The Effect of Early Childhood Education on Social Preferences

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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, or a control group. We returned to the 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. Our findings highlight the importance of taking a broad perspective when designing and evaluating early childhood educational programs.

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).[1] 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

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[1]Related 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. The effect sizes are quite large. The children attending preschool implement 33% less inequality than the control group when they as spectators distribute between two others in a situation where the source of inequality is luck and there is no cost of redistribution. The children attending the parenting program, on the other hand, implement 50% more inequality than the control group when they as spectators distribute between two others and face a tradeoff between fairness and efficiency. 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.

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.[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 inter- actions and partnered activities.[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.[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

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[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.

[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*).

[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.[5]

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.[6] We reached all the children who 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.[7] 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).[8]

[Table 1 about here]

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[5]They received $25 to come to the pre-assessment and between $25 and $100 to attend the post-assessment.

[6]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.

[7]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.

[8]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.

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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 (Fehr and Schmidt, 1999; Bolton and Ockenfels, 2000; Konow, 2000; Andreoni and Miller, 2002; Charness and Rabin, 2002; Cappelen et al., 2007; Almås et al., 2010; Cappelen et al., 2013; Almås et al., 2019). To guide our analysis of the data, we introduce a generalized version of the utility function in Cappelen et al. (2007):

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

where, in a stakeholder decision, 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 of the two children given the choice of child i, and $maxX$ is the maximal sum of income if the child chooses the most efficient alternative. The weight attached to fairness relative to self-interest is captured by β_i, the weight attached to fairness relative to efficiency is captured by β_i/α_i, and the child's fairness view is captured by m_i. This formulation of the utility function assumes that utility is linear in income, that the disutility from unfairness or inefficiency is captured by a standard quadratic loss function and that the three motives are additively separable, but these assumptions are only made to structure the discussion and are not essential for the main analysis. We further assume that the children maximize the same utility function as spectators, with the following modifications: the first term is zero, the second term is defined for the spectator's preferences over the income of one of the two other children, and the third term is defined for the sum of income of the two other children.

Within this framework, an early childhood intervention may shape the social preferences of the child in three ways: i) in the weight she attaches to fairness relative to self-interest (β_i) ii) in the weight she attaches to fairness relative to efficiency (β_i/α_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 child-

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hood education programs causally affect these fundamental dimensions of the children's social preferences.[9]

To study whether the early childhood programs affect the weight that the children place on fairness relative to self-interest β_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. 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 ($X_i = maxX$ for all possible decisions of the child).[10] 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 ($m_i = maxX/2$), 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, β_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). 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

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[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.

[10]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.

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.[11] The efficiency experiment thus placed the child in a distributive situation with a trade-off between efficiency and fairness, where, as a spectator, it is optimal to choose the efficient alternative if the weight attached to fairness relative to 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 interventions shape 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 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

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[11]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.

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.[12] A treatment difference in the merit or luck experiments would thus identify a 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 experiment is 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 choose to share exactly half of the coins. Only 7% of the children keep everything for themselves. Very few children give more than half of the coins to the other child. In the efficiency experiment, we observe that 49% of the participants prefer the efficient, but unfair, allocation, while 51% of the participants choose the inefficient, but fair, allocation.

[Figure 1 about here]

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[12]Note that the initial allocations purposely differ between the merit and luck experiments. We did this to avoid the experiments appearing too similar to the children, which might have caused them to ignore that the economic environments differed when making their choice.

[13]Complete instructions are provided in Appendix B.

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 choose an equal distribution. Interestingly, many of the children find it fair that one child receives more stickers than the other child when their initial earnings differ. However, very few children give more stickers to the child with the lower initial earnings, which provides strong evidence against the children randomizing in their choices.

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. As shown in Table A3 in Appendix A, we observe positive and significant correlations of inequality implemented across the experiments, which is suggestive of β_i, α_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 experiment 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 β_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=0.751 for Preschool and p=0.478 for Parent Academy), and

the Preschool and Parent Academy groups do not differ in the level of selfishness (p=0.712).[14] An F-test of joint significance of the dummy variables also confirms the absence of any treatment effect on selfishness ($p = 0.777$).

[Figure 2 about here]

[Table 3 about here]

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%), and therefore implement 50% more inequality than the children in the Control group (0.36 versus 0.22, corresponding to 0.32 standard deviations, p=0.030). The Parent Academy program thus makes the children place more weight on efficiency relative to fairness in their distributive decisions, which causes a larger share to have a β_i/α_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 Parent Academy group is more likely to choose the efficient option than the Preschool group ($p = 0.099$).

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 implement 33% less inequality than the children in the Control group (0.33 versus 0.22, p=0.057). In the merit experiment, the Preschool children implement 21% less inequality than children in the Control group (0.28 versus 0.22, p=0.143). Combining the luck and the merit experiments, we find that the Preschool children implement 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=0.046). In contrast, we find less evidence of the Parent Academy affecting the children's fairness views. The Parent Academy children implement 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 (luck: 0.33 versus 0.28, p=0.423; merit: 0.28 versus 0.30, p=0.685: combined: 0.31 versus 0.29, p=0.746). The Parent Academy children are less egalitarian than the Preschool children, however,

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[14]Unless noted otherwise, all p-values reported are from comparing the estimated coefficients for the treatments in the corresponding regression with control variables in Table 3.

and implement more inequality in the merit and the luck experiments (combined: 0.29 versus 0.22, $p = 0.094$).

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 egalitarian 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 dummy 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%, $p = 0.038$), but the F-test of joint significance of the two treatment dummy variables is not significant ($p = 0.108$). We also find a larger share of meritocrats among the Parent Academy children as compared to the Preschool children, but this difference is not statistically significant (28.4% versus 20.5%, $p = 0.129$).

In Appendix A, we show that our main findings are virtually unaffected by 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), using probit and tobit regressions (Table A6), and including cognitive controls (Table A7).[15] In Table A8 of Appendix A, we also show with inverse probability weighted regressions that the findings generalize to the full CHECC sample. Overall, we consider our data to provide a good deal of evidence suggesting that the CHECC interventions play an important role in shaping the social preferences of the children.

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[15]Our 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 ($p = 0.985$).

In particular, we find that 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   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 difference between the two educational interventions is particularly significant in terms of the egalitarian effect, where we find a large increase in the share of egalitarians in the Preschool group compared to the Parent Academy group.

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

of social preferences.

More broadly, our results contribute to a better understanding of how social preferences 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. While the effects documented several years after treatment in our study are interesting, the channels through which early education shapes social preferences still remain unknown.[16] A better understanding of these mechanisms and their long-term effects are crucial for

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[16]A possible explanation for the effects we observe is social learning theory. 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). In the Preschool group, children were introduced to teachers and their approach to conflict resolution, which often is egalitarian (e.g., through taking turns, sharing, not cutting line). In the Parent Academy group, children did not experience new role models, but parents may have changed their behavior. In particular, parents could have focused more of their resources on the child in the program, justifying it by efficiency-oriented reasoning. Exploring these pathways further, we consider siblings as potential moderators of the effects. The hypothesis is that in the case of Preschool, children without siblings should be more affected since they have less experience in conflict resolution at home. In the case of Parent Academy, children without siblings should be less affected since there is no sibling competition for resources at home. Table A9 in Appendix A provides some evidence for the social learning mechanism, showing that the egalitarian effect of Preschool is mainly driven by the children who do not have siblings, and the efficiency effect of Parent Academy is mainly driven by children with siblings.

how society should design institutions that are optimal for children's human capital formation.

References

Almås, Ingvild, Alexander W. Cappelen, and Bertil Tungodden, "Cutthroat capitalism versus cuddly socialism: Are Americans more meritocratic and efficiency-seeking than Scandinavians?," *Journal of Political Economy*, 2019.

_ , **Alexander W Cappelen, Erik Ø Sørensen, and Bertil Tungodden**, "Fairness and the development of inequality acceptance," *Science*, 2010, *328* (5982), 1176–1178.

Andersen, Steffen, Seda Ertac, Uri Gneezy, John A List, and Sandra Maximiano, "Gender, competitiveness, and socialization at a young age: Evidence from a matrilineal and a patriarchal society," *Review of Economics and Statistics*, 2013, *95* (4), 1438–1443.

Andreoni, James and John Miller, "Giving according to GARP: An experimental test of the consistency of preferences for altruism," *Econometrica*, 2002, *70* (2), 737–753.

Angerer, Silvia, Daniela Glätzle-Rützler, Philipp Lergetporer, and Matthias Sutter, "Donations, risk attitudes and time preferences: A study on altruism in primary school children," *Journal of Economic Behavior & Organization*, 2015, *115*, 67–74.

_ , **Philipp Lergetporer, Daniela Glätzle-Rützler, and Matthias Sutter**, "How to measure time preferences in children: a comparison of two methods," *Journal of the Economic Science Association*, 2015, *1* (2), 158–169.

Bandura, Albert, "Self-efficacy: Toward a unifying theory of behavioral change," *Psychological Review*, 1977, *84* (2), 191–215.

Bauer, Michal, Julie Chytilová, and Barbara Pertold-Gebicka, "Parental background and other-regarding preferences in children," *Experimental Economics*, 2014, *17* (1), 24–46.

Becker, Gary S, *Human capital: A theoretical and empirical analysis, with special reference to education*, University of Chicago Press, 2009.

Ben-Ner, Avner, John A List, Louis Putterman, and Anya Savikhin Samek, "Learned Generosity? A Field Experiment with Parents and their Children," *A Field Experiment with Parents and Their Children (December 21, 2015)*, 2015.

Bettinger, Eric and Robert Slonim, "Patience among children," *Journal of Public Economics*, 2007, *91* (1), 343–363.

Binmore, Ken, *Game Theory and the Social Contract: Just playing*, MIT P, 1994.

Bisin, Alberto and Thierry Verdier, "The Economics of Cultural Transmission and Socialization," *Handbook of Social Economics*, 2010, p. nc.

Bolton, Gary E and Axel Ockenfels, "ERC: A theory of equity, reciprocity, and competition," *American economic review*, 2000, pp. 166–193.

Buser, Thomas, Muriel Niederle, and Hessel Oosterbeek, "Gender, Competitiveness, and Career Choices," *The Quarterly Journal of Economics*, 2014, *1409*, 1447.

Campbell, Frances A, Craig T Ramey, Elizabeth Pungello, Joseph Sparling, and Shari Miller-Johnson, "Early childhood education: Young adult outcomes from the Abecedarian Project," *Applied Developmental Science*, 2002, *6* (1), 42–57.

Cantoni, Davide, Yuyu Chen, David Y Yang, Noam Yuchtman, and Y Jane Zhang, "Curriculum and Ideology," Technical Report, National Bureau of Economic Research 2014.

Cappelen, Alexander W, Astri Drange Hole, Erik Ø Sørensen, and Bertil Tungodden, "The Pluralism of Fairness Ideals: An Experimental Approach," *The American Economic Review*, 2007, pp. 818–827.

Cappelen, Alexander W., James Konow, Erik Ø. Sørensen, and Bertil Tungodden, "Just Luck: An Experimental Study of Risk Taking and Fairness," *American Economic Review*, 2013, *103* (3), 1398–1413.

Castillo, Marco, Paul J Ferraro, Jeffrey L Jordan, and Ragan Petrie, "The today and tomorrow of kids: Time preferences and educational outcomes of children," *Journal of Public Economics*, 2011, *95* (11), 1377–1385.

Charness, Gary and Matthew Rabin, "Understanding Social Preferences with Simple Tests," *Quarterly Journal of Economics*, 2002, *117* (3), 817–869.

Engel, Christoph, "Dictator games: A meta study," *Experimental Economics*, 2011, *14* (4), 583–610.

Fehr, Ernst and Klaus M Schmidt, "A theory of fairness, competition, and cooperation," *Quarterly journal of Economics*, 1999, pp. 817–868.

_ , **Helen Bernhard, and Bettina Rockenbach**, "Egalitarianism in young children," *Nature*, 2008, *454* (7208), 1079–1083.

Fisman, Raymond, Shachar Kariv, and Daniel Markovits, "Individual preferences for giving," *The American Economic Review*, 2007, *97* (5), 1858–1876.

Fryer, Roland G, Steven D Levitt, and John A List, "Parental Incentives and Early Childhood Achievement: A Field Experiment in Chicago Heights," Technical Report, National Bureau of Economic Research 2015.

Gneezy, Uri and Aldo Rustichini, "Gender and competition at a young age," *The American Economic Review*, 2004, *94* (2), 377–381.

Harbaugh, William T, Kate Krause, and Lise Vesterlund, "Learning to bargain," *Journal of Economic Psychology*, 2007, *28* (1), 127–142.

Heckman, James J, "Policies to foster human capital," *Research in economics*, 2000, *54* (1), 3–56.

_ , "Skill formation and the economics of investing in disadvantaged children," *Science*, 2006, *312* (5782), 1900–1902.

_ , **Jora Stixrud, Sergio Urzua et al.**, "The Effects of Cognitive and Noncognitive Abilities on Labor Market Outcomes and Social Behavior," *Journal of Labor Economics*, 2006, *24* (3), 411–482.

_ , **Seong Hyeok Moon, Rodrigo Pinto, Peter A Savelyev, and Adam Yavitz**, "The rate of return to the HighScope Perry Preschool Program," *Journal of public Economics*, 2010, *94* (1), 114–128.

Killen, Melanie and Judith G. Smetana, eds, *Handbook of Moral Development*, Psychology Press, 2013.

Kohlberg, Lawrence, "Essays on moral development: The psychology of moral development (Vol. 2)," 1984.

Konow, James, "Fair shares: Accountability and cognitive dissonance in allocation decisions," *The American Economic Review*, 2000, *90* (4), 1072–1091.

17

Kosse, Fabian, Thomas Deckers, Hannah Schildberg-Horisch, and Armin Falk, "The Formation of Prosociality: Causal Evidence on the Role of Social Environment," Working Papers 2016-011, Human Capital and Economic Opportunity Working Group 2016.

Krause, Kate, William T. Harbaugh, and Timothy R. Berry, "GARP for kids: On the Development of Rational Choice Behavior," *American Economic Review*, 2001, *91* (5), 1539–45.

List, John A., "Does Market Experience Eliminate Market Anomalies?," *Quarterly Journal of Economics*, February 2003, *118* (1), 41–71.

_ , "The Behavioralist Meets the Market: Measuring Social Preferences and Reputation Effects in Actual Transactions," *Journal of Political Economy*, 2006, *114* (1).

_ **and Daniel L. Millimet**, "The Market: Catalyst for Rationality and Filter of Irrationality," *The B.E. Journal of Economic Analysis & Policy*, 2008, *8* (1 - Frontiers), Article 47.

Piaget, Jean, "The moral judgment of the child (1932)," *New York: Free Press*, 1965.

Samak, Anya, "Is there a gender gap in preschoolers' competitiveness? An experiment in the US," *Journal of Economic Behavior & Organization*, 2013, *92*, 22–31.

Schweinhart, Lawrence J et al., *Significant Benefits: The High/Scope Perry Preschool Study through Age 27. Monographs of the High/Scope Educational Research Foundation, No. Ten.*, ERIC, 1993.

_ , **Jeanne Montie, Zongping Xiang, William S Barnett, Clive R Belfield, and Milagros Nores**, "Lifetime effects: the High/Scope Perry Preschool study through age 40," 2005.

Sutter, Matthias and Martin G Kocher, "Trust and trustworthiness across different age groups," *Games and Economic Behavior*, 2007, *59* (2), 364–382.

_ , **Levent Yilmaz, and Manuela Oberauer**, "Delay of gratification and the role of defaults - An experiment with kindergarten children," *Economics Letters*, 2015, *137*, 21–24.

Figure 1: Overview of decisions
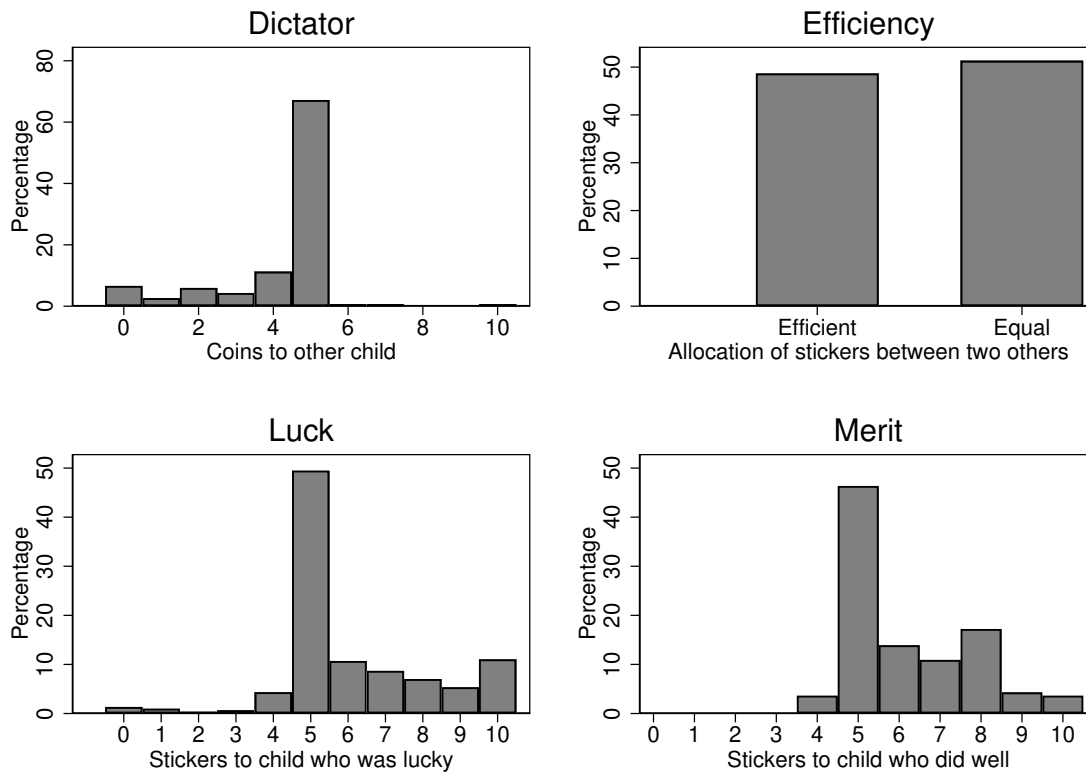
Note: The figure shows histograms of the choices made by the children in each of the four experiments.

Figure 2: Effect of early education
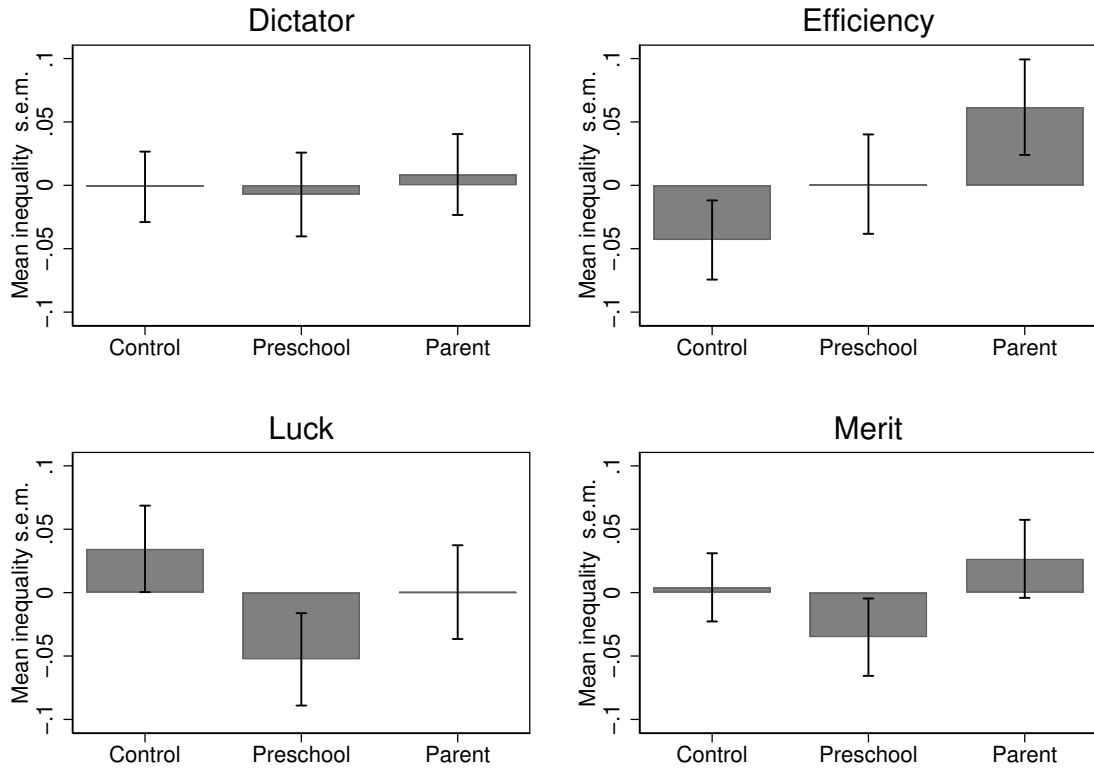
Note: The figure shows for the Control group, the Preschool group and the Parent Academy group, how the mean inequality chosen by children in each treatment differs from the mean inequality chosen by all participants. Inequality is calculated as the absolute difference in the units (coins or stickers) received by the children divided by the total number of units. This number is zero if the child chooses 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
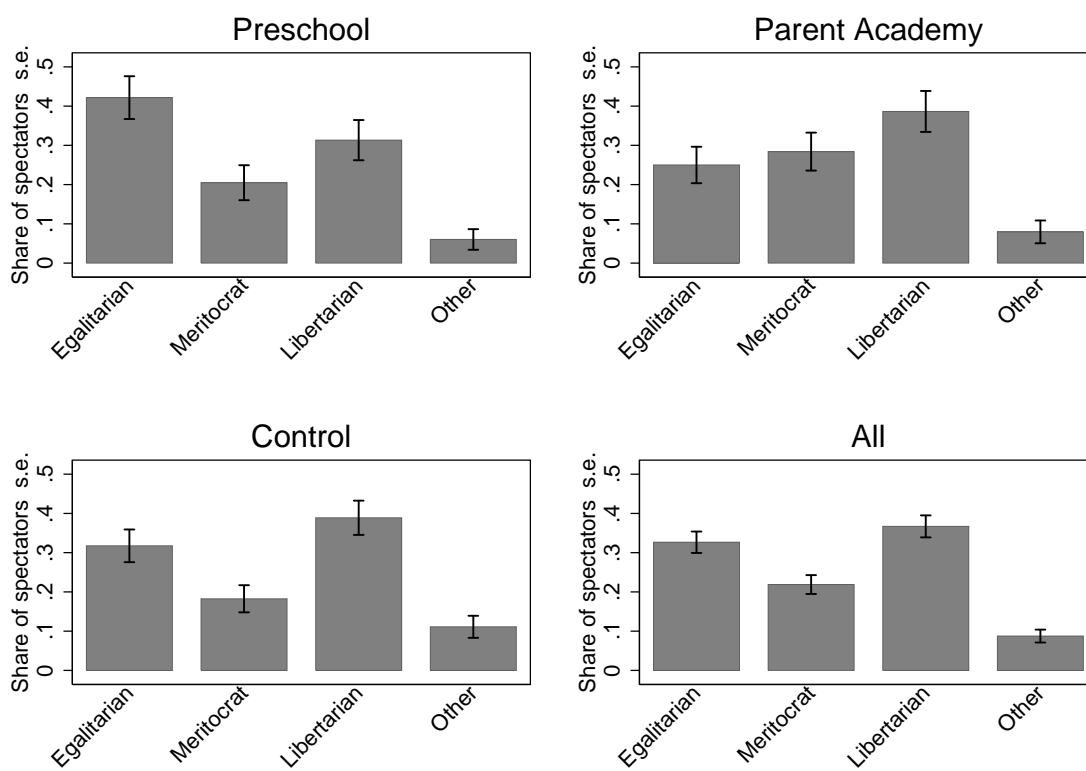
Note: The figure shows the distribution of the different fairness types (egalitarian, meritocrats, libertarians, others) by treatment and for all treatments combined.

Table 1: Balance Table

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

Note: The table reports the background characteristics of the 301 participants in the main sample, 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; 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

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

Note: The table provides an overview of the four experiments. 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

	(1) Dictator	(2) Dictator	(3) Efficiency	(4) Efficiency	(5) Luck	(6) Luck	(7) Merit	(8) Merit	(9) M+L	(10) M+L
Preschool	0.01	0.01	0.03	0.02	-0.11**	-0.10*	-0.06	-0.06	-0.09**	-0.08**
	(0.04)	(0.04)	(0.05)	(0.05)	(0.05)	(0.05)	(0.04)	(0.04)	(0.04)	(0.04)
Parent Academy	0.03	0.03	0.12**	0.11**	-0.05	-0.04	0.02	0.02	-0.02	-0.01
	(0.04)	(0.04)	(0.05)	(0.05)	(0.05)	(0.05)	(0.04)	(0.04)	(0.04)	(0.04)
Age		-0.10		-0.09		-0.07		-0.09		-0.08
		(0.17)		(0.29)		(0.24)		(0.23)		(0.23)
Female		0.01		0.05		-0.00		0.06*		0.03
		(0.04)		(0.04)		(0.04)		(0.03)		(0.03)
Black		0.16***		0.27***		0.00		0.05		0.03
		(0.06)		(0.09)		(0.10)		(0.08)		(0.07)
Hispanic		0.12**		0.17**		-0.01		0.05		0.02
		(0.05)		(0.08)		(0.08)		(0.07)		(0.07)
Constant	0.20***	0.58*	0.24***	0.41	0.33***	1.18***	0.28***	0.70**	0.31***	0.95***
	(0.05)	(0.31)	(0.06)	(0.39)	(0.06)	(0.39)	(0.05)	(0.32)	(0.05)	(0.32)
Observations	301	301	301	301	298	298	301	301	297	297
R2	0.164	0.188	0.109	0.148	0.125	0.151	0.172	0.195	0.160	0.189
p-value PS=PA	0.664	0.712	0.116	0.099	0.239	0.281	0.056	0.062	0.083	0.094
p-value PS=PA=0	0.796	0.777	0.078	0.077	0.111	0.162	0.137	0.147	0.087	0.101

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" (PS) is a dummy variable taking the value one if the child was in the Preschool group and "Parent Academy" (PA) is a dummy 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. 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, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

5 Appendix A

Table A1: Table 2 in paper, School District Subsample

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

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

	(1) Dictator	(2) Dictator	(3) Efficiency	(4) Efficiency	(5) Luck	(6) Luck	(7) Merit	(8) Merit	(9) M+L	(10) M+L
Preschool	0.01	0.02	0.03	0.03	-0.10*	-0.10*	-0.06	-0.07	-0.08*	-0.08*
	(0.04)	(0.05)	(0.05)	(0.05)	(0.05)	(0.06)	(0.05)	(0.05)	(0.04)	(0.04)
Parent Academy	0.03	0.04	0.12**	0.12**	-0.04	-0.04	0.02	0.01	-0.01	-0.01
	(0.05)	(0.05)	(0.05)	(0.05)	(0.06)	(0.06)	(0.04)	(0.04)	(0.04)	(0.04)
Age		-0.09		-0.13		-0.09		-0.10		-0.10
		(0.17)		(0.29)		(0.25)		(0.24)		(0.24)
Female		0.01		0.07		0.01		0.07*		0.04
		(0.04)		(0.04)		(0.05)		(0.04)		(0.03)
Black		0.17***		0.27**		0.03		0.08		0.06
		(0.06)		(0.11)		(0.11)		(0.09)		(0.09)
Hispanic		0.15***		0.16*		0.01		0.07		0.04
		(0.05)		(0.09)		(0.10)		(0.08)		(0.08)
Constant	0.20***	0.52	0.23***	0.52	0.33***	1.17***	0.30***	0.70**	0.31***	0.95***
	(0.06)	(0.32)	(0.06)	(0.42)	(0.07)	(0.42)	(0.05)	(0.35)	(0.05)	(0.35)
Observations	280	280	281	281	278	278	280	280	277	277
R2	0.147	0.169	0.110	0.152	0.103	0.128	0.155	0.182	0.134	0.166
p-value PS=PA	0.711	0.765	0.117	0.096	0.232	0.257	0.066	0.070	0.089	0.092
p-value PS=PA=0	0.785	0.746	0.070	0.076	0.152	0.186	0.162	0.162	0.112	0.109

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" (PS) is a dummy variable taking the value one if the child was in the Preschool group and "Parent Academy" (PA) is a dummy 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

	(1)			
	Dictator	Efficiency	Luck	Merit
Dictator	1			
Efficiency	0.131*	1		
Luck	0.117*	0.210***	1	
Merit	0.268***	0.287***	0.495***	1

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

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

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

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" is a dummy variable taking the value one if the child was in the Preschool group and "Parent Academy" is a dummy 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

	(1) Dicatator	(2) Dicatator	(3) Efficiency	(4) Efficiency	(5) Luck	(6) Luck	(7) Merit	(8) Merit	(9) M+L	(10) M+L
Preschool	-0.02	-0.03	-0.04	-0.03	0.16**	0.16**	0.05	0.04	0.14*	0.14*
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.08)	(0.08)	(0.07)	(0.07)
Parent Academy	-0.08	-0.09	-0.16**	-0.16**	0.03	0.02	-0.07	-0.07	-0.05	-0.05
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.08)	(0.07)	(0.07)	(0.06)	(0.07)
Age		0.14		0.13		0.11		0.09		0.17
		(0.26)		(0.40)		(0.41)		(0.39)		(0.49)
Female		0.03		-0.08		-0.05		-0.03		-0.07
		(0.06)		(0.06)		(0.06)		(0.06)		(0.06)
Black		-0.18		-0.38***		0.06		-0.06		-0.04
		(0.14)		(0.13)		(0.15)		(0.15)		(0.14)
Hispanic		-0.12		-0.24**		0.09		-0.10		-0.03
		(0.12)		(0.11)		(0.14)		(0.13)		(0.13)
Constant	0.59***	-0.03	0.67***	0.43	0.47***	-0.56	0.40***	0.13	0.24***	-0.52
	(0.08)	(0.48)	(0.08)	(0.55)	(0.08)	(0.55)	(0.08)	(0.54)	(0.07)	(0.56)
Observations	301	301	301	301	298	298	301	301	297	297
R2	0.126	0.142	0.109	0.148	0.118	0.139	0.140	0.146	0.120	0.138
p-value PS=PA	0.383	0.424	0.116	0.099	0.092	0.096	0.150	0.170	0.011	0.012
p-value PS=PA=0	0.464	0.433	0.078	0.077	0.069	0.077	0.338	0.369	0.037	0.039

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" (PS) is a dummy variable taking the value one if the child was in the Preschool group and "Parent Academy" (PA) is a dummy 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 A6: Table 3 in paper, using probit/tobit

	(1) Dictator	(2) Dictator	(3) Efficiency	(4) Efficiency	(5) Luck	(6) Luck	(7) Merit	(8) Merit	(9) M+L	(10) M+L
Preschool	0.04	0.04	0.10	0.10	-0.21**	-0.21**	-0.08	-0.08	-0.13**	-0.13**
	(0.12)	(0.12)	(0.20)	(0.20)	(0.10)	(0.10)	(0.07)	(0.07)	(0.06)	(0.06)
Parent Academy	0.13	0.13	0.43**	0.43**	-0.06	-0.06	0.04	0.04	-0.00	-0.00
	(0.12)	(0.12)	(0.19)	(0.19)	(0.09)	(0.09)	(0.07)	(0.07)	(0.05)	(0.05)
Age	-0.27	-0.27	-0.39	-0.39	-0.14	-0.14	-0.13	-0.13	-0.13	-0.13
	(0.68)	(0.68)	(0.98)	(0.98)	(0.54)	(0.54)	(0.40)	(0.40)	(0.31)	(0.31)
Female	-0.02	-0.02	0.22	0.22	0.03	0.03	0.08	0.08	0.05	0.05
	(0.10)	(0.10)	(0.16)	(0.16)	(0.08)	(0.08)	(0.06)	(0.06)	(0.05)	(0.05)
Black	0.40	0.40	1.11***	1.11***	-0.04	-0.04	0.09	0.09	0.04	0.04
	(0.25)	(0.25)	(0.42)	(0.42)	(0.18)	(0.18)	(0.14)	(0.14)	(0.11)	(0.11)
Hispanic	0.29	0.29	0.74*	0.74*	-0.06	-0.06	0.11	0.11	0.03	0.03
	(0.23)	(0.23)	(0.39)	(0.39)	(0.16)	(0.16)	(0.13)	(0.13)	(0.10)	(0.10)
Constant	1.09	1.09	0.18	0.18	1.73**	1.73**	0.73	0.73	1.17***	1.17***
	(0.92)	(0.92)	(1.46)	(1.46)	(0.72)	(0.72)	(0.55)	(0.55)	(0.42)	(0.42)
Observations	301	301	295	295	298	298	301	301	297	297
R2										
p-value PS=PA	0.454	0.454	0.110	0.110	0.137	0.137	0.108	0.108	0.039	0.039
p-value PS=PA=0	0.511	0.511	0.073	0.073	0.084	0.084	0.265	0.265	0.049	0.049

Note: The table reports Tobit regressions of a participant's chosen level of inequality in the dictator experiment, the luck 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" (PS) is a dummy variable taking the value one if the child was in the Preschool group and "Parent Academy" (PA) is a dummy 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 A7: Table 3 in paper, controlling for cognitive and non-cognitive test scores at time of experiment

	(1) Dictator	(2) Dictator	(3) Efficiency	(4) Efficiency	(5) Luck	(6) Luck	(7) Merit	(8) Merit	(9) M+L	(10) M+L
Preschool	0.02	0.02	0.02	0.02	-0.10*	-0.10*	-0.05	-0.05	-0.08*	-0.08*
	(0.05)	(0.05)	(0.06)	(0.05)	(0.06)	(0.06)	(0.05)	(0.04)	(0.05)	(0.04)
Parent Academy	0.03	0.03	0.11*	0.11**	-0.06	-0.05	0.01	0.02	-0.02	-0.02
	(0.05)	(0.05)	(0.05)	(0.05)	(0.06)	(0.06)	(0.05)	(0.04)	(0.04)	(0.04)
Age	-0.11	-0.11	-0.19	-0.17	-0.10	-0.08	-0.10	-0.09	-0.11	-0.08
	(0.17)	(0.21)	(0.32)	(0.26)	(0.25)	(0.28)	(0.24)	(0.30)	(0.24)	(0.28)
Female	0.01	0.02	0.07	0.08*	0.00	0.00	0.06	0.07*	0.03	0.04
	(0.04)	(0.04)	(0.05)	(0.04)	(0.05)	(0.05)	(0.04)	(0.04)	(0.04)	(0.03)
Black	0.15**	0.10*	0.31***	0.23**	0.06	0.01	0.13	0.06	0.09	0.03
	(0.06)	(0.06)	(0.10)	(0.11)	(0.12)	(0.12)	(0.09)	(0.10)	(0.09)	(0.10)
Hispanic	0.13***	0.08	0.21**	0.14	0.03	0.01	0.11	0.04	0.07	0.03
	(0.05)	(0.05)	(0.09)	(0.10)	(0.11)	(0.11)	(0.08)	(0.09)	(0.08)	(0.09)
Cog Score		-0.07***		-0.09***		-0.04		-0.08***		-0.06***
		(0.02)		(0.02)		(0.02)		(0.02)		(0.02)
Noncog Score		0.02		-0.02		-0.05		-0.01		-0.03
		(0.02)		(0.03)		(0.03)		(0.02)		(0.02)
Constant	0.60*	0.78**	0.58	0.73*	1.17***	1.14**	0.67*	0.83**	0.93***	0.99***
	(0.32)	(0.34)	(0.43)	(0.42)	(0.43)	(0.44)	(0.36)	(0.38)	(0.35)	(0.37)
Observations	266	266	267	267	265	265	266	266	264	264
R2	0.179	0.216	0.174	0.235	0.131	0.153	0.176	0.247	0.162	0.214
p-value PS=PA	0.819	0.854	0.103	0.092	0.408	0.376	0.136	0.136	0.187	0.184
p-value PS=PA=0	0.819	0.854	0.103	0.092	0.408	0.376	0.136	0.136	0.187	0.184

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" (PS) is a dummy variable taking the value one if the child was in the Preschool group and "Parent Academy" (PA) is a dummy 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 A8: Table 3 in paper, with inverse probability weights

	(1) Dictator	(2) Dictator	(3) Efficiency	(4) Efficiency	(5) Luck	(6) Luck	(7) Merit	(8) Merit	(9) M+L	(10) M+L
Preschool	-0.02	-0.03	0.03	0.00	-0.13**	-0.12**	-0.10*	-0.10**	-0.11**	-0.11**
	(0.05)	(0.05)	(0.06)	(0.06)	(0.06)	(0.06)	(0.05)	(0.05)	(0.05)	(0.05)
Parent Academy	-0.04	-0.04	0.10	0.10*	-0.06	-0.05	-0.01	-0.01	-0.04	-0.03
	(0.05)	(0.05)	(0.06)	(0.06)	(0.07)	(0.06)	(0.05)	(0.05)	(0.05)	(0.05)
Age		-0.12		-0.23		0.01		0.10		0.05
		(0.15)		(0.26)		(0.22)		(0.21)		(0.21)
Female		0.07		0.10**		-0.02		0.07*		0.03
		(0.04)		(0.05)		(0.05)		(0.04)		(0.04)
Black		0.11**		0.26***		0.01		0.03		0.02
		(0.05)		(0.09)		(0.10)		(0.07)		(0.07)
Hispanic		0.11**		0.17**		-0.01		0.04		0.01
		(0.05)		(0.08)		(0.09)		(0.06)		(0.06)
Constant	0.21***	0.66*	0.30***	0.46	0.37***	1.38***	0.29***	0.50	0.33***	0.96***
	(0.05)	(0.36)	(0.07)	(0.46)	(0.08)	(0.44)	(0.05)	(0.35)	(0.06)	(0.36)
Observations	301	301	301	301	298	298	301	301	297	297
R2	0.288	0.324	0.114	0.188	0.157	0.200	0.238	0.263	0.191	0.229

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" is a dummy variable taking the value one if the child was in the Preschool group and "Parent Academy" is a dummy 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 A9: Table 3 in paper, by whether child has siblings or not

	(1) Dictator	(2) Dictator	(3) Efficiency	(4) Efficiency	(5) Luck	(6) Luck	(7) Merit	(8) Merit	(9) M+L	(10) M+L
Preschool	-0.00	-0.01	0.05	-0.00	-0.08	-0.41**	-0.05	-0.25	-0.07	-0.33**
	(0.05)	(0.16)	(0.06)	(0.17)	(0.06)	(0.14)	(0.05)	(0.15)	(0.05)	(0.13)
Parent Academy	0.02	0.12	0.13**	-0.02	-0.04	-0.24	0.02	-0.19	-0.01	-0.22
	(0.05)	(0.16)	(0.06)	(0.17)	(0.06)	(0.20)	(0.05)	(0.17)	(0.05)	(0.17)
Age	-0.09	8.74	-0.17	3.41	-0.10	-4.61	-0.11	-7.56	-0.11	-6.09
	(0.15)	(12.21)	(0.31)	(15.30)	(0.20)	(13.21)	(0.23)	(9.73)	(0.20)	(10.19)
Female	0.03	-0.04	0.10**	0.04	0.04	-0.24	0.08**	-0.09	0.06*	-0.16
	(0.04)	(0.16)	(0.05)	(0.12)	(0.05)	(0.13)	(0.04)	(0.11)	(0.04)	(0.11)
Black	0.14**	0.25	0.23**	0.70*	-0.09	0.57	0.02	0.38	-0.03	0.47
	(0.07)	(0.40)	(0.10)	(0.38)	(0.11)	(0.39)	(0.09)	(0.30)	(0.09)	(0.32)
Hispanic	0.08	0.36	0.17*	0.27	-0.08	0.38	0.03	0.37	-0.03	0.38
	(0.06)	(0.32)	(0.09)	(0.30)	(0.09)	(0.31)	(0.08)	(0.25)	(0.08)	(0.26)
Constant	0.73**	-7.34	0.53	-2.85	1.22***	4.11	0.77**	5.70	1.01***	4.91
	(0.34)	(8.89)	(0.44)	(11.02)	(0.42)	(9.34)	(0.36)	(6.92)	(0.35)	(7.20)
Observations	260	41	260	41	257	41	260	41	256	41
R2	0.201	0.745	0.163	0.778	0.132	0.850	0.180	0.746	0.163	0.827
p-value PS=PA	0.733	0.380	0.172	0.940	0.514	0.207	0.150	0.617	0.237	0.301
p-value PS=PA=0	0.926	0.619	0.069	0.994	0.413	0.015	0.345	0.256	0.335	0.035

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" (PS) is a dummy variable taking the value one if the child was in the Preschool group and "Parent Academy" (PA) is a dummy 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, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.