>
<td>0.03</td>
</tr>
<tr>
<td></td>
<td>(0.23)</td>
<td>(0.23)</td>
<td>(0.39)</td>
<td>(0.39)</td>
<td>(0.16)</td>
<td>(0.16)</td>
<td>(0.13)</td>
<td>(0.13)</td>
<td>(0.10)</td>
<td>(0.10)</td>
</tr>
<tr>
<td>Constant</td>
<td>1.09</td>
<td>1.09</td>
<td>0.18</td>
<td>0.18</td>
<td>1.73**</td>
<td>1.73**</td>
<td>0.73</td>
<td>0.73</td>
<td>1.17***</td>
<td>1.17***</td>
</tr>
<tr>
<td></td>
<td>(0.92)</td>
<td>(0.92)</td>
<td>(1.46)</td>
<td>(1.46)</td>
<td>(0.72)</td>
<td>(0.72)</td>
<td>(0.55)</td>
<td>(0.55)</td>
<td>(0.42)</td>
<td>(0.42)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.64***</td>
<td>0.64***</td>
<td>0.57***</td>
<td>0.57***</td>
<td>0.43***</td>
<td>0.43***</td>
<td>0.35***</td>
<td>0.35***</td>
<td>0.35***</td>
<td>0.35***</td>
</tr>
<tr>
<td>Observations</td>
<td>301</td>
<td>301</td>
<td>295</td>
<td>295</td>
<td>295</td>
<td>298</td>
<td>301</td>
<td>301</td>
<td>297</td>
<td>297</td>
</tr>
<tr>
<td>p-value PA=PK</td>
<td>0.454</td>
<td>0.454</td>
<td>0.110</td>
<td>0.110</td>
<td>0.137</td>
<td>0.137</td>
<td>0.108</td>
<td>0.108</td>
<td>0.039</td>
<td>0.039</td>
</tr>
</tbody>
</table>

Note: The table reports Tobit regressions of a participant’s chosen level of inequality in the dictator experiment, the luck experiment, the merit experiment and for the merit and luck experiments combined. For the efficiency experiment, the table reports Probit regressions for the share who choose to equalize. "Preschool" (PK) is an indicator variable taking the value one if the child was in the Preschool group and "Parent Academy" (PA) is an indicator variable taking the value one if the child was in the Parent Academy group. “Age” is the child’s average age in years; “Female” is a dummy for the child being a girl; "Black" and "Hispanic" are dummies for the children belonging to each of these categories, respectively. Included, but not reported, are controls for the time of day when the child took part in the experiment and experimenter fixed effects. Standard errors in parentheses, * p < 0.1, ** p < 0.05, *** p < 0.01.
<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
<th>(9)</th>
<th>(10)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dictator</td>
<td>Dictator</td>
<td>Efficiency</td>
<td>Efficiency</td>
<td>Luck</td>
<td>Luck</td>
<td>Merit</td>
<td>Merit</td>
<td>M+L</td>
<td>M+L</td>
</tr>
<tr>
<td>Preschool</td>
<td>-0.02</td>
<td>-0.03</td>
<td>0.03</td>
<td>0.00</td>
<td>-0.13**</td>
<td>-0.12**</td>
<td>-0.10*</td>
<td>-0.10**</td>
<td>-0.11**</td>
<td>-0.11**</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.06)</td>
<td>(0.06)</td>
<td>(0.06)</td>
<td>(0.06)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.05)</td>
</tr>
<tr>
<td>Parent Academy</td>
<td>-0.04</td>
<td>-0.04</td>
<td>0.10</td>
<td>0.10*</td>
<td>-0.06</td>
<td>-0.05</td>
<td>-0.01</td>
<td>-0.01</td>
<td>-0.04</td>
<td>-0.03</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.06)</td>
<td>(0.06)</td>
<td>(0.07)</td>
<td>(0.06)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.05)</td>
</tr>
<tr>
<td>Age</td>
<td>-0.12</td>
<td>-0.23</td>
<td>0.01</td>
<td>0.10</td>
<td>0.01</td>
<td>0.02</td>
<td>0.03</td>
<td>0.04</td>
<td>0.03</td>
<td>0.03</td>
</tr>
<tr>
<td></td>
<td>(0.15)</td>
<td>(0.26)</td>
<td>(0.22)</td>
<td>(0.21)</td>
<td>(0.21)</td>
<td>(0.21)</td>
<td>(0.20)</td>
<td>(0.20)</td>
<td>(0.20)</td>
<td>(0.20)</td>
</tr>
<tr>
<td>Female</td>
<td>0.07</td>
<td>0.10**</td>
<td>-0.02</td>
<td>0.07*</td>
<td>0.01</td>
<td>0.02</td>
<td>0.03</td>
<td>0.04</td>
<td>0.04</td>
<td>0.04</td>
</tr>
<tr>
<td></td>
<td>(0.04)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.04)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.04)</td>
</tr>
<tr>
<td>Black</td>
<td>0.11**</td>
<td>0.26***</td>
<td>0.01</td>
<td>0.03</td>
<td>0.01</td>
<td>0.03</td>
<td>0.03</td>
<td>0.04</td>
<td>0.04</td>
<td>0.04</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.09)</td>
<td>(0.10)</td>
<td>(0.07)</td>
<td>(0.07)</td>
<td>(0.07)</td>
<td>(0.07)</td>
<td>(0.07)</td>
<td>(0.07)</td>
<td>(0.07)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.11**</td>
<td>0.17**</td>
<td>-0.01</td>
<td>0.04</td>
<td>0.01</td>
<td>0.04</td>
<td>0.04</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.08)</td>
<td>(0.07)</td>
<td>(0.06)</td>
<td>(0.06)</td>
<td>(0.06)</td>
<td>(0.06)</td>
<td>(0.06)</td>
<td>(0.06)</td>
<td>(0.06)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.21***</td>
<td>0.66*</td>
<td>0.30***</td>
<td>0.46</td>
<td>0.37***</td>
<td>1.38***</td>
<td>0.29***</td>
<td>0.50</td>
<td>0.33***</td>
<td>0.96***</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.36)</td>
<td>(0.07)</td>
<td>(0.46)</td>
<td>(0.08)</td>
<td>(0.44)</td>
<td>(0.05)</td>
<td>(0.35)</td>
<td>(0.06)</td>
<td>(0.36)</td>
</tr>
<tr>
<td>Observations</td>
<td>301</td>
<td>301</td>
<td>301</td>
<td>301</td>
<td>298</td>
<td>298</td>
<td>301</td>
<td>301</td>
<td>297</td>
<td>297</td>
</tr>
<tr>
<td>R²</td>
<td>0.288</td>
<td>0.324</td>
<td>0.114</td>
<td>0.188</td>
<td>0.157</td>
<td>0.200</td>
<td>0.238</td>
<td>0.263</td>
<td>0.191</td>
<td>0.229</td>
</tr>
</tbody>
</table>

*Note:* The table reports ordinary least squares (OLS) regressions of a participant’s chosen level of inequality in the four experiments and for the merit and luck experiments combined with inverse probability weights from the full sample of the CHECC intervention. "Preschool" (PK) is an indicator variable taking the value one if the child was in the Preschool group and "Parent Academy" (PA) is an indicator variable taking the value one if the child was in the Parent Academy group. “Age” is the child’s average age in years; “Female” is a dummy for the child being a girl; "Black" and "Hispanic" are dummies for the children belonging to each of these categories, respectively. Included, but not reported, are controls for the time of day when the child took part in the experiment and experimenter fixed effects. Standard errors in parentheses, * p < 0.1, ** p < 0.05, *** p < 0.01.
Table A8: Impact of interventions on Cognitive and non-Cognitive scores

<table>
<thead>
<tr>
<th></th>
<th>(1) Cog Score</th>
<th>(2) Cog Score</th>
<th>(3) Noncog Score</th>
<th>(4) Noncog Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preschool</td>
<td>0.16</td>
<td>0.16</td>
<td>0.01</td>
<td>0.05</td>
</tr>
<tr>
<td></td>
<td>(0.15)</td>
<td>(0.15)</td>
<td>(0.14)</td>
<td>(0.13)</td>
</tr>
<tr>
<td>Parent Academy</td>
<td>0.10</td>
<td>0.07</td>
<td>0.10</td>
<td>0.14</td>
</tr>
<tr>
<td></td>
<td>(0.15)</td>
<td>(0.15)</td>
<td>(0.11)</td>
<td>(0.11)</td>
</tr>
<tr>
<td>Age</td>
<td>1.57</td>
<td></td>
<td>2.61</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3.12)</td>
<td></td>
<td>(2.63)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>0.12</td>
<td></td>
<td>-0.14</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.13)</td>
<td></td>
<td>(0.09)</td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>-0.80***</td>
<td></td>
<td>-0.17</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.27)</td>
<td></td>
<td>(0.27)</td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>-0.67***</td>
<td></td>
<td>0.25</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.24)</td>
<td></td>
<td>(0.22)</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-0.31</td>
<td>1.36</td>
<td>0.51**</td>
<td>-2.58</td>
</tr>
<tr>
<td></td>
<td>(0.93)</td>
<td>(2.32)</td>
<td>(0.20)</td>
<td>(1.61)</td>
</tr>
<tr>
<td>Observations</td>
<td>269</td>
<td>269</td>
<td>267</td>
<td>267</td>
</tr>
<tr>
<td>R2</td>
<td>0.125</td>
<td>0.170</td>
<td>0.062</td>
<td>0.147</td>
</tr>
<tr>
<td>p-value PA=PK</td>
<td>0.694</td>
<td>0.557</td>
<td>0.544</td>
<td>0.483</td>
</tr>
</tbody>
</table>

Note: The table reports ordinary least squares (OLS) regressions of a participant’s cognitive and non-Cognitive scores at the time of the experiment. "Preschool" (PK) is an indicator variable taking the value one if the child was in the Preschool group and "Parent Academy" (PA) is an indicator variable taking the value one if the child was in the Parent Academy group. “Age” is the child’s average age in years; “Female” is a dummy for the child being a girl; "Black" and "Hispanic" are dummies for the children belonging to each of these categories, respectively. “Cog Score” is standardized test scores on cognitive tests at the time of the experiment. “Noncog Score” is standardized test scores on non-cognitive tests at the time of the experiment. Included, but not reported, are controls for the time of day when the child took part in the experiment and experimenter fixed effects. Standard errors in parentheses, * p < 0.1, ** p < 0.05, *** p < 0.01.
<table>
<thead>
<tr>
<th></th>
<th>(1) Dictator</th>
<th>(2) Dictator</th>
<th>(3) Efficiency</th>
<th>(4) Efficiency</th>
<th>(5) Luck</th>
<th>(6) Luck</th>
<th>(7) Merit</th>
<th>(8) Merit</th>
<th>(9) M+L</th>
<th>(10) M+L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preschool</td>
<td>0.02</td>
<td>0.02</td>
<td>0.02</td>
<td>0.02</td>
<td>-0.10*</td>
<td>-0.10*</td>
<td>-0.05</td>
<td>-0.05</td>
<td>-0.08*</td>
<td>-0.08*</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.06)</td>
<td>(0.05)</td>
<td>(0.06)</td>
<td>(0.06)</td>
<td>(0.05)</td>
<td>(0.04)</td>
<td>(0.05)</td>
<td>(0.04)</td>
</tr>
<tr>
<td>Parent Academy</td>
<td>0.03</td>
<td>0.03</td>
<td>0.11*</td>
<td>0.11**</td>
<td>-0.06</td>
<td>-0.05</td>
<td>0.01</td>
<td>0.02</td>
<td>-0.02</td>
<td>-0.02</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.06)</td>
<td>(0.06)</td>
<td>(0.05)</td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.04)</td>
</tr>
<tr>
<td>Age</td>
<td>-0.11</td>
<td>-0.11</td>
<td>-0.19</td>
<td>-0.17</td>
<td>-0.10</td>
<td>-0.08</td>
<td>-0.10</td>
<td>-0.09</td>
<td>-0.11</td>
<td>-0.08</td>
</tr>
<tr>
<td></td>
<td>(0.17)</td>
<td>(0.21)</td>
<td>(0.32)</td>
<td>(0.26)</td>
<td>(0.25)</td>
<td>(0.28)</td>
<td>(0.24)</td>
<td>(0.30)</td>
<td>(0.24)</td>
<td>(0.28)</td>
</tr>
<tr>
<td>Female</td>
<td>0.01</td>
<td>0.02</td>
<td>0.07</td>
<td>0.08*</td>
<td>0.00</td>
<td>0.00</td>
<td>0.06</td>
<td>0.07*</td>
<td>0.03</td>
<td>0.04</td>
</tr>
<tr>
<td></td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.05)</td>
<td>(0.04)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.03)</td>
</tr>
<tr>
<td>Black</td>
<td>0.15**</td>
<td>0.10*</td>
<td>0.31***</td>
<td>0.23**</td>
<td>0.06</td>
<td>0.01</td>
<td>0.13</td>
<td>0.06</td>
<td>0.09</td>
<td>0.03</td>
</tr>
<tr>
<td></td>
<td>(0.06)</td>
<td>(0.06)</td>
<td>(0.10)</td>
<td>(0.11)</td>
<td>(0.12)</td>
<td>(0.09)</td>
<td>(0.10)</td>
<td>(0.09)</td>
<td>(0.10)</td>
<td>(0.10)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.13***</td>
<td>0.08</td>
<td>0.21**</td>
<td>0.14</td>
<td>0.03</td>
<td>0.01</td>
<td>0.11</td>
<td>0.04</td>
<td>0.07</td>
<td>0.03</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.09)</td>
<td>(0.10)</td>
<td>(0.11)</td>
<td>(0.11)</td>
<td>(0.08)</td>
<td>(0.09)</td>
<td>(0.08)</td>
<td>(0.09)</td>
</tr>
<tr>
<td>Cog Score</td>
<td>-0.07***</td>
<td>-0.09***</td>
<td>-0.04</td>
<td>-0.08***</td>
<td>-0.06***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noncog Score</td>
<td>0.02</td>
<td>-0.02</td>
<td>-0.05</td>
<td>-0.01</td>
<td>-0.03</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.02)</td>
<td>(0.03)</td>
<td>(0.03)</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.60*</td>
<td>0.78**</td>
<td>0.58</td>
<td>0.73*</td>
<td>1.17***</td>
<td>1.14**</td>
<td>0.67*</td>
<td>0.83**</td>
<td>0.93***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.32)</td>
<td>(0.34)</td>
<td>(0.43)</td>
<td>(0.42)</td>
<td>(0.43)</td>
<td>(0.44)</td>
<td>(0.44)</td>
<td>(0.36)</td>
<td>(0.35)</td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>266</td>
<td>266</td>
<td>267</td>
<td>267</td>
<td>265</td>
<td>266</td>
<td>266</td>
<td>264</td>
<td>264</td>
<td></td>
</tr>
<tr>
<td>R2</td>
<td>0.179</td>
<td>0.216</td>
<td>0.174</td>
<td>0.235</td>
<td>0.131</td>
<td>0.153</td>
<td>0.176</td>
<td>0.247</td>
<td>0.162</td>
<td>0.214</td>
</tr>
<tr>
<td>p-value PA=PK</td>
<td>0.819</td>
<td>0.854</td>
<td>0.103</td>
<td>0.092</td>
<td>0.408</td>
<td>0.376</td>
<td>0.136</td>
<td>0.136</td>
<td>0.187</td>
<td>0.184</td>
</tr>
</tbody>
</table>

Note: The table reports ordinary least squares (OLS) regressions of a participant’s chosen level of inequality in the four experiments and for the merit and luck experiments combined, including controls for cognitive and non-cognitive test scores at the time of the experiment. "Preschool" (PK) is an indicator variable taking the value one if the child was in the Preschool group and "Parent Academy" (PA) is an indicator variable taking the value one if the child was in the Parent Academy group. "Age" is the child’s average age in years; “Female” is a dummy for the child being a girl; "Black" and "Hispanic" are dummies for the children belonging to each of these categories, respectively. “Cog Score” is standardized test scores on cognitive tests at the time of the experiment. “Noncog Score” is standardized test scores on non-cognitive tests at the time of the experiment. Included, but not reported, are controls for the time of day when the child took part in the experiment and experimenter fixed effects. Standard errors in parentheses, * p < 0.1, ** p < 0.05, *** p < 0.01.
### Table A10: Table 3 in paper, by whether child has siblings or not

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
<th>(9)</th>
<th>(10)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dictator</td>
<td>Dictator</td>
<td>Efficiency</td>
<td>Efficiency</td>
<td>Luck</td>
<td>Luck</td>
<td>Merit</td>
<td>Merit</td>
<td>M+L</td>
<td>M+L</td>
</tr>
<tr>
<td>Preschool</td>
<td>-0.00</td>
<td>-0.01</td>
<td>0.05</td>
<td>-0.00</td>
<td>-0.08</td>
<td>-0.41**</td>
<td>-0.05</td>
<td>-0.25</td>
<td>-0.07</td>
<td>-0.33**</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.16)</td>
<td>(0.06)</td>
<td>(0.17)</td>
<td>(0.06)</td>
<td>(0.14)</td>
<td>(0.05)</td>
<td>(0.15)</td>
<td>(0.05)</td>
<td>(0.13)</td>
</tr>
<tr>
<td>Parent Academy</td>
<td>0.02</td>
<td>0.12</td>
<td>0.13**</td>
<td>-0.02</td>
<td>-0.04</td>
<td>-0.24</td>
<td>0.02</td>
<td>-0.19</td>
<td>-0.01</td>
<td>-0.22</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.16)</td>
<td>(0.06)</td>
<td>(0.17)</td>
<td>(0.06)</td>
<td>(0.20)</td>
<td>(0.05)</td>
<td>(0.17)</td>
<td>(0.05)</td>
<td>(0.17)</td>
</tr>
<tr>
<td>Age</td>
<td>-0.09</td>
<td>8.74</td>
<td>-0.17</td>
<td>3.41</td>
<td>-0.10</td>
<td>-4.61</td>
<td>-0.11</td>
<td>-7.56</td>
<td>-0.11</td>
<td>-6.09</td>
</tr>
<tr>
<td></td>
<td>(0.15)</td>
<td>(12.21)</td>
<td>(0.31)</td>
<td>(15.30)</td>
<td>(0.20)</td>
<td>(13.21)</td>
<td>(0.23)</td>
<td>(9.73)</td>
<td>(0.20)</td>
<td>(10.19)</td>
</tr>
<tr>
<td>Female</td>
<td>0.03</td>
<td>-0.04</td>
<td>0.10**</td>
<td>0.04</td>
<td>0.04</td>
<td>-0.24</td>
<td>0.08**</td>
<td>-0.09</td>
<td>0.06*</td>
<td>-0.16</td>
</tr>
<tr>
<td></td>
<td>(0.04)</td>
<td>(0.16)</td>
<td>(0.05)</td>
<td>(0.12)</td>
<td>(0.05)</td>
<td>(0.13)</td>
<td>(0.04)</td>
<td>(0.11)</td>
<td>(0.04)</td>
<td>(0.11)</td>
</tr>
<tr>
<td>Black</td>
<td>0.14**</td>
<td>0.25</td>
<td>0.23**</td>
<td>0.70*</td>
<td>-0.09</td>
<td>0.57</td>
<td>0.02</td>
<td>0.38</td>
<td>-0.03</td>
<td>0.47</td>
</tr>
<tr>
<td></td>
<td>(0.07)</td>
<td>(0.40)</td>
<td>(0.10)</td>
<td>(0.38)</td>
<td>(0.11)</td>
<td>(0.39)</td>
<td>(0.09)</td>
<td>(0.30)</td>
<td>(0.09)</td>
<td>(0.32)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.08</td>
<td>0.36</td>
<td>0.17*</td>
<td>0.27</td>
<td>-0.08</td>
<td>0.38</td>
<td>0.03</td>
<td>0.37</td>
<td>-0.03</td>
<td>0.38</td>
</tr>
<tr>
<td></td>
<td>(0.06)</td>
<td>(0.32)</td>
<td>(0.09)</td>
<td>(0.30)</td>
<td>(0.09)</td>
<td>(0.31)</td>
<td>(0.08)</td>
<td>(0.25)</td>
<td>(0.08)</td>
<td>(0.26)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.73**</td>
<td>-7.34</td>
<td>0.53</td>
<td>-2.85</td>
<td>1.22***</td>
<td>4.11</td>
<td>0.77**</td>
<td>5.70</td>
<td>1.01***</td>
<td>4.91</td>
</tr>
<tr>
<td></td>
<td>(0.34)</td>
<td>(8.89)</td>
<td>(0.44)</td>
<td>(11.02)</td>
<td>(0.42)</td>
<td>(9.34)</td>
<td>(0.36)</td>
<td>(6.92)</td>
<td>(0.35)</td>
<td>(7.20)</td>
</tr>
<tr>
<td>Observations</td>
<td>260</td>
<td>41</td>
<td>260</td>
<td>41</td>
<td>257</td>
<td>41</td>
<td>260</td>
<td>41</td>
<td>256</td>
<td>41</td>
</tr>
<tr>
<td>R2</td>
<td>0.201</td>
<td>0.745</td>
<td>0.163</td>
<td>0.778</td>
<td>0.132</td>
<td>0.850</td>
<td>0.180</td>
<td>0.746</td>
<td>0.163</td>
<td>0.827</td>
</tr>
<tr>
<td>p-value PA=PK</td>
<td>0.733</td>
<td>0.380</td>
<td>0.172</td>
<td>0.940</td>
<td>0.514</td>
<td>0.207</td>
<td>0.150</td>
<td>0.617</td>
<td>0.237</td>
<td>0.301</td>
</tr>
</tbody>
</table>

**Note:** The table reports ordinary least squares (OLS) regressions of a participant’s chosen level of inequality in the four experiments and for the merit and luck experiments combined, split by those children who have siblings and those who do not have siblings. "Preschool" (PK) is an indicator variable taking the value one if the child was in the Preschool group and "Parent Academy" (PA) is an indicator variable taking the value one if the child was in the Parent Academy group. "Age" is the child’s average age in years; “Female” is a dummy for the child being a girl; "Black" and "Hispanic" are dummies for the children belonging to each of these categories, respectively. Included, but not reported, are controls for the time of day when the child took part in the experiment and experimenter fixed effects. Standard errors in parentheses, * \( p < 0.1 \), ** \( p < 0.05 \), *** \( p < 0.01 \).