Impersonal Trust in a Just and Unjust World: Evidence from an Educational Intervention*

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Abstract

We provide causal evidence on how impersonal trust and reciprocity create prosperity and shape its distribution. For this, we leverage a large-scale randomized educational intervention that boosts trust and reciprocity in children. We show that in a world where individuals trust anonymous others, prosperity grows but so does inequality. While impersonal trust unambiguously creates wealth, redistribution is needed to tame the inequality it brings. Our results suggest that harnessing prosocial psychology through educational actions may pave the way for a prosperous and just society. However, for these actions to ultimately achieve this end, they should be pervasive and universally accessible.

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1 Introduction

Impersonal trust, also known as generalized trust, refers to the optimism regarding the behavior of individuals who are unknown at a personal level. This optimism is based on the level of reciprocity expected from these individuals in economic and social interactions. Impersonal trust, measured in various ways, is shown to be much higher in today's prosperous societies than in less developed nations. There is voluminous correlational evidence documenting the relationship between impersonal trust and economic outcomes, such as economic efficiency, governance quality, economic growth, and investment (Helliwell and Putnam, 1995; Easterly and Levine, 1997; Knack and Keefer, 1997; Knack and Zak, 2001; La Porta et al., 1997; Guiso et al., 2004, 2008, 2009; Dearmon and Grier, 2011; Bloom et al., 2012; Falk et al., 2018).[1] High cross-country correlations between impersonal trust and economic outcomes are not surprising, as the former leads to more economic interactions with unknown parties. Resulting productive engagements likely foster further trust and reciprocity and ultimately eliminate (or marginalize) predatory zero-sum behavior.

Impersonal trust is also associated with social cohesion, which is considered essential for prosperity and social justice (Banfield, 1958; Rawls, 1971; Arrow, 1972; Coleman, 1990; Putnam, 1993; Evans, 1996). It is extensively documented that impersonal trust is positively correlated with wealth accumulation and negatively correlated with wealth/income inequality (Knack and Keefer, 1997; Alesina and La Ferrara, 2000; Alesina and Ferrara, 2002; Barone and Mocetti, 2016; Butler et al., 2016). A common interpretation of the latter is that social injustice created by inequality damages social cohesion by lowering impersonal trust and desire for redistribution in communities. It is, however, entirely plausible that wealth inequality and impersonal trust form a dynamic feedback loop where one feeds the other through various slow-moving cultural factors. Because of this possible circular causality, it has been challenging to identify the causal effect of impersonal trust on the creation and distribution of prosperity. Several studies document the causal effect of impersonal trust on economic prosperity by leveraging various instruments or using lab settings (Algan and Cahuc, 2010; Tabellini, 2010; Costa-Gomes et al., 2014; Guiso et al., 2016; Bartling et al.,

[1] In his seminal work, Francis Fukuyama argues that economic life is tightly connected to cultural life so that social capital is as important as physical capital in creating prosperity. Societies with a high degree of impersonal trust are, therefore, more likely to prosper, establish social justice and move away from the extreme form of individualism; see Fukuyama (1995).

2018).[2] However, very little is known about the role of impersonal trust in shaping social justice, in particular, income and wealth inequality.

In this paper, we explore the extent to which impersonal trust creates prosperity, and impersonal reciprocity shapes its distribution. To do this, we leverage a unique field setting where a randomly implemented educational program boosted impersonal trust and desire for redistribution (reciprocity) in children. The educational program involved implementing a specifically designed social cohesion curriculum with the aim of fostering prosocial behavior in children. To do this, the program focused on cognitive empathy, a socio-cognitive trait considered to be the fundamental driver of prosocial attributes, including trust, reciprocity, cooperation, and altruism. The program was implemented in elementary schools in socioeconomically disadvantaged areas in Southeast Turkey in the 2018-2019 academic year. It was evaluated using a sample of 6500 children aged 8 to 11 in 80 schools, a random 40 of which received the program. The evaluation results with respect to a wide range of social cohesion indicators, including peer violence, social exclusion, and prosocial behavior, are presented in Alan et al. (2021). Importantly, for the purpose of this paper, the program significantly increased impersonal trust and reciprocity in children. Furthermore, the program also increased children's expectation of reciprocity from anonymous others, i.e., it made treated children significantly more optimistic about the state of the world they live in.

To identify the causal effect of trust and reciprocity on wealth creation and inequality, we utilize the program effect on experimental earnings generated by a trust game played at endline (May 2019) and later in the long-term follow-up (October 2021). A standard trust game involves pairing two endowed individuals who are unknown to each other and giving one the role of the trustor (sender) and the other the trustee (receiver). The amount of endowment transferred by the sender to the receiver is multiplied by a factor greater than unity. The amount sent by the sender is taken as a measure of trust and likely depends on the sender's expectation of reciprocity. The amount transferred back by the receiver is a measure of reciprocity, which also measures the desire for redistribution (Berg et al., 1995). We visited all participating schools in person to play this game with our subject children. We matched each child with an anonymous child from an out-of-sample school so that our trust and reciprocity measures could be considered as "impersonal."

To construct each child's simulated earnings, we first match each classroom with a class-

[2]A number of studies examine the effect of community-level trust or social trust on individual behavior; see for example Michaelson et al. (2013) and Jachimowicz et al. (2017).

room from another school in our sample using a random matching algorithm. We then calculate the simulated earnings by using the empirical distribution of trust and reciprocity decisions. Throughout the paper, we refer to these simulated earnings as individual "wealth." To construct aggregate quantities of interest, such as inequality indices and per-capita wealth, we perform this matching by forming fictive communities. Each community contains two groups of individuals; one group takes the role of the sender and the other the receiver. Based on the treatment status of groups within communities, we create four types of societies. Our first society is composed of communities where high trust meets a strong desire for redistribution, i.e., children in both groups in a given community are treated by the program. This society gives us a counterfactual policy ideal and represents our Just World. The second society is where we observe high trust from one group but low reciprocity from the other in a community, i.e., treated senders' trust meets the low reciprocity of the untreated. The society composed of these communities represents the actual state of the world for the treated children since the out-of-sample matches are indeed untreated children. We refer to this society as the Unjust World. The third society represents the state of autarky (status quo), where no one in any community is treated. This society is the actual state of the world for untreated children. Finally, in the fourth society, the senders' low trust meets the high reciprocity of the receivers, i.e., only receiver groups are treated in communities. We refer to this society as the Kind World, a counterfactual scenario for untreated children. Given this algorithm, a treated sender in our data can either be in the Just (counterfactual) or the Unjust World (factual), whereas a control sender can either be in the autarky (factual) or the Kind (counterfactual) World. We then empirically compare the level and distribution of wealth in these societies.

We show that the world with low trust and low reciprocity is not only impoverished but also less equal than the world with high trust and high reciprocity. The latter, the Just World, represents a policy ideal whereby all members of the society have access to interventions that foster prosocial psychology. We then show that providing these opportunities to only a segment of a society leads to a world even more unjust than the status quo. In such a world, trusting individuals create wealth, but its distribution is highly unequal due to the low desire for redistribution. While the wealthiest individuals in both the Just and Unjust worlds are equally wealthy, poverty presents itself in a salient way in the Unjust World. The poorest in the Unjust World are significantly more impoverished than the poorest in the Just World. In the former, while wealth creation is as high as it is in the Just World, the desire for redistribution is low. Therefore, inequality is salient with a significantly larger

Gini coefficient.

The educational intervention, by its randomized design, created an Unjust World for the treated children. As a result, treated children ended up earning significantly less than untreated children by extending their trust to anonymous others and not receiving the reciprocity they expected. Given this result, we ask whether the fact that the intervention created an Unjust World caused treated children's trust and reciprocity to erode in the long run, pushing communities back to autarky. To answer this question, we conducted another round of data collection in the Fall 2021, almost 2.5 years after the intervention. We played the impersonal trust game with the original participants we managed to locate in their new schools in the same manner. Although we find that the effects we estimate on trust and reciprocity in the short-term dissipated to some extent, we find that treated children are still significantly more optimistic than the control children about the state of the world they live in. Consistent with this, we do not find a full convergence to autarky. Instead, we find that despite dissipated impersonal trust, still more wealth is generated in the Just World than in any other world.

Our study offers two main contributions. First, to the best of our knowledge, this is the first paper that causally assesses the role of impersonal trust in creating prosperity and shaping its distribution. We argue that identifying this causal link by leveraging an educational intervention and an amenable field setting offers significant research value and policy insights. Our second contribution pertains to the fact that our subjects are children. A growing literature provides compelling evidence of neural plasticity in the childhood period and recommends skill-enhancing interventions (Alan and Ertac, 2018; Alan et al., 2019, 2021; Kosse et al., 2019). Our study underlines the political economy implications of these endeavors. In particular, we show that instilling prosociality in children might offer a sustainable pathway to prosperity and social justice. The persistence of our results, even in a highly non-cohesive environment and even after a long school closure, is strong evidence of the power of public education in building prosperous and just societies (Putnam, 1993). Our results also caution that fostering prosociality should be done by considering the externalities inherent in prosocial psychology. This caution is particularly relevant for our increasingly segregated societies, where children from different socioeconomic segments have different access to skill-building opportunities. Our results suggest that interventions aiming at building social capital can bring persistent equilibrium effects, especially if they embrace all segments of society and are implemented at scale.

Our study relates to two disparate literatures. The first one is extant literature on social capital and economic prosperity, in particular, the literature that documents the relationship between trust and economic outcomes (see, e.g., Tabellini (2008); Algan and Cahuc (2010, 2013)). A strand of this literature documents the correlation between impersonal trust and income inequality (see, e.g., Barone and Mocetti (2016)). We complement this literature by showing the causal relationship between impersonal trust and the distribution of prosperity using a setting where a randomized intervention exogenously shifted the former. Secondly, our study speaks to the literature on the political economy of education. Specifically, it highlights the power of public education in building prosperous and just societies (Goldin and Katz, 1999; Gradstein and Justman, 2002; Glaeser et al., 2007; Helliwell and Putnam, 2007; Bandiera et al., 2019). Understanding the extent of this power may help us design targeted educational actions to harness prosocial psychology and build social capital in today's non-cohesive and polarized societies.

The rest of the paper is organized as follows. Section 2 provides details on the context and educational program. Section 3 explains how we conducted the trust game. Section 4 shows how we simulated experimental earnings, and constructed factual and counterfactual societies by leveraging the random implementation of the program. We present and discuss our results in Section 5 and conclude in Section 6.

2 Background and Context

Our data come from a large-scale educational RCT launched in the Spring of 2018. The trial covered over 6500 children, aged 8 to 11, from 80 elementary schools (222 classrooms) in Southeast Turkey. The intervention involved implementing an educational program in randomly selected 40 schools to test the effectiveness of a unique social cohesion curriculum before implementing it at scale. The curriculum, coined as "Understanding Each Other," was designed in response to the worsening school climate due to massive waves of Syrian refugee influx in Turkish public schools. The program's ultimate objective was to provide afflicted schools with a curricular tool to maintain/restore social cohesion.

The Understanding Each Other curriculum aims to harness prosocial psychology by targeting a single socio-cognitive skill in children, perspective-taking. Perspective-taking is an ability to understand others' mental states and has shown to be positively correlated with prosocial attitudes like trust, reciprocity, and cooperation and negatively associated with

violence and aggression (Batson et al., 1997; Galinsky and Moskowitz, 2000; Galinsky et al., 2005). Motivated by these correlational findings, Understanding Each Other was created by a multidisciplinary team of pedagogy experts, curricula designers, and artists as part of a private university's philanthropic efforts. The curriculum comprises a large package of materials, including animated videos, reading materials, activities, and games, all narrowly centered around encouraging children to exert conscious effort to take others' perspectives in all social situations. Although the program was developed as a response to the worsening school climate due to the massive influx of refugee students, the content of the curriculum makes no explicit reference to the situation or ethnicity. Instead, it highlights the importance of prosocial acts toward one another and embracing individual differences.[3]

After baseline data collection in Spring 2018, 124 teachers from 40 schools received extensive training on the curriculum and implemented it throughout the 2018-2019 academic year in the extra-curricular hours allotted to all elementary schools by the Turkish Ministry of Education. These extra-curricular hours were used in the same way by the control schools implementing unrelated (placebo) projects on personal hygiene, dental care, environment protection, coding, and more. On average, teachers spent three lecture hours per week to cover the curriculum throughout the 2018-2019 academic year. Endline data for the short-term evaluation were collected in May 2019. Alan et al. (2021) evaluated this program with respect to a wide range of social cohesion indicators, including peer violence, social exclusion, ethnic segregation, and prosocial behavior. They found that the program was highly effective in improving these indicators. More importantly, they showed that the program significantly increased trust and reciprocity in children, not only toward their own classmates (interpersonal trust and reciprocity) but also toward anonymous peers outside of their schools (impersonal trust and reciprocity).

For the purpose of this paper, in Fall 2021, after a long school closure due to the Covid 19 pandemic, we conducted another round of data collection. To do this, we first located as many children as we could with the help of the local educational authorities. This tracking required checking all middle schools' registry databases in the study provinces as the students were expected to be in middle schools (grades 6 and 7). Tracking these children was challenging as the study sites host large numbers of refugees who tend to be mobile and many locals whose livelihood depends on seasonal agricultural work, which makes them similarly

[3]More details about the content of the curriculum and examples of class activities can be found in the Online Appendix.

mobile. Nevertheless, we managed to locate 92% of the original participants registered in middle schools in our study sites. However, official registration does not mean actual school attendance in these deprived regions. Many children never attend their registered schools despite remaining officially registered. We find that this drainage from the education system is more likely for males and refugees and likely exacerbated by the extended school closures Turkey experienced due to the Covid-19 pandemic. Visiting the middle schools flagged to have at least 10 of our original participants registered in October 2021, we managed to collect data from 51% of our original sample in 101 middle schools. Among these, we found 20 schools hosting only treated participants, 13 only control participants, and 68 schools hosting both types of students. We note that attrition in the long term is balanced across treatment and control. As we show in Table A1, we do not find any significant differences in baseline student characteristics by treatment status in our long-term data. Table A2 in the Online Appendix provides additional analysis for attrition where we compare the characteristics of non-attriters across treatment and control and find no statistically significant difference.[4]

3 Measuring Impersonal Trust and Reciprocity

To measure trust and reciprocity, we played a standard trust game with children by visiting all participating primary schools throughout May 2019 and visiting all middle schools where we were able to locate our original participants in October 2021 (Berg et al., 1995; Glaeser et al., 2000). The essence of the trust game is as follows. Two individuals (often unknown to each other) are paired, and both are given a monetary endowment. One of them is given the role of "sender" (trustor) and the other "receiver" (trustee). The sender decides the amount of her endowment to send to the receiver, zero being an option. Before the amount sent is delivered to the receiver, it is magnified by a factor $m > 1$. Then, it is up to the receiver to keep the whole amount or return a portion of this transfer back to the sender. The amount of endowment sent by the sender measures the level of trust, and the amount sent back by the receiver measures the level of reciprocity.

To play this game with our subject children, we first endowed them with four tokens, which could be converted to gifts we brought to the classroom in a basket. These are small gifts of great value to children, such as attractive stationery, hairpins, skipping ropes, balls,

[4]To assess the implication of high attrition in our long-term-follow up, we repeat our simulation exercise for our short-term sample by restricting the sample to the non-attriters. Our results are very similar to those we obtain from the full sample, both in size and precision; see Table A3 in the Online Appendix.

and more. We told the children that they were paired with another child of the same grade in another elementary school.[5] We designed the game so that children first assumed the role of sender and then the role of receiver and made their decisions in each role (Harbaugh et al. (2003)). We set the magnifying factor to 3 so that the amount sent by senders was tripled before being delivered to receivers. We elicited receivers' decisions for all 4 cases: the case of receiving 1 (tripled to 3), 2 (tripled to 6), 3 (tripled to 9), and 4 (tripled to 12). Children were made fully aware that their final earnings would depend on (i) the role we assigned to them randomly after all decisions were made (sender or receiver), ii) their decisions in their assigned role, and iii) the decisions of their anonymous pairs. We provided numerous examples to ensure that children fully understood the game before eliciting decisions. The number of tokens transferred by the sender is our measure of "impersonal trust," and the number of tokens sent back by the receiver is our measure of "impersonal reciprocity." Because of the way we elicited the decisions, we have both measures for all children in our sample. After the decisions were made as senders, we elicited their beliefs about the reciprocity they would receive. Specifically, we asked them, after they made their decision as senders, whether they believed the receiver would send back "none," "less than half," "half," "more than half," or "all" of the tokens transferred (and multiplied by 3).

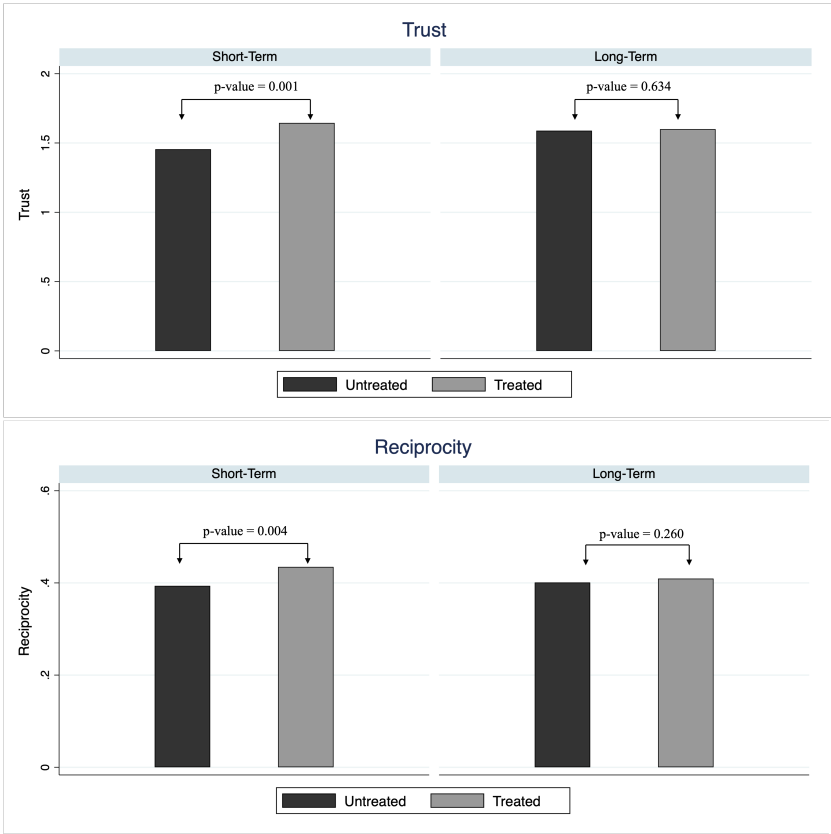
The elicitation protocol and incentive structure were the same for the long-term follow-up in October 2021 to ensure comparability across data collection rounds. We gathered the original participants in large conference rooms in their schools as we found them scattered around different classrooms and conducted the data collection sessions.

Figure 1 provides the descriptive statistics of the level of trust and reciprocity for the short- and long-term. As can be seen, the treatment had a significant effect on impersonal trust and reciprocity in the short-term, but the effects dissipated considerably after about 2.5 years. While treated children had 13% (10.4%) higher trust (reciprocity) than control children in May 2019, they had only 0.6% (1.5%) higher trust (reciprocity) in October 2021, and the latter effects do not reach statistical significance. Note, however, that the treated children's beliefs about reciprocity remained somewhat optimistic in the long run. While the optimism of the treated children about the reciprocity of anonymous others was 7 percentage points higher than that of the control children, this value went down to 3 percentage points

[5]In practice, we implemented two versions of this game played within-subject in May 2019. In the first version, which we refer to as "in-class," each child is paired with an anonymous classmate. This version intends to measure interpersonal trust, which is not the focus of this article. See full instructions for the trust game and payoff distribution protocol in the Online Appendix.

after 2.5 years but remained statistically significant (see Figure A1).

Figure 1: Treatment Effects on Trust and Reciprocity



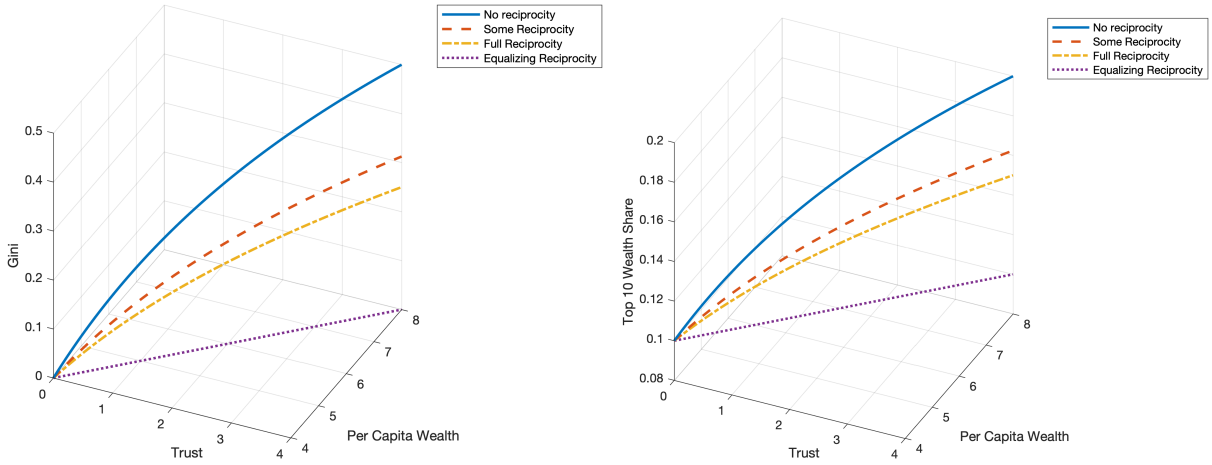
Note: Figures depict average individual level (i) trust (the number of tokens sent), and (ii) reciprocity (the fraction of tokens sent back) in the control and treatment groups for short-term and long-term. The sample size for the former is 6500, and for the latter around 3400.

4 The Effect of Trust and Reciprocity on Wealth and Wealth Distribution

To motivate our empirical work, we first present the theoretical predictions of wealth and wealth inequality in the context of our trust game. Two 3-D graphs presented in Figure 2 depict per-capita wealth and inequality as a function of trust and reciprocity. We created these figures by forming communities containing two groups of 100 agents; one group consists of senders the other receivers. For illustration purposes, we assume that each group makes a homogeneous, single decision. For example, if a group is composed of senders, they can collectively send an amount between 0 and 4 to the receiver group. If the group is composed

of receivers, the share of tokens they collectively send back is either 0, 1/4, 2/3, or 1. We then calculate community level per-capita wealth and inequality for each trust and reciprocity level.

Figure 2: Wealth and Wealth Inequality as Functions of Trust and Reciprocity



Note: Theoretical simulations of the Trust Game. Communities contain two groups, senders and receivers. For illustration purposes, we assume four receiver types, α, with α denoting the share of tokens sent back, $\alpha \in \{0, 1/4, 2/3, 1\}$ rendering four different scenarios. No reciprocity case (0) is where receivers keep all tokens sent by senders, some reciprocity case (1/4) is where receivers sent back 1/4 of the tokens they receive, equalizing reciprocity (2/3) is the case where receivers send back 2/3 of the tokens they receive, which makes payoffs of senders and receivers equal. Finally, full reciprocity (1) is the case where receivers send back all the tokens they receive.

In both panels, notice first that independent of reciprocity, higher impersonal trust generates a higher level of per-capita wealth. This is not surprising since every time there is a transfer from a sender, the size of the pie (the aggregate wealth in the community) increases by design. However, how this enlarged pie is distributed within the community is entirely determined by the way receivers behave. Unless the redistribution is fully equalizing (fraction 2/3 is the equalizing reciprocity level in our game), the enlarged pie comes with a higher degree of wealth inequality represented by the Gini coefficient (left panel) as well as the share of wealth owned by the top 10 wealthiest (right panel). We observe the highest inequality when trust meets with no reciprocity (top curve in both panels). The degree of inequality depends on the proximity of reciprocity to its equalizing (2/3) level. The latter gives the extreme case where there is no inequality at any level of aggregate wealth (bottom curve in both panels). We now turn to our data with these insights in mind.

4.1 Individual Wealth: Experimental Earnings

Experimental payoffs for our trust game can be shown in the following way:

Sender i's wealth W_i^k who meets receiver j is:

$$W_i^k = E - X_i(1 - q_j^k m) \tag{1}$$

Receiver j's wealth W_j^k who receives tokens from sender i is:

$$W_j^k = E + mX_i(1 - q_j^k), \tag{2}$$

where E is the total endowment given to each child (4 tokens), X_i is the amount sender i decides to send to anonymous receiver j, m is experimenter's magnifying factor, which is set to 3, q_j is the fraction of endowment receiver j sends back to sender i. k is the child's treatment status, which can be T (treated) or U (untreated). Note that q^T and q^U are random variables from the perspective of sender i, and we observe empirically that $F_T(q) \geq F_U(q)$. This means, given her decision, the sender would end up with higher wealth in expectation if she meets a receiver from the treatment group rather than a receiver from the control group.

4.2 Wealth and Wealth Inequality in Factual and Counterfactual Worlds

We consider classrooms as groups that form fictive communities. We create each community with two classrooms from two different schools. For simplicity, we make the students in one classroom senders and those in the other classroom receivers. To match each classroom with a classroom from another school, we use a random matching algorithm. After creating a community with two randomly matched classrooms, we construct the simulated wealth of each child based on the empirical distribution of trust and reciprocity decisions. Then, we calculate aggregate quantities such as inequality indices and per-capita wealth for the community. We replicate this matching exercise 1000 times via bootstrap random sampling to purge the effect of sampling error and to obtain bootstrapped standard errors. More details about the construction of simulated earnings can be found in Appendix B.

For the short-term analysis, we consider each classroom as a group. In scenario 1, we match each treated classroom with a randomly selected treated classroom from another

school, assigning the role of the sender to those in one classroom and the receiver to those in the other classroom. This scenario is what we refer to as the "Just World." It represents a counterfactual (policy ideal) world where treated children's optimism about others' reciprocity is somewhat realized. In scenario 2, we match each treated classroom with a randomly selected control classroom. This scenario represents our "Unjust World," a world where treated children are too optimistic about anonymous others' reciprocity relative to the actual state of the world. This is the actual state of the world for the treated children. In scenario 3, we match each control classroom with a randomly selected control classroom from another school, representing the state of autarky and the actual state of the world for the untreated children. Finally, in scenario 4, we match each control classroom with a randomly selected treated classroom, representing a rather strange world we call "Kind World," which constitutes a counterfactual world for the control children. Note that treated children can only live in the Just (counterfactual) or in the Unjust (factual) World, whereas untreated children can only be in the state of autarky (factual) or the Kind World (counterfactual). Figure A2 depicts the creation of our four worlds in visual clarity. Given that we have 124 treated classrooms and 98 control classrooms, the above algorithm generates a total of 444 communities, 124 communities in the Just World, 124 in the Unjust World, 98 in autarky, and 98 in the Kind World.

Construction of the states of the world is similar for the long-term data. The only difference is that we now create communities based on schools rather than classrooms. This is because our students are now in middle schools, distributed across different classrooms mixed with students who were not part of the RCT, preventing us from considering a classroom as a group. Instead, we form groups based on the treatment status of students in a given school. If a school includes only treatment (or control) students, the school is considered a single group. In cases where a school hosts both treatment and control students, we create two separate groups. One group consists of only treated students, and the other only untreated students. We exclude the groups with an insufficient number of students (less than seven observations) from the simulations. This leaves us with a total of 111 groups to form our communities, 57 treatment and 54 control, implying 57 communities in the Just World, 57 in the Unjust World, 54 in autarky, and 54 in the Kind World. To account for the imbalance with respect to gender and ethnicity between short and long-term due to attrition, we simulate wealth using inverse probability weights.[6]

[6]While we do not have differential attrition across treatment status, we lost more boys and more refugees in the long-term follow-up in both treatment groups.

After simulating wealth for each child in their possible worlds, we calculate community-level aggregate quantities of interest. These quantities are the level and the dispersion of wealth. For the former, we use per-capita wealth. To measure wealth inequality in each community, we use two commonly utilized metrics in economics. The first one is the well-known Gini coefficient (index). The Gini coefficient measures a normalized dispersion of a variable, and it is not very sensitive to the features of the underlying distribution. The coefficient lies between zero and unity, with higher numbers indicating higher inequality in a group. While extensively used in inequality literature and policy circles, there are concerns about the Gini coefficient not capturing the behavior of top earners due to the fact that surveys generally do not include them. While we do not have such concerns in our data as we can observe all earners, we follow convention and examine the share of wealth held by the top 10 wealthiest as another measure of inequality in our communities. Finally, we also examine maximum and minimum earners in a community. Keep in mind that we examine per-capita wealth and wealth inequality at the community level; therefore, the unit of observation in our analyses is community.

5 Results

Table 1 presents the differences in wealth and wealth inequality across four scenarios relative to autarky. Panel 1 shows the results in the short-term (immediately after the intervention), and Panel 2 presents the results in the long-term (2.5 years after the intervention). Looking at the short-term results, we observe that higher impersonal trust, whether it meets reciprocity (as in the Just World) or not (as in the Unjust World), creates higher per-capita wealth relative to autarky. Moreover, the rich are equally rich in the Just and Unjust Worlds (see Column 2). However, observe that the Unjust World's poorest individual, measured by the average of the lowest wealth, is significantly poorer than the poorest individual in the Just World. In fact, the poorest individuals in the Kind World are better off than the poorest in the Unjust World. Moreover, wealth inequality is at the highest level in the Unjust World relative to all other worlds, measured by the Gini coefficient.

Table 1: Differences in Wealth and Inequality across Worlds

Panel 1: Short-Term Effects

	Per Capita Wealth	Maximum Wealth	Minimum Wealth	Gini Index	Top 10 Wealth Share
Just World	0.206***	0.478***	0.149**	-0.004	-0.005
	(0.020)	(0.037)	(0.067)	(0.005)	(0.004)
Unjust World	0.209***	0.575***	-0.007	0.012**	0.003
	(0.020)	(0.028)	(0.073)	(0.005)	(0.004)
Kind World	-0.000	-0.077**	0.157**	-0.015***	-0.008*
	(0.020)	(0.036)	(0.069)	(0.005)	(0.004)
Mean Autarky	5.44	8.24	3.68	0.14	0.17
p-val (Just W.= Kind W.)	0.00	0.00	0.57	0.16	0.42
p-val (Just W.= Unjust W.)	0.80	0.55	0.07	0.02	0.12
p-val (Kind W.= Unjust W.)	0.00	0.00	0.07	0.00	0.04
Observations (Number of Communities)	444	444	444	444	444

Panel 2: Long-Term Effects

	Per Capita Wealth	Maximum Wealth	Minimum Wealth	Gini Index	Top 10 Wealth Share
Just World	0.143**	0.338***	0.066	0.003	-0.004
	(0.069)	(0.070)	(0.059)	(0.005)	(0.006)
Unjust World	0.059	0.320***	-0.019	0.007	-0.001
	(0.066)	(0.071)	(0.065)	(0.006)	(0.006)
Kind World	0.080	0.030	0.076	-0.003	-0.002
	(0.067)	(0.068)	(0.059)	(0.005)	(0.007)
Mean Autarky	5.38	7.97	3.82	0.12	0.17
p-val (Just W.= Kind W.)	0.50	0.12	0.55	0.44	0.49
p-val (Just W.= Unjust W.)	0.44	0.77	0.26	0.51	0.52
p-val (Kind W.= Unjust W.)	0.61	0.14	0.22	0.25	0.51
Observations (Number of Communities)	222	222	222	222	222

Note: Coefficient estimates indicate mean differences relative to autarky. In Panel 1, the number of observations is the total number of simulated communities; 124 communities in the Just World, 124 in the Unjust World, 98 in the Kind World, and 98 in autarky. The first two are formed by making 124 treatment classrooms senders, and the last two by making 98 control classrooms senders. In Panel 2, the number of observations is the total number of simulated communities in the long-term; 57 communities in the Just World, 57 communities in the Unjust World, 54 communities in the Kind World, and 54 communities in autarky. Bootstrapped standard errors are in parentheses. Asterisks indicate statistical significance at the 1% ***, 5% **, and 10% * levels.

Results presented in Panel 2 suggest that these conclusions generally hold true 2.5 years after the intervention, albeit weaker in the statistical sense. The notable result here is that even after a long school closure and children moving to new schools, we observe that the minimum wealth level of the Just World (and the Kind World) is still higher, albeit weakly in the statistical sense, than that of autarky and the Unjust World, suggesting that the intervention continues to prevent extreme poverty through higher reciprocity. Note also that the rich of the Just and Unjust worlds remain equally rich, with the latter also implying inequality. However, inequality estimates lack statistical precision in the long-run. Overall, while the estimated effects appear smaller in the long-run, we cannot reject the equality of short-run and long-run estimates.

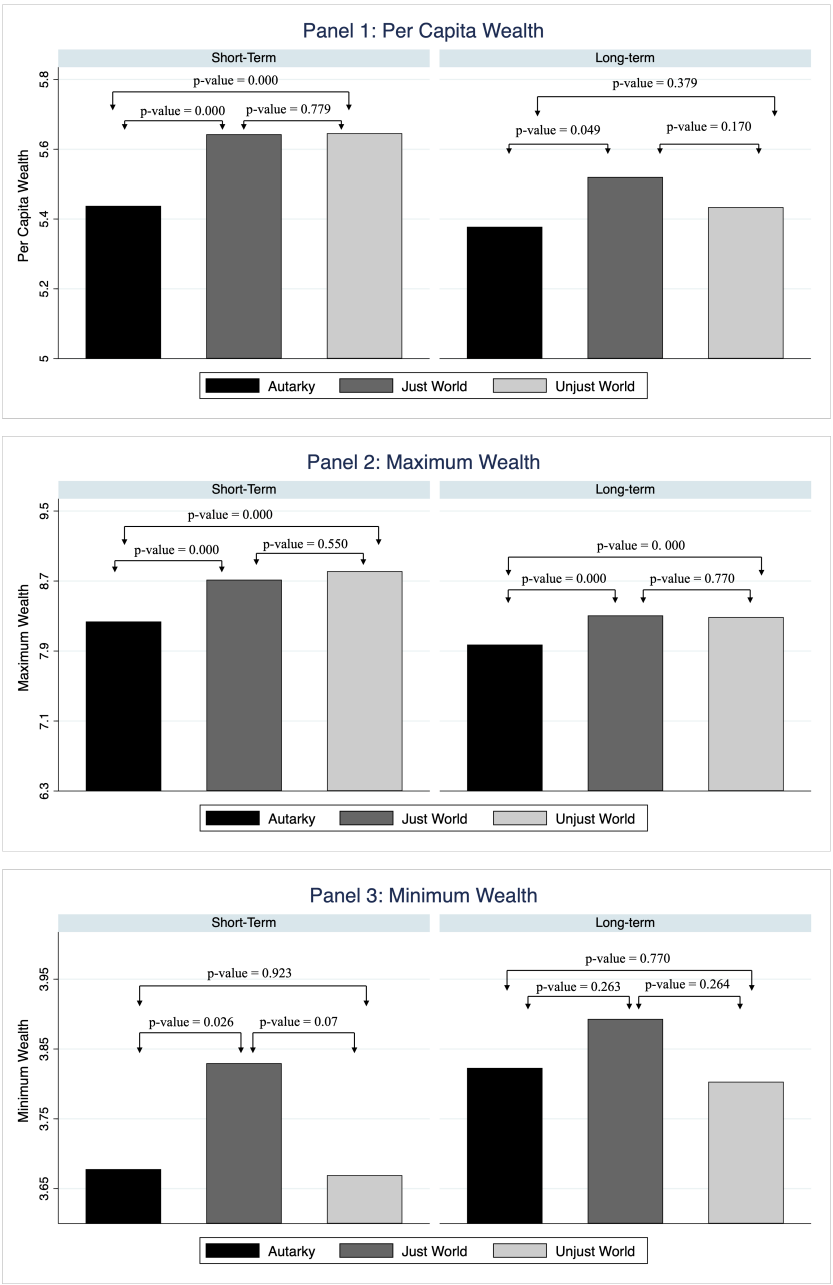
We now zoom into these results and compare our policy ideal, the Just World, with the two actual states of the world. The latter states are the Unjust World, the factual world for

the treated, and autarky, the factual world for the untreated. Figure 3 compares the degree of wealth creation in two factual worlds and the policy ideal. What emerges from these figures is that the Just World creates more wealth than autarky. The autarkic world with low impersonal trust is on average 3.7% poorer than the other two. Both Just and Unjust Worlds are equally rich in per-capita wealth terms. However, the prosperity created by the heightened impersonal trust masks an important fact: such prosperity may also bring high inequality if there is not much desire for redistribution. As can be seen in Panels 2 and 3 of Figure 3, while the wealthiest individual in both Just and Unjust worlds are equally wealthy, the lowest wealth in the Unjust World is 4% lower than the lowest wealth in the Just World. This difference is statistically significant at the 10% level.

Figure 4 presents the wealth inequality within these three worlds. In both panels, we observe that the Just World is a world where wealth is more fairly distributed in the short term. While we do not see statistically different Gini coefficients between autarky and the Just World, the difference is significant between autarky and the Unjust World. The difference between the Just and the Unjust World is sizeable in the short-term. The average Gini coefficient is 11% higher in the Unjust World than in the Just World, and the difference is statistically significant. The top 10 metric does not show any statistically significant difference across worlds, either in the short or the long term. In sum, while we see a considerable dissipation of effects, we still find that the policy ideal dominates both factual worlds, albeit weakly in the long-run.

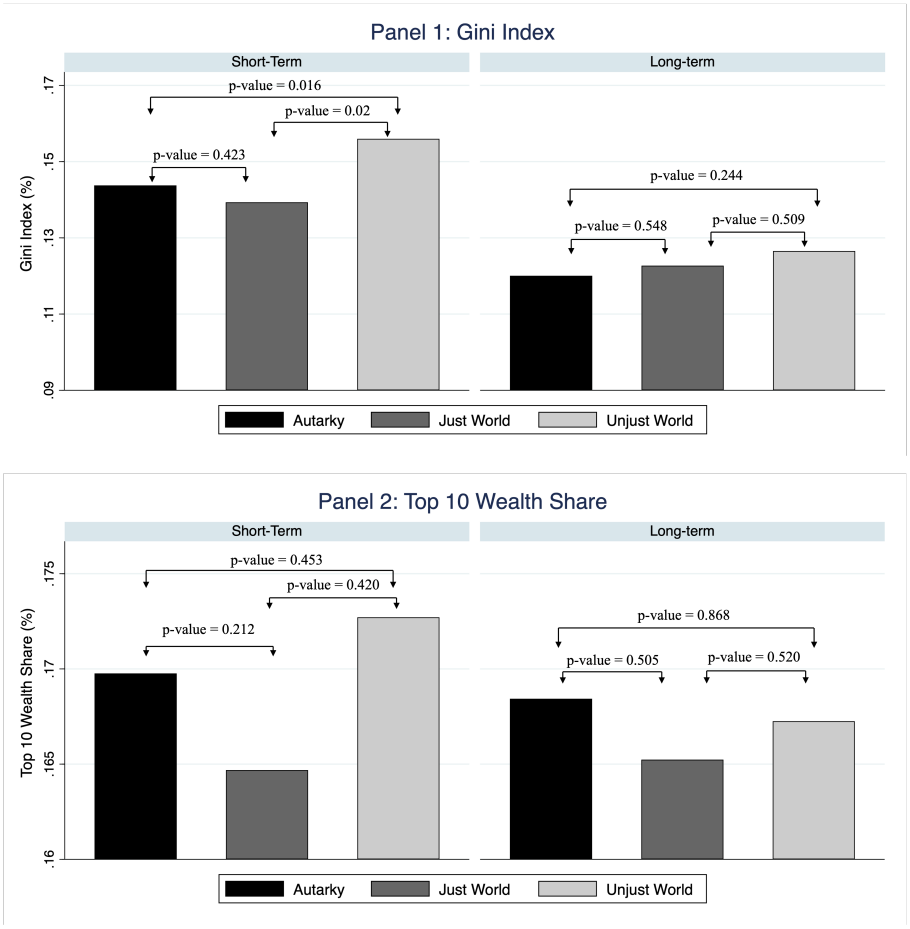
The above exercise shows the difference between a more desirable world intended by the intervention and the actual states of the world. One of those actual states represents the status quo, and the other represents the world created by the intervention, the Unjust World. The ultimate objective was to take this program to scale, provided that the evaluation results were positive. The program has not been scaled up yet, but we do not detect a complete reversion back to autarky. Even though the effects dissipated, the remaining tiny effects are sufficient to show that the counterfactual policy ideal dominates the actual states of the world in terms of wealth creation and inequality/poverty reduction.

Figure 3: Wealth Creation in Data



Note: Figures depict average community-level (i) per-capita wealth, (ii) maximum wealth, and (iii) minimum wealth in autarky, Just and Unjust Worlds for short-term and long-term.

Figure 4: Wealth Inequality in Data



Note: Figures depict average community-level (i) Gini coefficient and (ii) top 10% wealth share for autarky, Just and Unjust Worlds for short-term and long-term.

6 Concluding Remarks

This paper documents the causal relationship between impersonal trust and wealth inequality. We are able to establish this causality by leveraging a unique setting where impersonal trust and reciprocity were increased significantly by an educational program. Coupled with the program's random implementation, measuring impersonal trust and reciprocity using an incentivized game enables us to explore the creation and distribution of wealth under different states of the world to establish a policy ideal. We have two main results: First, we show that impersonal trust and reciprocity lead to prosperous and more equal societies. Second, for actions to build trust and reciprocity to achieve this end, they should be implemented at scale, embracing all members of the society.

Perhaps the most important takeaway from our results is that prosociality has significant societal externalities and that fostering prosocial psychology requires inclusive policy actions. Educational interventions that aim to improve prosociality in children cannot hope for long-lasting general equilibrium effects if they embrace only a segment of society. This is particularly important when these educational actions are targeted at non-cohesive communities characterized by violence, social exclusion, and segregation. In these communities, the impersonal trust may fall victim to predatory behavior, and repeated zero-sum interactions may push the communities back to the state of low trust and low desire for redistribution. Our longer-term results indicate that this reversal is a real possibility. Given the slow-moving cultural and institutional forces that shape prosocial psychology, the burden on public education is undoubtedly high. In this article, we argue that mobilized in an inclusive manner, public education may serve as a potent tool to achieve prosperous and just societies.

The study has two main caveats. First, our one-shot game does not allow us to assess the development of trust and reciprocity over time, and our simulation exercise using this game is undoubtedly an oversimplification of the real world. However, we hope that the message that emerges from this simple exercise advances our understanding of the causal link between impersonal trust and prosperity and the role of education in facilitating this link. To fully understand how a given educational environment builds trust in individuals or fails to do so requires a longitudinal approach, which we leave for the future.

Second, while internally valid, our results may lack external validity. One reason for an external validity concern is that our decision-makers are children. Note, however, that literature shows that children are as rational as adults in making decisions under incentive-compatible conditions (Harbaugh et al., 2001; Alan and Ertac, 2018). Another reason pertains to our high attrition rate. The study site has the highest number of seasonal workers and Syrian refugees in Turkey. These ever-mobile groups posed significant challenges to conducting long-term tracking, and the pandemic-related relocations and early marriages exacerbate the problem further. As a result, the long-term sample likely misses the most vulnerable groups (refugees, seasonal workers, and girls).

Nevertheless, our unique experimental setting allows us to study the causal relationship between prosociality and economic prosperity in a context where (i) socioeconomic disadvantages hinder the development of prosocial attributes, (ii) study subjects are rational decision-makers with high neural plasticity, and (iii) an educational tool successfully increased their prosociality. Therefore, we believe that the lessons we learn from this exer-

cise provide generalizable research and policy insights for similarly disadvantaged settings. They also open new avenues to study the implications of prosocial psychology for economic prosperity and social justice.

References

Alan, S., Baysan, C., Gumren, M., and Kubilay, E. (2021). Building Social Cohesion in Ethnically Mixed Schools: An Intervention on Perspective Taking. *The Quarterly Journal of Economics*, 136(4):2147–2194.

Alan, S., Boneva, T., and Ertac, S. (2019). Ever Failed, Try Again, Succeed Better: Results from a Randomized Educational Intervention on Grit. *The Quarterly Journal of Economics*, 134(3):1121–1162.

Alan, S. and Ertac, S. (2018). Fostering Patience in the Classroom: Results from Randomized Educational Intervention. *Journal of Political Economy*, 126(5):1865–1911.

Alesina, A. and Ferrara, E. L. (2002). Who Trusts Others? *Journal of Public Economics*, 85.

Alesina, A. and La Ferrara, E. (2000). Participation in Heterogeneous Communities. *The Quarterly Journal of Economics*, 115(3):847–904.

Algan, Y. and Cahuc, P. (2010). Inherited Trust and Growth. *American Economic Review*, 100(5):2060–2092.

Algan, Y. and Cahuc, P. (2013). Trust and Growth. *Annual Review of Economics*, 5(1):521–549.

Arrow, K. J. (1972). Gifts and Exchanges. *Philosophy & Public Affairs*, 1(4):343–362.

Bandiera, O., Mohnen, M., Rasul, I., and Viarengo, M. (2019). Nation-building Through Compulsory Schooling during the Age of Mass Migration. *The Economic Journal*, 129(617):62–109.

Banfield, E. C. (1958). *The Moral Basis of a Backward Society*. Free Press.

Barone, G. and Mocetti, S. (2016). Inequality and Trust: New Evidence from Panel Data. *Economic Inquiry*, 54(2):794–809.

Bartling, B., Fehr, E., Huffman, D., and Netzer, N. (2018). The Causal Effect of Trust. SSRN Scholarly Paper ID 3271611, Social Science Research Network, Rochester, NY.

Batson, C. D., Polycarpou, M. P., Harmon-Jones, E., Imhoff, H. J., Mitchener, E. C., Bednar, L. L., Klein, T. R., and Highberger, L. (1997). Empathy and attitudes: Can feeling for a member of a stigmatized group improve feelings toward the group? *Journal of Personality and Social Psychology*, 72(1):105–118.

Berg, J., Dickhaut, J., and McCabe, K. (1995). Trust, Reciprocity, and Social History. *Games and Economic Behavior*, 10(1):122–142.

Bloom, N., Sadun, R., and Van Reenen, J. (2012). The Organization of Firms Across Countries. *The Quarterly Journal of Economics*, 127(4):1663–1705.

Butler, J. V., Giuliano, P., and Guiso, L. (2016). The Right Amount of Trust. *Journal of the European Economic Association*, 14(5):1155–1180.

Coleman, J. S. (1990). *Foundations of Social Theory*. Harvard University Press.

Costa-Gomes, M. A., Huck, S., and Weizsäcker, G. (2014). Beliefs and actions in the trust game: Creating instrumental variables to estimate the causal effect. *Games and Economic Behavior*, 88:298–309.

Dearmon, J. and Grier, R. (2011). Trust and the accumulation of physical and human capital. *European Journal of Political Economy*, 27(3):507–519.

Easterly, W. and Levine, R. (1997). Africa's Growth Tragedy: Policies and Ethnic Divisions. *The Quarterly Journal of Economics*, 112(4):1203–1250.

Evans, P. (1996). Government action, social capital and development: Reviewing the evidence on synergy. *World Development*, 24(6):1119–1132.

Falk, A., Becker, A., Dohmen, T., Enke, B., Huffman, D., and Sunde, U. (2018). Global Evidence on Economic Preferences*. *The Quarterly Journal of Economics*, 133(4):1645–1692.

Fukuyama, F. (1995). *Trust: The Social Virtues and the Creation of Prosperity*. Free Press.

Galinsky, A. D., Ku, G., and Wang, C. S. (2005). Perspective-Taking and Self-Other Overlap: Fostering Social Bonds and Facilitating Social Coordination. *Group Processes & Intergroup Relations*, 8(2):109–124.

Galinsky, A. D. and Moskowitz, G. B. (2000). Perspective-taking: Decreasing stereotype expression, stereotype accessibility, and in-group favoritism. *Journal of Personality and Social Psychology*, 78(4):708.

Glaeser, E., Ponzetto, G., and Shleifer, A. (2007). Why Does Democracy Need Education? *Journal of Economic Growth*, 12(2):77–99.

Glaeser, E. L., Laibson, D. I., Scheinkman, J. A., and Soutter, C. L. (2000). Measuring Trust. *The Quarterly Journal of Economics*, 115(3):811–846.

Goldin, C. and Katz, L. F. (1999). Human Capital and Social Capital: The Rise of Secondary Schooling in America, 1910-1940. *The Journal of Interdisciplinary History*, 29(4):683–723.

Gradstein, M. and Justman, M. (2002). Education, Social Cohesion, and Economic Growth. *American Economic Review*, 92(4):1192–1204.

Guiso, L., Sapienza, P., and Zingales, L. (2004). The Role of Social Capital in Financial Development. *American Economic Review*, 94(3):526–556.

Guiso, L., Sapienza, P., and Zingales, L. (2008). Trusting the Stock Market. *The Journal of Finance*, 63(6):2557–2600.

Guiso, L., Sapienza, P., and Zingales, L. (2009). Cultural Biases in Economic Exchange? *The Quarterly Journal of Economics*, 124(3):1095–1131.

Guiso, L., Sapienza, P., and Zingales, L. (2016). Long-Term Persistence. *Journal of the European Economic Association*, 14(6):1401–1436.

Harbaugh, W. T., Krause, K., and Berry, T. R. (2001). GARP for Kids: On the Development of Rational Choice Behavior. *The American Economic Review*, 91(5):1539–1545.

Harbaugh, W. T., Krause, K., Liday, S. G., and Vesterlund, L. (2003). Trust in children. *Trust and reciprocity: interdisciplinary lessons from experimental research*, 302:322.

Helliwell, J. and Putnam, R. (1995). Economic Growth and Social Capital in Italy. *Eastern Economic Journal*, 21(3):295–307.

Helliwell, J. F. and Putnam, R. D. (2007). Education and Social Capital. *Eastern Economic Journal*, 33(1):1–19.

Jachimowicz, J. M., Chafik, S., Munrat, S., Prabhu, J. C., and Weber, E. U. (2017). Community trust reduces myopic decisions of low-income individuals. *Proceedings of the National Academy of Sciences*, 114(21):5401–5406.

Knack, S. and Keefer, P. (1997). Does Social Capital Have an Economic Payoff? A Cross-Country Investigation. *The Quarterly Journal of Economics*, 112(4):1251–1288.

Knack, S. and Zak, P. J. (2001). Trust and Growth. *The Economic Journal*, 111(470):295–321.

Kosse, F., Deckers, T., Pinger, P., Schildberg-Hörisch, H., and Falk, A. (2019). The Formation of Prosociality: Causal Evidence on the Role of Social Environment. *Journal of Political Economy*, 128(2):434–467.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., and Vishny, R. W. (1997). Trust in Large Organizations. *The American Economic Review*, 87(2):333–338.

Michaelson, L., de la Vega, A., Chatham, C. H., and Munakata, Y. (2013). Delaying gratification depends on social trust. *Frontiers in Psychology*, 4.

Putnam, R. (1993). The prosperous community: Social capital and public life. *The American Prospect*, 13((Spring), Vol. 4.).

Rawls, J. (1971). *A Theory of Justice*. Harvard University Press.

Tabellini, G. (2008). Institutions and Culture. *Journal of the European Economic Association*, 6(2-3):255–294.

Tabellini, G. (2010). Culture and Institutions: Economic Development in the Regions of Europe. *Journal of the European Economic Association*, 8(4):677–716.

Online Appendix: Supplementary Materials

A Tables and Figures

Table A1: Balance in the Long-Term

	N	Control Mean	Treatment Mean	Difference (T-C)	SE	p-value
Student Demographics:						
Male	3362	0.514	0.488	-0.026	0.017	0.172
Age in Months	3319	103.972	105.016	1.044	0.369	0.290
Refugee	3362	0.131	0.116	-0.015	0.011	0.450
Working Mother	2358	0.283	0.284	0.001	0.019	0.980
Working Father	2299	0.855	0.859	0.004	0.015	0.840
Cognitive Tests:						
Raven Score	2631	-0.042	-0.048	-0.005	0.039	0.953
Eyes Test Score	2649	0.035	0.017	-0.018	0.038	0.818
Math Score	2649	0.027	0.052	0.026	0.038	0.779
Turkish Score	2649	0.044	0.016	-0.028	0.038	0.705
Cohesion Indicators:						
Proportion Bullied by Peers in Classroom	2437	0.841	0.860	0.019	0.015	0.299
Proportion Bullied by Peers in School	2449	0.791	0.785	-0.006	0.017	0.798
Fraction Donated	2600	-0.031	-0.080	-0.049	0.039	0.272
Willingness to Donate	2600	0.639	0.603	-0.036	0.019	0.166
Proportion Cooperate	2565	0.535	0.561	0.026	0.020	0.239
Perspective Taking	2526	-0.030	0.008	0.038	0.040	0.373
Empathetic Concern	2525	0.022	0.020	-0.002	0.040	0.966
Ethnic Bias	2469	-0.049	-0.029	0.020	0.040	0.642
Impulsivity	2479	-0.017	0.044	0.061	0.042	0.321
Having a Friend	2627	0.934	0.935	0.001	0.010	0.965
Having Emotional Support	2627	0.694	0.677	-0.017	0.018	0.582
Having Academic Support	2627	0.581	0.564	-0.017	0.020	0.507
Friendship Ties (in-degree)	2971	1.921	2.017	0.095	0.074	0.256
Emotional Support Ties (in-degree)	2971	1.167	1.132	-0.034	0.051	0.693
Academic Support Ties (in-degree)	2971	0.955	0.916	-0.038	0.049	0.532

Note: Reported statistics use the long-term sample. All cognitive tests and survey measures are standardized. p-values are obtained by controlling for randomization strata. Standard errors are clustered at the school level (unit of randomization).

Table A2: Attrition Analysis

	Non-attrition in Treatment	Non-attrition in Control	p-value
Male	-0.04	0.01	0.13
Age in Months	-1.06	-1.42	0.64
Refugee	-0.06	-0.07	0.47
Working Mother	-0.01	0.01	0.53
Working Father	-0.01	-0.01	0.88
Raven Score	-0.02	-0.06	0.55
Eyes Test Score	0.01	0.07	0.40
Math Score	0.00	0.04	0.66
Turkish Score	-0.02	0.07	0.20
Proportion Bullied by Peers in Classroom	-0.00	-0.01	0.77
Proportion Bullied by Peers in School	-0.03	-0.02	0.49
Fraction Donated	-0.07	-0.04	0.57
Willingness to Donate	-0.02	-0.02	0.98
Proportion Cooperate	-0.02	-0.00	0.64
Perspective Taking	0.00	-0.06	0.31
Empathetic Concern	0.05	0.04	0.92
Ethnic Bias	0.04	-0.08	0.07
Impulsivity	0.04	-0.02	0.37
Having a Friend	0.01	0.01	0.87
Having Emotional Support	0.05	0.04	0.73
Having Academic Support	0.03	0.01	0.55
Friendship Ties (in-degree)	0.22	0.10	0.27
Emotional Support Ties (in-degree)	0.10	0.09	0.94
Academic Support Ties (in-degree)	0.11	0.12	0.90

Note: Reported statistics use the baseline sample. All cognitive tests and survey measures are standardized. p-values are obtained by controlling for randomization strata. Standard errors are clustered at the school level (unit of randomization). Asterisks indicate that the difference is statistically significant at the 1% ***, 5% **, and 10% * levels.

Table A3: Robustness Check for Attrition

Panel 1: Treatment Effects on Short-Term Outcomes

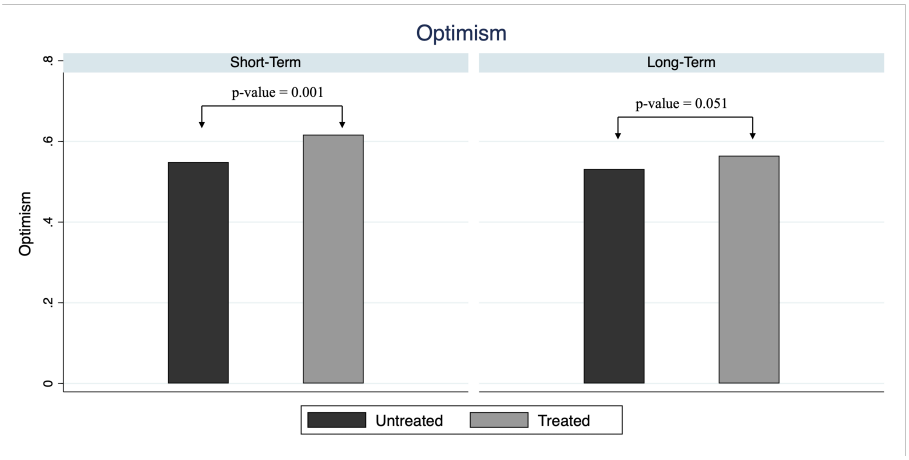
	Trust		Reciprocity		Optimisim	
	Full Sample	LT Sample	Full Sample	LT Sample	Full Sample	LT Sample
Treatment	0.207***	0.277***	0.048***	0.055***	0.065***	0.072***
	(0.050)	(0.058)	(0.014)	(0.016)	(0.018)	(0.026)
p-val (Full Sample=LT Sample)	0.029		0.255		0.660	
Control Mean	1.45	1.45	0.39	0.39	0.51	0.55
Observations	6512	2982	6523	2989	6170	2829

Panel 2: Differences in Wealth and Inequality across Worlds (Short-Term)

	Per Capita Wealth	Maximum Wealth	Minimum Wealth	Gini Index	Top 10 Wealth Share
Just World	0.177***	0.484***	0.171**	-0.002	-0.014**
	(0.045)	(0.069)	(0.076)	(0.005)	(0.006)
Unjust World	0.224***	0.695***	-0.035	0.018***	-0.005
	(0.044)	(0.070)	(0.087)	(0.006)	(0.007)
Kind World	-0.043	-0.159**	0.195**	-0.016***	-0.008
	(0.042)	(0.071)	(0.076)	(0.005)	(0.006)

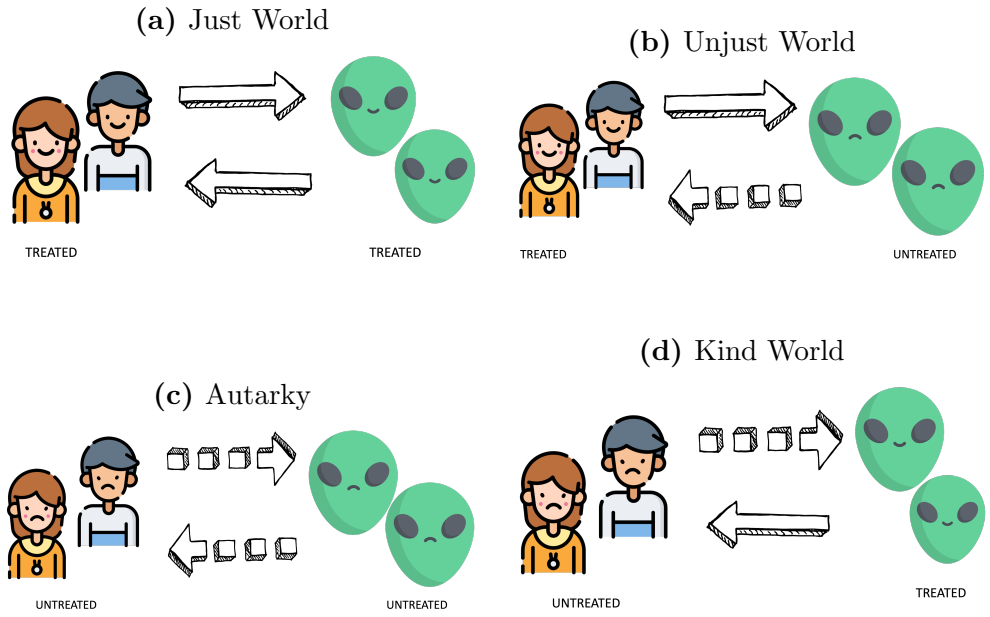
Note: Reported estimates are obtained from ordinary least squares (OLS) regressions. In Panel 1, the columns labeled "Full Sample" report treatment effects on short-term outcomes, and the columns labeled "LT Sample" report the estimates for the non-attriters. In Panel 1, the dependent variable in columns 1 and 2 is the number of tokens (out of 4) sent to an anonymous classmate, in columns 3 and 4 is the average fraction of tokens sent back, in columns 5 and 6 is a dummy variable which equals one if a student is expecting more that half of his/her tokens back. In Panel 2, coefficient estimates indicate mean differences relative to autarky. Asterisks indicate statistical significance at the 1% ***, 5% **, and 10% * levels.

Figure A1: Treatment Effect on Optimism



Note: This figures depicts the average individual level optimism (the fraction expecting more than half of the tokens back) in the control and treatment groups for short-term and long-term. The sample size for the former is 6500, and for the latter around 3400.

Figure A2: State of Worlds



Note: This figure illustrates the way we construct four states of the world. Panel (a) depicts the case where high impersonal trust meets high reciprocity. We simulated payoffs of these communities by matching treated senders with treated receivers (the counterfactual policy ideal). Panel (b) depicts the case where high impersonal trust meets low reciprocity. We simulated payoffs of these communities by matching treated senders with untreated receivers (the actual state of the world for treated). Panel (c) depicts the autarky where both trust and reciprocity are low in communities. We simulated payoffs of autarkic communities by matching untreated senders with untreated receivers (the actual state of the world for the treated). Finally, Panel (d) depicts the case where low trust meets high reciprocity (the counterfactual for the untreated). We simulated payoffs of these communities by matching untreated senders with treated receivers. Aliens represent the fact that we are concerned with impersonal trust and reciprocity.

B Random Matching Algorithm and Calculation of Earnings

In order to calculate the earnings of children, we first randomly match two classrooms from different schools. Let's denote these classrooms as classroom A and classroom B. Then, we assign the role of sender to students in classroom A and the role of receiver to students in classroom B. We call the collection of students created by classroom A and classroom B "a community." The type of the community is determined by the treatment status of the classrooms as shown in Figure A2.

We elicit the decisions of the receivers by using the strategy method. Specifically, the decision of the receiver is elicited for the case of receiving 1 token (tripled to 3), 2 tokens (tripled to 6), 3 tokens (tripled to 9), and 4 tokens (tripled to 12). Using these decisions, we calculate the expected number of tokens reciprocated for each level of trust and calculate

the earnings of senders as follows:

$$W_i^S = E – X_i + E_{C_B}(Y_j|X_i),$$

where E is the initial endowment (4 tokens), X_i is the amount sent by student i in classroom A, $E_{C_B}(Y_j|X_i)$ is the expected number of tokens reciprocated by student j conditional on the number of tokens sent by student i. We take the expectations using the empirical distribution of reciprocity in classroom B.

Then, we calculate the probability of sending 0, 1, 2, 3 and 4 tokens in classroom A and calculate the expected payoff of receivers as follows:

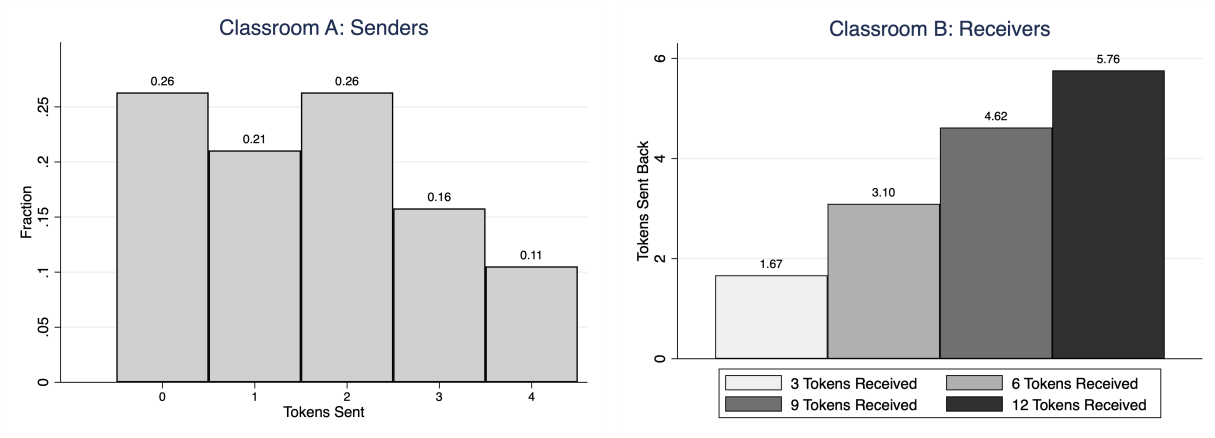
$$W_j^R = E + E_{C_A}(X_i) – Y_j,$$

where the $E_{C_A}(X_i)$ is the expected number of tokens sent by student i in classroom A, where the expectation is taken by using the empirical distribution of trust decisions in classroom A and Y_j is the number of tokens reciprocated by student j.

A Simple Illustration

Assume that we have a community which is composed of students from classroom A (senders), and students from classroom B (receivers). The empirical distribution of trust and reciprocity decisions are given in Figure A3.

Figure A3: Two Example Classrooms



Note: The figure on the left panel depicts the distribution of trust decisions of students in classroom A, i.e. senders. The figure on the right panel depicts the distribution of reciprocity decisions of students in classroom B, i.e. receivers.

We calculate the earnings of sender i by using the empirical distribution of reciprocity decisions as follows:

- If $X_i = 0$ then $W_i^S = 4$.
- If $X_i = 1$ then $E_{C_B}(Y_j|X_i = 1) = 1.67 \rightarrow W_i^S = 4 - 1 + 1.67 = 4.67$.
- If $X_i = 2$ then $E_{C_B}(Y_j|X_i = 2) = 3.10 \rightarrow W_i^S = 4 - 2 + 3.10 = 5.10$.
- If $X_i = 3$ then $E_{C_B}(Y_j|X_i = 3) = 4.62 \rightarrow W_i^S = 4 - 3 + 4.62 = 5.62$.
- If $X_i = 4$ then $E_{C_B}(Y_j|X_i = 4) = 5.76 \rightarrow W_i^S = 4 - 4 + 5.76 = 5.76$.

We calculate the earnings of receiver j by using the empirical distribution of trust decisions as follows:

$$W_j^R = 4 + 0.21 * (3 - Y_j^1) + 0.26 * (6 - Y_j^2) + 0.16 * (9 - Y_j^3) + 0.11 * (12 - Y_j^4),$$

where Y_j^k denotes the number of tokens sent back conditional on receiving k tokens, where $k \in \{1, 2, 3, 4\}$.

Suppose that student i has the following decision plan: $Y_j^1 = 2$, $Y_j^2 = 5$, $Y_j^3 = 7$, $Y_j^4 = 8$. Then the earnings of this student is calculated as follows:

$$W_j^R = 4 + 0.21 * (3 - 2) + 0.26 * (6 - 5) + 0.16 * (9 - 7) + 0.11 * (12 - 8) = 5.23.$$

C Educational Intervention: Understanding Each Other

Understanding Each Other Curriculum consists of an activity book, several animated videos, and suggested games and activities given in the teacher user guide. Table B1 presents all topics covered throughout the academic year. Figure B2 is the first page of the Table of Contents in the main book. Figure B3 and B4 are example class activities in the book, and Figure B5 is an activity suggested in the teacher user guide.

Table B4: "Understanding Each Other" Curriculum

TOPIC 1: WHAT IS EMPATHY? **Purpose:** Introducing students to the concept of empathy **Learning outcome:** Students learn what kind of a character trait empathy is. **The Material of the Week:** Activity	**TOPIC 2: GETTING TO KNOW EMOTIONAL CUES** **Purpose:** Teaching students to recognize social cues **Learning outcome:** Students learn to make inferences from social cues. **The Material of the Week:** Activity	**TOPIC 3: DIFFERENT PEOPLE, SAME EMOTIONS** **Purpose:** Conveying students that we are all similar in our emotions **Learning outcome:** Students learn that all individuals share the emotions like pain, happiness and embarrassment. **The Material of the Week:** Video, Activity
TOPIC 4: UNDERSTANDING MY FRIEND **Purpose:** Teaching students to solve problems by adopting the perspective of another **Learning outcome:** Students learn a problem solving strategy by adopting another's point of view in a familiar scenario. **The Material of the Week:** Reading exercise	**TOPIC 5: UNDERSTANDING THE FEELINGS OF CREATURES** **Purpose:** Teaching students that animals, like humans, also need to be understood and respected **Learning outcome:** Students learn that not only humans, but also animals need to be understood and respected. **The Material of the Week:** Reading exercise	**TOPIC 6: UNDERSTANDING UNSAID THOUGHTS** **Purpose:** Fostering the ability of understanding and problem-solving in social interactions by making inferences from social cues **Learning outcome:** Students learn to understand other individuals in social situations. **The Material of the Week:** Activity
TOPIC 7: INJUSTICE AND ITS SOLUTION **Purpose:** Teaching students to exhibit a principled attitude when they witness a wrongdoing. **Learning outcome:** Students learn the importance of opposing to anti-social behaviors in principle. **The Material of the Week:** Reading exercise	**TOPIC 8: PUTTING ONESELF INTO SOMEONE ELSE'S SHOES-1** **Purpose:** Showing students two different points of views for the same situation and helping them to gain perspective. **Learning outcome:** Students learn that there could be two sides to the same story. **The Material of the Week:** Reading exercise 1	**TOPIC 9: PUTTING ONESELF INTO SOMEONE ELSE'S SHOES-2** **Purpose:** Showing students two different points of views for the same situation and helping them to gain perspective. **Learning outcome:** Students learn that there could be two sides to the same story. **The Material of the Week:** Reading exercise 2
TOPIC 10: UNDERSTANDING EMOTIONAL SIGNALS **Purpose:** Reinforcing students' understandings of social signals. **Learning outcome:** Students learn to quickly analyze anti- social situations and exhibit a principled stance. **The Material of the Week:** Activity	**TOPIC 11: DO WE KNOW EACH OTHER?** **Purpose:** Helping students to communicate with all of their friends in the class. **Learning outcome:** Students will get to know more about their classmates who were less familiar to them before. **The Material of the Week:** Activity	**TOPIC 12: BEAUTIFUL WORDS AND BEAUTIFUL EMOTIONS** **Purpose:** Teaching students the importance of positive attitudes and words for healthy social relations. **Learning outcome:** Students will learn the benefits of positive words and behavior in social interactions. **The Material of the Week:** Activity
TOPIC 13: I AM ABLE TO CONTROL MY ANGER **Purpose:** Teaching students to find constructive solutions to conflicts by controlling intense emotions. **Learning outcome:** Students will learn to cope with emotions like anger, rage and find solutions to the conflicts in a calm manner. **The Material of the Week:** Video, Activity	**TOPIC 14: WHAT KIND OF A CLASS ARE WE?** **Purpose:** Reinforcing a healthy classroom culture **Learning outcome:** Students will understand the importance of forming a classroom culture with a high level of tolerance. **The Material of the Week:** Video, Activity	**TOPIC 15: OUR EMPATHETIC CLASSROOM** **Purpose:** Giving awards (feedback) to students. **Learning outcome:** Students will feel proud of having built building a classroom culture. **The Material of the Week:** Activity

Figure B4: Understanding Each Other Curriculum Example

Figure B5: Understanding Each Other Activity Example 1

Figure B6: Understanding Each Other Activity Example 2

Figure B7: Teacher User Guide: Example Suggested Activity

D Instructions and Implementation of Trust Game

To evaluate the educational program, we collected data on a rich set of outcomes using tests, incentivized games, and surveys. The trust game we use in this paper was played in classrooms under the instructions of well-trained experimenters, including the authors of the paper. We played two versions of this game, within-subject. The first version aimed at measuring interpersonal trust/reciprocity, and the second impersonal/reciprocity trust. In all classrooms, the first version was explained in full detail and played first. In this version, children were paired with an anonymous classmate. After collecting decisions in this version of the game, we told the children that they were going to play the same game again, but this time their anonymous pair is someone they do not know at all, a student of the same grade from another school. Children were informed that they would earn the gifts from only one game/version chosen randomly at the end of our visit. Before starting to explain the game, we made the students familiar with the gifts we brought to the classroom and explained the conversion from tokens to gifts. We provide the full instructions given to the experimenters below.

In-Class Trust Game:

Now, I will explain the rules of the first game. For this game, everyone has 4 tokens. The game is played by two people. We randomly paired each of you with one of your classmates. You don't know who your pair is, and you will not know. They could be anyone in the classroom present today. There are two roles in this game, sender, and receiver [write sender and receiver on the board for everyone to see]. You will either be a sender or a receiver, but you do not know your role yet. If you become the sender, your pair will be the receiver; if you become the receiver, your pair will be the sender.

Let's see what these roles entail. The sender will start the game, and they will decide on how many of their tokens (out of 4) they want to send to the receiver. They can choose to send 0 (nothing), 1, 2, 3, or all of their tokens. The decision is up to them; there is no right or wrong decision here.

The number of tokens the sender sends will be tripled before given to the receiver. For example, if the sender sends 1 token, the receiver will get 3 tokens, if the sender sends 2 tokens, the receiver will get 6 (2X3) tokens. Now, you tell me: if the sender sends 3 tokens,

how many tokens will the receiver get? 9. What if the sender decides to send 4 tokens? How many tokens will the receiver get? 12. [Repeat if necessary to ensure that children understand this]

Now, let's see the role of the receiver. The receiver will decide how many of these now-tripled tokens they received they want to send back to the sender. Let's see some examples: [Give the examples below in detail and explain by using the board]

- **Example 1:** Suppose that the sender decides to send none of his tokens. Then the receiver will not receive any tokens, so he can not send anything back. Both the sender and the receiver will end up with 4 tokens.
- **Example 2:** Suppose that the sender decides to send one token [Draw a line from the sender to the receiver and write 1 above the line]. How many tokens does the sender have left? $4 - 1 = 3$ tokens [Erase 4 and write 3 under the sender]. The receiver will receive 3 tokens as tokens triple on the way [Write $1X3 = 3$ above the line from the sender to the receiver]. Now, it's the receiver's turn. He will decide on how many tokens to send back out of 3 to the sender. Let's see what can happen:
  - Suppose that the receiver decides to send back 0 (nothing). Then the sender will end up with 3 tokens, and the receiver will end up with $3 + 4 = 7$ tokens.
  - Suppose that the receiver decides to send back 1 token. Then the sender will end up with $3 + 1 = 4$ tokens, and the receiver will end up with $7 - 1 = 6$ tokens.
  - Suppose that the receiver decides to send back 2 tokens. Then the sender will end up with $3 + 2 = 5$ tokens, and the receiver will end up with $7 - 2 = 5$ tokens.
  - Suppose that the receiver decides to send back 3 tokens. Then the sender will end up with $3 + 3 = 6$ tokens, and the receiver will end up with $7 - 3 = 4$ tokens.
- **Example 3:** Now, suppose that the sender decides to send two tokens [Draw a line from the sender to the receiver and write 2 above the line]. [Repeat the examples as above].
- **Example 4:** Now, suppose that the sender decides to send three tokens [Draw a line from the sender to the receiver and write 3 above the line]. [Repeat the examples as above].

- **Example 5:** Now, suppose that the sender decides to send all of his tokens [Draw a line from the sender to the receiver and write 4 above the line]. [Repeat the examples as above].

Did you understand the rules of the game? [Make sure students understood the game and then distribute the booklets]. Now, everyone, first write your name, surname, and classroom on the first page in relevant parts and DO NOT turn the page.

- Suppose that you are chosen to be the sender, think about how many of your tokens you would like to send to the receiver and mark your decision on your sheet. You see the options given to you in your sheet. You can send 0 (nothing), 1, 2, 3 or 4 (all) tokens. Mark your choice, turn the page and wait for the further instructions [Wait until students mark their choice].
- Now, I want you to make a guess. I want you to guess how many tokens the receiver will send you back given your decision and mark the appropriate option. Options are i) none, ii) less than half, iii) half, iv) more than half and v) all of them [Wait until students mark their choice].
- Now, suppose that you are chosen to be the receiver and suppose that the sender sends you 1 token, which will triple and become 3 tokens. How many tokens would you like to send her back? 0 (nothing), 1, 2 or 3? Mark your choice.
- Suppose that the sender sends you 2 tokens, which will triple and become 6 tokens. How many tokens would you like to send her back? Mark your choice.
- Suppose that the sender sends you 3 tokens, which will triple and become 9 tokens. How many tokens would you like to send her back? Mark your choice.
- Suppose that the sender sends you 4 tokens, which will triple and become 12 tokens. How many tokens would you like to send her back? Mark your choice.

Out-School Trust Game:

Now, let's learn about the rules of the second game. This game is the same as the first game. Again, everyone has 4 tokens, and the game is played by pairs. The only difference is, this time your pair is a student of your grade from another school; you do not know, and will never know this student. [Proceed the same way as above].

Actual Payoff Distribution:

Children were paid at the end of our two-lecture hour visit. To do this, we provided a named sheet to each child showing the decision panels for each game. We asked them to mark their decision on the sheet. After all the games were complete, we collected the sheets and left the booklets for the tests and surveys. For the interpersonal trust game, the actual implementation is straightforward. Using the sheets, we match each student with another one in the classroom, making one sender and the other one receiver. We then quickly calculated the payoff of each student and wrote the amount on their sheets. One designated field assistant handled these calculations while students were filling up their surveys under the invigilation of the other assistants. For the impersonal game, we provided every designated assistant with sender and receiver decisions recorded from a large out-of-school pilot. The assistant matched each student with someone in this pilot sheet and calculated payoffs. The calculation of payoffs took 10 to 15 minutes for each classroom. At the end of our visit, we informed the class which game was chosen for payment. Then we distribute the gifts in an orderly fashion. When handing out gifts, we told each student quietly why they received the amount they received. For example, we said: "You turned out to be a sender. We see that you sent 2 (left with 2) tokens to your pair and your pair sent you back 3 of the 6 (2X3) they received from you. So you ended up with 2+3=5 tokens." We strictly follow the experimental "no deception" protocol in all our games.

The game was played by giving children options that are integers only. Specifically, as a sender, they could choose to send 0, 1, 2, 3, or 4. As a receiver, decisions were formulated using a strategy method. They were asked: If you receive 1 (multiplied by 3 and becomes 3), which amount would you send back [options: 0,1,2 or 3]? After answering this, they were asked: if you receive 2 (multiplied by 3 and becomes 6), which amount would you send back [options: 0,1,2,3, 4, 5 or 6]? We went on until 4.