Distributional Preferences in Adolescent Peer Networks
Online Appendix

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1. Additional Tables

Table A.1: Revealed distributional preferences of adults

	Adults	Men	Women
Efficiency-loving (EL)	38.6%	32.9%	44.4%
Inequality-loving (IL)	13.7%	15.0%	12.3%
Inequality-averse (IA)	31.1%	31.2%	31.0%
Spiteful (SF)	16.6%	20.9%	12.3%
WTP (DIB) > 0	52.3%	47.9%	56.7%
WTP (AIB) > 0	69.8%	64.1%	75.4%
Observations	717	359	358

Notes: WTP denotes a subject's willingness to pay to increase (decrease) the payoff of the passive agent in the DIB (AIB). Nine adults are dropped from the sample because of inconsistent (double switching) or erroneous (incomplete or ambiguous choices) answers.

Table A.2: Child characteristics by preference type

	(1) All Types	(2) EL	(3) IL	(4) IA	(5) SF	ANOVA
Study with friends	1.95	2.03	1.99	1.77	2.04	*
(days per week)	(0.991)	(1.055)	(0.993)	(1.053)	(0.908)	
Do homework with friends	1.56	1.40	1.72	1.49	1.63	
(days per week)	(1.137)	(1.120)	(1.180)	(1.135)	(1.128)	
Play with friends	2.34	2.32	2.47	2.25	2.38	
(days per week)	(0.915)	(0.929)	(1.251)	(0.999)	(0.881)	
Household size	5.35	5.47	5.28	5.28	5.37	
	(1.999)	(1.913)	(2.197)	(1.847)	(2.086)	
Number of children in hh	2.62	2.89	2.45	2.56	2.60	
	(1.304)	(1.465)	(1.251)	(1.215)	(1.318)	
Muslim	0.60	0.49	0.74	0.62	0.57	*
	(0.491)	(0.503)	(0.443)	(0.487)	(0.496)	
Observations	612	89	76	188	259	

Notes: Means for observable characteristics are shown for all types and per distributional preference types separately. Rows 1-3 are answers from survey questions on how many days per week children study, do homework or play with friends. Rows 4-6 are household characteristics. Analysis of Variance (ANOVA) is used to test for differences between the means for the preference types. $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A3: Correlation in distributional preference types (stratified bootstrap)

Panel A:		by type			
Outcome: "Same Preference Type"	All Types	EL	IL	IA	SF
(at dyad level)	(1)	(2)	(3)	(4)	(5)
Friendship link	0.016*	0.001	0.067***	-0.029	0.035*
	(0.008)	(0.015)	(0.014)	(0.016)	(0.011)
Panel B:		by type			
Outcome: "Same Preference Type"	All Types	EL	IL	IA	SF
(at dyad level)	(1)	(2)	(3)	(4)	(5)
Friendship link	0.019^{+}	0.005	0.050*	-0.014	0.038**
× Unilateral	(0.010)	(0.018)	(0.023)	(0.021)	(0.015)
Friendship link	0.013	-0.005	0.123***	-0.050*	0.031^{+}
× Reciprocal	(0.014)	(0.024)	(0.033)	(0.019)	(0.017)
Panel C:		by type			
Outcome: "Same Preference Type"	All Types	EL	IL	IA	SF
(at dyad level)	(1)	(2)	(3)	(4)	(5)
Friendship link	0.038**	0.002	0.066*	-0.125***	0.108***
× Boy	(0.013)	(0.026)	(0.029)	(0.024)	(0.016)
Friendship link	-0.003	0.003	0.089***	0.026	-0.069***
× Girl	(0.012)	(0.021)	(0.024)	(0.019)	(0.015)
Controls	Yes	Yes	Yes	Yes	Yes
Observations	124,139	16,845	15,206	38,371	53,717
Outcome Mean	0.331	0.161	0.126	0.313	0.457

Notes: This table reports marginal effects from a probit regression of a friendship link. The outcome is a binary variable equal to one if two children at a school exhibit the same preference type. Column 1 shows the marginal effect on having the same preference type. Columns 2-5 report the results for subsamples of the child's preference type (EL = efficiency-loving, IL = inequality-loving, IA = inequality-averse, SF = spiteful). Panels B and C report correlations for reciprocal friends only and by the child's gender. In all panels standard errors are bootstrap stratified at child level, and controls include student's school grade, household size, religion, age, gender, dummies for gender-matched and age-matched dyads and school fixed effects. $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table A.4: Distributional preference and cohabitation with parents

Preference Type	EL	IL	IA	SF
	(1)	(2)	(3)	(4)
Panel A: *Binary control*				
Living without biological parents	0.0402	0.00264	0.0235	-0.0573
	(0.0417)	(0.0387)	(0.0578)	(0.0603)
Panel B: *Differentiated control*				
Living without biological parents	0.0382	0.0360	0.0147	-0.0730
	(0.0432)	(0.0403)	(0.0606)	(0.0629)
Lives only with mother	-0.0326	0.0904**	-0.0308	-0.0282
	(0.0370)	(0.0303)	(0.0465)	(0.0480)
Lives only with father	0.0581	0.000497	0.00578	-0.0608
	(0.0467)	(0.0513)	(0.0663)	(0.0696)
Controls	Yes	Yes	Yes	Yes
Observations	611	611	611	611

Notes: Columns 1–4 of this table report marginal effects from probit regressions of preference types regressed on orphanhood. The outcome variable is a binary variable that determines whether a student is of a specific distributional preference type (EL = efficiency-loving, IL = inequality-loving, IA = inequality-averse, SF = spiteful). Standard errors are robust. Controls include total size of social network, student's school grade, household size, religion, age, gender, and school fixed effects. $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

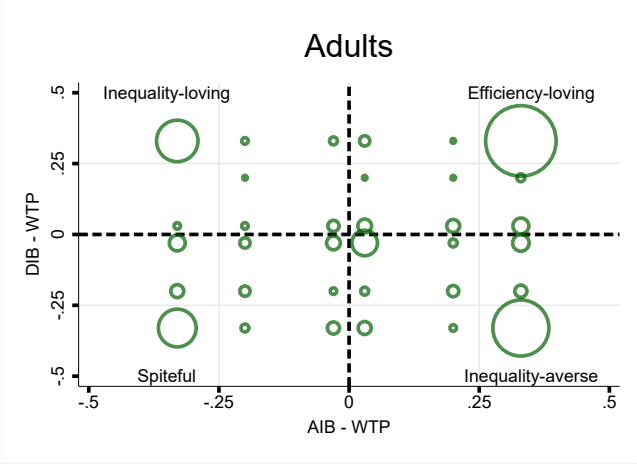
Table A.5: Correlation in distributional preference types

Panel A:		by type			
Outcome: "Same Preference Type"	All Types	EL	IL	IA	SF
(at dyad level)	(1)	(2)	(3)	(4)	(5)
Friendship link	0.017*	0.001	0.067***	-0.029	0.035*
	(0.008)	(0.023)	(0.017)	(0.019)	(0.016)
Panel B:		by type			
Outcome: "Same Preference Type"	All Types	EL	IL	IA	SF
(at dyad level)	(1)	(2)	(3)	(4)	(5)
Friendship link	0.012	-0.005	0.096**	-0.051^{+}	0.030
× Reciprocal	(0.017)	(0.038)	(0.032)	(0.032)	(0.027)
Panel C:		by type			
Outcome: "Same Preference Type"	All Types	EL	IL	IA	SF
(at dyad level)	(1)	(2)	(3)	(4)	(5)
Friendship link	0.017^{+}	0.002	0.074***	-0.035^{+}	0.038*
× Outward link	(0.010)	(0.026)	(0.020)	(0.022)	(0.019)
Panel D:		by type			
Outcome: "Same Preference Type"	All Types	EL	IL	IA	SF
(at dyad level)	(1)	(2)	(3)	(4)	(5)
Friendship link	0.015^{+}	0.0001	0.057**	-0.022	0.031
× Inward link	(0.009)	(0.024)	(0.019)	(0.023)	(0.020)
Controls	Yes	Yes	Yes	Yes	Yes
Observations	124,139	16,845	15,206	38,371	53,717
Outcome Mean	0.331	0.161	0.126	0.313	0.457

Notes: This table reports marginal effects from a probit regression of a friendship link. The outcome is a binary variable equal to one if two children at a school exhibit the same preference type. Column 1 shows the marginal effect on having the same preference type. Columns 2-5 report the results for subsamples of the child's preference type (EL = efficiency-loving, IL = inequality-loving, IA = inequality-averse, SF = spiteful). Panels B, C and D report correlations for reciprocal, outward and inward links estimated in separate regressions. In all panels standard errors are bootstrapped at child level, and controls include student's school grade, household size, religion, age, gender, a dummy for gender- and age-matched dyads and school fixed effects. $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

2. Additional Figure

Figure A.1: Distributional preference of adults



Note: Distribution of social preferences based on willingness to pay (WTP) to increase the passive agent's payoff in disadvantageous (DIB, y-axis) and advantageous (AIB, x-axis) domains (717 observations).

3. Choice List for Distributional Preferences Experiment

Figure A.2: Choice List for Distributional Preferences Experiment (translated from Swahili)

	LEFT		Decision		RIGHT	
	You get	Passive person gets			You get	Passive person gets
1	2000	4000	O	O	2500	2500
2	2400	4000	O	O	2500	2500
3	2500	4000	O	O	2500	2500
4	2600	4000	O	O	2500	2500
5	3000	4000	O	O	2500	2500

6	2000	1000	O	O	2500	2500
7	2400	1000	O	O	2500	2500
8	2500	1000	O	O	2500	2500
9	2600	1000	O	O	2500	2500
10	3000	1000	O	O	2500	2500

4. Instructions for Distributional Preferences Experiment

Start by reading the following instructions to the participants: We will now proceed with the next part of today's session. It consists of 10 decisions. You are matched with another person of your age in today's study. The identity of this person will remain unknown to you. We will call the person matched with you "your passive person" from now on. We will explain later, why this participant is called "passive person".

Each of your 10 decisions is a choice between the options LEFT and RIGHT. Each option has consequences for how much money you and your passive person can earn (show example choice).

Left		Choice	Right	
You get	Passive agent gets		You get	Passive agent gets
1900	3000	◯ ◯	2000	2000

In this example you are asked whether you prefer the alternative LEFT, in which you get 1900 TZS and your passive person gets 3000 TZS, or the alternative RIGHT, in which you earn 2000 TZS and your passive person gets 2000 TZS as well. You will have to decide for one of the two alternatives by crossing the circle next to the alternative. Are there any questions?

All in all, you will make 10 such decisions. Your earnings from this part will be determined as follows:

If you draw this part for payout, one decision is chosen randomly by drawing a numbered card from 1 to 10. The alternative that was selected in the decision situation will be paid out. For instance, in the decision situation described above, if you chose the alternative RIGHT, you would receive 2000 TZS as active person, whereas your passive person would receive 2000 TZS as passive person.

In the same way your passive person receives earnings from your decision without doing anything for it. At the end of today's session you will be informed about which part of the session and which of your 10 decisions determines your earnings. Importantly, you are also a passive person for one of the other participants. Again, that person does not know your identity. You will get additional payout from your role as passive person according to that participant's choices. Are there any questions?

5. Ex Ante versus Ex Post Similarity

The main result of this paper establishes that there is correlation in the distributional preferences of friends. This suggests that social attitudes such as distributional preferences already shape interactions between individuals at a young age. In fact, children may choose their close friends by, among other characteristics, matching on distributional preferences (ex ante similarity). In this case, the networks that we measure are likely to be endogenous. On the other hand, children might be influenced by the attitudes of their peers, such that distributional preferences could be transmitted through friends (ex post similarity). When measuring social preferences for children old enough to participate in experimental sessions in our study setting, the elicited networks are likely to be endogenous, as pupils have attended the same school for the previous five years. Therefore, it is very likely that peer correlations represent the joint effect of selection and preference transmission.

The decomposition of the correlation into selection and transmission cannot definitively be achieved by our study set-up and is clearly a highly relevant question for further research. Nevertheless, we report the following results as an attempt to offer tentative evidence that correlations operate through both channels.

First, we do not find that friends who were in the same class in the year prior to the preference elicitation have differential correlation to the child's type compared to friends who simply go to the same school, see Table A.6. The idea behind this

Table A.6: Ex ante versus ex post similarity: Exposure in class (sample of friendship dyads)

		by type			
Outcome: "Same Preference Type" (at friendship dyad level)	All Types (1)	EL (2)	IL (3)	IA (4)	SF (5)
Friends in same class	-0.002 (0.022)	0.046 (0.049)	-0.004 (0.043)	-0.035 (0.039)	-0.018 (0.037)
Controls	Yes	Yes	Yes	Yes	Yes
Observations	3,211	468	423	956	1,364

Notes: Columns 1–4 of this table present marginal effects (probit) of having been in the same class on the likelihood of having the same-type friend in a friendship dyad. Column 1 shows the marginal effect on having the same preference type. Columns 2-5 report the results for subsamples of the child's preference type (EL = efficiency-loving, IL = inequality-loving, IA = inequality-averse, SF = spiteful). Standard errors are bootstrapped at child level. Controls include total size of social network, student's school grade, household size, religion, age, gender, dummies for gender- and age-matched dyads, and school fixed effects. $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

exercise is that a higher exposure to these friends in class would create a larger correlation if preferences are transmitted ex post. However, class compositions in the study context change every year, such that the exposure to same-class friends might not be long enough.[1]

Second, we attempt to control for observable and unobservable characteristics that best (first-ranked) friends share with each other. We implement a best-friend fixed effect specification at the friendship dyad level by augmenting the following baseline equation.

$$\mathbf{1}[\text{type} = t]_{i,d} = \beta_0 + \beta_1 \mathbf{1}[\text{friend type} = t]_d + X_i'\delta + \epsilon_{i,d} \tag{1}$$

We regress a dummy equal to one if the index child is of type t on a dummy of the same type for the friend and the standard set of controls. For each of the four preference types a separate equation is estimated. The estimation sample for this exercise is specifically constructed to include only friendship dyads. It includes all friendship dyads of each best friend pair, captured by a best friend indicator variable.

[1] Every year, classes are newly formed by a quasi-random procedure. Specifically, depending on the grade point sum, students are iteratively assigned to class A or class B.

Table A7: Ex ante versus ex post similarity: Best friend fixed effects

Preference Type	EL	IL	IA	SF
	(1)	(2)	(3)	(4)
Panel A: *Baseline OLS:*				
Friend of same type	0.0009	0.043*	-0.033*	0.037*
	(0.028)	(0.027)	(0.024)	(0.022)
Logit p-values	0.921	0.007**	0.149	0.026*
Panel B: *Best Friend Fixed Effects:*				
Friend of same type	-0.008	0.023*	-0.018^{+}	0.017^{+}
	(0.013)	(0.011)	(0.011)	(0.009)
FE logit p-values	0.659	0.088^{+}	0.15	0.036*
Controls	Yes	Yes	Yes	Yes
Observations	4,265	4,265	4,265	4,265

Notes: Columns 1–4 of this table present marginal effects for the likelihood of having the same-type friend in a friendship dyad. The outcome of all specifications is a binary variable that determines whether a student is of a specific distributional preference type (EL = efficiency-loving, IL = inequality-loving, IA = inequality-averse, SF = spiteful). Panel A reports marginal effects from a probit estimation for which the preference types of friends are separated between those within the same class and others from the same school but in a different class. Panel B reports results from a linear probability model estimated without best friend fixed effects. Panel C reports results from a linear probability model with best friend fixed effects. Each pair of best friends represents a fixed effect and each pair is used only once in the estimation sample. Standard errors are robust. Controls include total size of social network, student's school grade, household size, religion, age, gender, and school fixed effects. $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

If two students named each other as best friends reciprocally, the pair is kept only once in the estimation sample. This means that we construct best-friend pairs and leverage the information on the types of their unshared friends by controlling for best-friend dyad fixed effects ϕ_i (child i's best friend). If two students named each other as best friends reciprocally, the pair is kept only once in the estimation sample. The augmented equation takes the following form:

$$\mathbf{1}[\text{type} = t]_{i,d} = \beta_0 + \beta_1 \mathbf{1}[\text{friend type} = t]_d + X_i'\delta + \phi_i + \epsilon_{i,d,b} \tag{2}$$

The idea behind such an approach is that, if close friends share characteristics that lead to endogenous network formation, the fixed effects would capture such confounding, and one can identify the ex post peer effect from the pair's unshared friends. The regression results reported in panels A (baseline OLS) and B (fixed effects) of Table A7 show that correlations for the spiteful types, as well as for

inequality-loving and averse children, survive the inclusion of best-friend fixed effects. The reduction in point estimates suggests that 53.5% and 54.1% (ratio of FE to OLS estimates) of the peer correlations between inequality-loving and spiteful types are explained by observable and unobservable characteristics shared with the best friend. Given that preference transmission might be larger between best friends compared with second-best or third-best friends, and that selection could be driven by factors not shared with the best friend, these results have to be interpreted with caution. Additionally, the truncation of the friend networks may lead to identification based on unshared friends, that, when observing the full network, might not be unshared after all. Nevertheless, they suggest the presence of both a high degree of selection and a positive, but smaller, impact of preference transmission in social preference peer networks.

6. Comment on Preanalysis Plan

In this paper, there are two main departures from the registered preanalysis plan: (i) The present study focuses purely on distributional preferences, using children's time preferences only as a control variable in some specifications. This is mainly due to presentational considerations. Time preferences were collected as planned and may feature in additional studies. (ii) The paper focuses mainly on peer and network effects. We attempted to collect preference measures for the parents of all children. However, we encountered high rates of orphans and children who do not live with both biological parents in their current homes in Dar es Salaam. The resulting sample of parents of the sample children is too small for robust inference on intergenerational preference correlations that we wanted to address