Economic preferences across generations and family clusters: A large-scale experiment in a developing country

Shyamal Chowdhury, School of Economics, University of Sydney
Matthias Sutter, Max Planck Institute for Research on Collective Goods Bonn
Klaus F. Zimmermann, Maastricht University, UNU-MERIT, CEPR and GLO

Chowdhury, S., M. Sutter, K.F. Zimmermann. 2022. Economic preferences across generations and family clusters: A large-scale experiment in a developing country. *Journal of Political Economy*, vol 130, number 9: 2361-2410.

Table of contents

1. Introduction
2. Data & Exp.
3. Single pref
4. Channels
5. Clusters
6. Differences
7. Conclusions
8. Extras

1. Introduction

Economic preferences – such as risk, time and social preferences – are important for a large set of outcomes in life.

They have been shown to influence educational achievements (Castillo et al., 2011), labor market outcomes (Heckman et al., 2006), financial success (Meier and Sprenger, 2010), or a subject's health status (Sutter et al., 2013).

Since preferences are often assumed to be largely shaped in childhood and remain fairly stable onwards, the transmission of preferences from parents to children has received ever increasing attention.

However, previous research has typically elicited the relation of one parent's (typically the mother's) economic preferences to a child's preferences, and moreover only in one domain.

None of the previous research has focused on how different domains of a subject's economic preferences relate to each other.

Even more so, no study has ever looked at whether it is possible to identify types of whole families with respect to a set of economic preferences, and which factors might determine a family's type.

In order to do so, it is necessary to elicit the economic preferences of full families, meaning of both parents and of children, and then examine the relationships of economic preferences and classify families into different types that share a combination of specific economic preferences.

We present results from an experiment with 542 families where we elicited economic preferences of 542 pairs of husbands and wives, and of their 907 children, yielding a total of 1,991 individuals as experimental participants.

We measure three dimensions of economic preferences – time, risk and social preferences – in a unified and incentivized context, allowing us to examine them at the individual, but also at the family level.

Besides the experimental elicitation of economic preferences, we have a rich set of additional controls, such as personality traits, and socio-demographic background data.

Based on this data set, we can contribute in several ways to the literature on the formation of economic preferences.

Contributions:

Firstly, we are the first to study whether the economic preferences of mothers and fathers are related to the same degree to their children's preferences where all members in a family take part in incentivised experiments.

We are also the first to answer the question whether the relation between the parents' preferences is weaker or stronger than the relation between siblings or between parents and children.

Secondly, since previous work has investigated inter-generational transmission only in rich countries, we study how parents' and children's economic preferences are related to each other in a developing country.

We also examine whether the relationship between the economic preferences of parents and children is mediated by the socio-economic status of parents as found in some rich countries.

Contributions:

Thirdly, we establish what we will call "family clusters" with respect to how a set of different economic preferences relates to each other within whole families.

We identify which background characteristics of families are predictive of the cluster to which a family belongs to.

This approach allows us to show how background characteristics of parents relate to whether we can classify a whole family as more patient, more risk tolerant and more prosocial, or rather as impatient, risk averse and antisocial.

As far as we can tell, no previous paper has attempted to address such an issue and provide a 360-degree perspective of economic preferences within families.

2. Data collection and experimental procedures

Our data were collected in four rural districts of Bangladesh (Chandpur, Gopalgonj, Netrokona, and Sunamgonj).

150 villages from the four districts and 30 households within each village were randomly selected; a detailed household survey with these households was conducted between March and May 2014.

Due to budgetary constraints, only one third of the households was randomly selected for participation in an additional survey wave.

For the current paper, we are only interested in the subset of households that had at least one child aged between six and 16 years.

This subset contains 1,000 households of which we managed to survey both parents, and their children in 732 households in October and November 2014.

Most importantly, from March to May 2016, we employed a final wave in which we elicited economic preferences of children and their parents through economic experiments and collected data on non-cognitive skills.

The combination of all three waves constitutes the basis for this paper, and it includes 542 families with complete data from all waves.

Table: 1: Summary statistics of participants

	Mean	Std. Dev.
Parents (N=542 for each parent)		
Age husband (in years)	47.16	8.73
Age wife (in years)	38.49	6.94
Schooling husband (in years)	3.04	4.01
Schooling wife (in years)	3.16	3.45
Husband works as a farmer (yes=1)	0.53	0.50
Wife works as a housewife (yes=1)	0.95	0.22
Children (N=907)		
Gender (girls= 1)	0.50	0.50
Age (in years)	12.23	2.90
Schooling (in years)	3.99	2.73
Currently attending school (yes=1, no=0)	0.93	0.26
Number of elder brothers	0.96	1.07
Number of elder sisters	0.93	1.06
Number of younger brothers	0.61	0.76
Number of younger sisters	0.57	0.75
Household data (N = 542)		
Household size (of persons)	5.79	1.37
Grandparents living in household (yes=1)	0.15	0.36
Average household income per capita per month in 2016 (in Taka)	1,640.09	1,799.14
Total village population	1,710.82	1,851.69

Note: Data refer to 2016 (except village population for 2015)

Experimental measurement of time, risk and social preferences

The experiments were conducted between March and May 2016.

The experiments elicited: a) time preferences, b) risk preferences, and c) social preferences, where the order was randomized at the individual level.

All experiments were incentivized, but only one of the three experiments was randomly chosen for actual payment at the very end of the experimental session.

The incentives were scaled contingent on the participant's age.

Time preferences:

We used a simple choice list-approach where participants faced a trade-off between a sooner, but smaller, reward and a later, but larger, reward (Bauer et al., 2012).

The choice lists that we used were kept simple in order to make it easy for children to understand the choice options.

Both for children and parents we designed three sets of choices. The earliest payment was always the day after the experiment ("tomorrow") and the later payment was either paid between three weeks and one year after the earlier payments.

Both for children and parents we used two choice sets where the delay was three months.

For the analysis of time preferences, we use the total number of patient choices, which is a simple count of how often the larger, but later, reward was chosen in all six (18) choices.

Panel A: Time preferences

	Option 1	Option 2
	Children	
Choice set 1	2 stars tomorrow vs.	3 stars in 3 weeks
	2 stars tomorrow vs.	4 stars in 3 weeks
Choice set 2	2 stars tomorrow vs.	3 stars in 3 months
	2 stars tomorrow vs.	4 stars in 3 months
Choice set 3	2 stars in 1 month vs.	3 stars in 4 months
	2 stars in 1 month vs.	4 stars in 4 months
	Parents	
Choice set 1	100 Taka tomorrow vs.	105 Taka in 3 months
	100 Taka tomorrow vs.	110 Taka in 3 months
	100 Taka tomorrow vs.	120 Taka in 3 months
	100 Taka tomorrow vs.	125 Taka in 3 months
	100 Taka tomorrow vs.	150 Taka in 3 months
	100 Taka tomorrow vs.	200 Taka in 3 months
Choice set 2	100 Taka in 1 month vs.	105 Taka in 4 months
	100 Taka in 1 month vs.	110 Taka in 4 months
	100 Taka in 1 month vs	120 Taka in 4 months
	100 Taka in 1 month vs	125 Taka in 4 months
	100 Taka in 1 month vs	150 Taka in 4 months
	100 Taka in 1 month vs	200 Taka in 4 months
Choice set 3	100 Taka in 1 year vs.	105 Taka in 1 year 3 months
	100 Taka in 1 year vs	110 Taka in 1 year 3 months
	100 Taka in 1 year vs	120 Taka in 1 year 3 months
	100 Taka in 1 year vs	125 Taka in 1 year 3 months
	100 Taka in 1 year vs	150 Taka in 1 year 3 months
	100 Taka in 1 year vs	200 Taka in 1 year 3 months

Risk preferences:

Here we followed the design created by Binswanger (1980) that has often been used in rural settings in developing countries (e.g., Bauer et al., 2012).

Participants had to choose one out of six gambles that yielded either a high or a low payoff with equal probability.

The low payoff was decreasing and the high payoff was increasing for each successive gamble.

For risk preferences, we used the gamble number picked as an outcome measure, a number from 1 to 6. Higher numbers are associated with a higher willingness to take risks.

Panel B: Risk preferences – payoffs offered to different age groups (in Taka)

Age	Outcome	Gamble #1	Gamble #2	Gamble #3	Gamble #4	Gamble #5	Gamble #6
6-7 years	Low	13	11	10	8	3	0
	High	13	24	30	38	47	50
8-9 years	Low	19	17	15	11	4	0
	High	19	36	45	56	71	75
10-11 years	Low	25	23	20	15	5	0
	High	25	48	60	75	95	100
12-13 years	Low	38	33	30	22	8	0
	High	38	72	90	112	142	150
14-15 years	Low	44	39	35	26	9	0
	High	44	84	105	131	166	175
16-17 years	Low	63	55	50	38	13	0
	High	63	120	150	188	237	250
Parents	Low	125	110	100	75	25	0
	High	125	240	300	375	475	500

Notes: Participants had to pick one out of the six gambles.

Social preferences:

We used the experimental protocol implemented in Bauer et al. (2014) who had extended Fehr et al. (2008).

Each participant had to make four choices between two options each. Each option describes an allocation of x units of rewards to the decision maker and y units to an anonymous recipient (of same gender and of roughly same age).

In each of the four choices, one allocation (x, y) was always the allocation (1,1), while the alternative allocation was designed to classify different social preference types.

From the four choices, one can create four mutually exclusive social preference types (Bauer et al., 2014):

(i) altruistic if subjects maximize the recipient's payoff in all four choices;

(ii) egalitarian if they always minimize the difference in payoffs for themselves and the recipient,

(iii) spiteful if they always minimize the recipient's payoffs; and

(iv) selfish if they maximize their own payoffs

Panel C: Social preferences

	Option 1	Option 2	In short
Prosocial game	1 star for me 1 star for other child	1 star for me 0 star for other child	(1,1) vs. (1,0)
Envy game	1 star for me 1 star for other child	1 star for me 2 stars for other child	(1,1) vs. (1,2)
Sharing game	1 star for me 1 star for other child	2 stars for me 0 stars for other child	(1,1) vs. (2,0)
Efficiency game	1 star for me 1 star for other child	2 stars for me 3 stars for other child	(1,1) vs. (2,3)

Measures of cognitive skills:

We used a locally adapted version of the Wechsler Intelligence Scale for Children (WISC, version IV; Wechsler, 2003) and the Wechsler Adult Intelligence Scale (WAIS) to measure cognitive skills.

From that we have derived a standardized composite measure of full-scale IQ (FSIQ).

Measures of non-cognitive skills:

We measured personality traits and locus of control.

The BIG 5 personality traits that we have measured are: extraversion, conscientiousness, openness, agreeableness, and neuroticism.

We have also measured locus of control (Rotter, 1966; Lefcourt, 1991) which is an indicator of subjects' beliefs to what extent they have control over the outcome of events in their life.

3. Analysis of single preferences at the individual level

- We start by presenting a descriptive overview of the experimental choices.
- Table 4 shows the means and corresponding standard deviations for the different measures of time, risk and social preferences.
- The upper panel presents data for parents, first combining husbands and wives, and then separately. The lower panel displays data for children, again first combined and then separately for daughters and sons.
- In the aggregate, husbands and wives have significantly different time preferences, and partly social preferences, but no differences in risk preferences.
- Daughters and sons, however, show no significant difference in any of our measures.

Table: 4: Economic preferences of parents and children – Descriptive overview

Parents	Total Mean	Std. dev.	Wives Mean	Std. dev.	Husband Mean	Std. dev.	Difference (p-value) Wives vs Husbands
# of patient choices	7.18	7.03	7.75	6.98	6.61	7.04	0.01
Gamble # picked	3.93	1.70	3.90	1.74	3.95	1.66	0.66
Altruistic (1,0)#	0.08	0.27	0.06	0.25	0.10	0.29	0.06
Egalitarian (1,0)#	0.15	0.36	0.09	0.29	0.22	0.41	0.00
Spiteful (1,0)#	0.20	0.40	0.22	0.41	0.19	0.39	0.33
Selfish (1,0)#	0.32	0.47	0.36	0.48	0.28	0.45	0.00
Unclassified social pref.	0.24	0.43	0.26	0.44	0.22	0.41	0.08
# of Observations	1,088		544		544		
Children:	Total Mean	Std. dev.	Girls Mean	Std. dev.	Boys Mean	Std. dev.	Difference (p-value) Boys vs Girls
# of patient choices	2.77	2.17	2.85	2.19	2.69	2.16	0.29
Gamble # picked	3.87	1.59	3.91	1.65	3.84	1.54	0.65
Altruistic (1,0)#	0.07	0.25	0.06	0.24	0.07	0.26	0.46
Egalitarian (1,0)#	0.17	0.38	0.17	0.37	0.17	0.38	0.79
Spiteful (1,0)#	0.20	0.40	0.21	0.41	0.20	0.40	0.85
Selfish (1,0)#	0.31	0.46	0.30	0.46	0.31	0.46	0.66
Unclassified social pref.	0.25	0.43	0.27	0.44	0.24	0.43	0.34
# of Observations	911		453		458		

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Correlations of single economic preferences within families

Table 5 examines correlations of economic preferences within families from three perspectives.

It presents correlations:

(i) among spouses (column 1),

(ii) between siblings (column 2), and

(iii) between parents and children (columns 3 & 4).

Table: 5: Correlations of economic preferences

	Husbands and wives	Siblings	Mothers and children	Fathers and children
No of patient choices	0.244***	0.324***	0.182***	0.165***
Gamble number picked	0.103**	0.312***	0.121***	0.079*
Spiteful	0.599***	0.514***	0.574***	0.448***
Egalitarian	0.080*	0.147***	0.112***	0.100***
Altruistic	0.042	0.037	0.094***	0.078**
Selfish	0.137***	0.305***	0.222***	0.172***

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Correlations of preferences within families (cont.)

Husbands' and wives' preferences are significantly positively correlated most of the time, i.e., for risk and time preferences, and partly for social preferences.

Marriages in rural Bangladesh are in an overwhelming majority of cases arranged by the bride's and the groom's families (Ambrus et al., 2010).

It is, therefore, not straightforward to expect similar preferences of husbands and wives.

Columns (3) and (4) address the correlations between mothers and children, respectively fathers and children. Again, we observe significant correlations in almost all cases.

By and large, the coefficients are comparable in both columns, indicating that mothers' and fathers' economic preferences are related to their children's preferences to a similar degree.

This is noteworthy because mothers spend much more time at home than fathers, for which reason one could naively expect mothers to have a tighter relationship if spending time would predominantly shape the relationships.

Assortativity of parents

We regress a husband's (wife's) economic preference on his wife's (husband's) corresponding preference.

Despite controlling for a large number of background variables, including socio-economic status, cognitive abilities and personality traits, there is a positive and significant relationship of "wife's preference" to her husband's preference.

Is it due to the selection of similar partners (even in case of arranged marriages) or a result of post-marriage convergence?

Post-marriage convergence is most likely not a main factor, but rather that the families of bride and groom seem to look for a match that includes similarities in economic preferences.

Table: 6a: Assortativity of parental preferences

	No of patient choices	Lottery # picked	Spiteful	Egalitarian	Altruistic	Selfish
Wife's pref.	0.186***	0.089**	0.339***	0.090	0.029	0.032
	(0.045)	(0.042)	(0.063)	(0.069)	(0.047)	(0.040)
Diff. in spouses' age	0.000	-0.008	-0.005*	0.002	0.002	0.002
	(0.074)	(0.017)	(0.003)	(0.004)	(0.002)	(0.005)
Diff. in spouses' sch	0.001	0.005	-0.005	-0.011	0.011***	0.010
	(0.116)	(0.028)	(0.006)	(0.007)	(0.004)	(0.008)
Number of children	0.011	-0.073	-0.039	0.028	-0.019	0.010
	(0.458)	(0.114)	(0.026)	(0.029)	(0.016)	(0.030)
Per cap inc x 10^{-4}	0.279	0.394	-0.040	0.113	0.155***	-0.238*
	(1.569)	(0.488)	(0.091)	(0.095)	(0.056)	(0.141)
FSIQ measure	-0.683*	0.142	0.007	0.031	-0.016	-0.044
	(0.396)	(0.096)	(0.018)	(0.023)	(0.013)	(0.028)
Conscientiousness	-0.110	-0.002	0.013	0.026	0.033***	-0.038*
	(0.365)	(0.089)	(0.018)	(0.020)	(0.013)	(0.022)
Extraversion	-0.169	-0.058	-0.010	0.020	0.003	0.006
	(0.345)	(0.092)	(0.018)	(0.020)	(0.013)	(0.023)
Agreeableness	0.332	-0.056	-0.053***	0.025	0.002	0.022
	(0.336)	(0.085)	(0.017)	(0.021)	(0.011)	(0.023)
Openness	0.047	0.115	-0.010	-0.011	-0.017	0.028
	(0.308)	(0.073)	(0.015)	(0.017)	(0.011)	(0.020)
Neuroticism	0.224	-0.046	-0.005	-0.001	0.005	0.000
	(0.323)	(0.093)	(0.017)	(0.020)	(0.013)	(0.022)
Locus of control	-0.328	-0.107	0.011	0.027	-0.019	-0.027
	(0.315)	(0.083)	(0.015)	(0.018)	(0.013)	(0.022)
Observations	540	536	531	538	536	536
R2/ Pseudo-R2	0.135	0.090	0.406	0.090	0.124	0.119
Dist FE?	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Additional covariates controlled for in all specifications, but not reported here, are: number of younger and older siblings, age and education of father and mother, household size, grandparents dummy, village population and district fixed effects. OLS coefficients reported in columns 1 and 2, Probit marginal effects reported in columns 3-6. R^2 refers to OLS, Pseudo-R^2 to Probit regressions. Standard errors in

Table: 6b: Assortativity of parental preferences

	No of patient choices	Lottery # picked	Spiteful	Egalitarian	Altruistic	Selfish
Husband's preference	0.162***	0.093*	0.358***	0.036	0.015	0.063
	(0.043)	(0.048)	(0.063)	(0.033)	(0.028)	(0.050)
Diff in spouses' age	0.000	0.008	-0.002	0.002	-0.001	-0.002
	(0.055)	(0.016)	(0.003)	(0.002)	(0.002)	(0.004)
Diff in spouses' sch	0.185**	-0.000	-0.008	0.004	0.001	-0.004
	(0.094)	(0.025)	(0.005)	(0.004)	(0.003)	(0.007)
Number of children	0.112	-0.114	-0.041	-0.009	-0.001	0.023
	(0.418)	(0.119)	(0.029)	(0.018)	(0.013)	(0.035)
Per cap inc x 10^{-4}	0.175	0.368	-0.081	0.022	-0.020	0.134
	(1.567)	(0.595)	(0.099)	(0.055)	(0.049)	(0.118)
FSIQ measure	-0.065	0.146	0.012	0.010	-0.011	-0.034
	(0.413)	(0.104)	(0.022)	(0.015)	(0.011)	(0.030)
Conscientiousness	-0.260	-0.062	0.006	0.018	0.019*	-0.054**
	(0.302)	(0.079)	(0.019)	(0.012)	(0.010)	(0.023)
Extraversion	0.887***	0.147*	-0.032	-0.006	0.024***	-0.011
	(0.323)	(0.084)	(0.020)	(0.012)	(0.008)	(0.025)
Agreeableness	0.070	-0.021	-0.012	-0.009	0.005	0.008
	(0.273)	(0.073)	(0.018)	(0.010)	(0.008)	(0.021)
Openness	0.011	0.087	0.018	0.017	-0.021**	-0.008
	(0.338)	(0.093)	(0.023)	(0.014)	(0.009)	(0.025)
Neuroticism	-0.349	-0.102	-0.027*	0.011	0.009	0.021
	(0.298)	(0.072)	(0.015)	(0.011)	(0.009)	(0.022)
Locus of control	-0.018	-0.125	0.017	0.027*	0.004	-0.012
	(0.327)	(0.090)	(0.020)	(0.014)	(0.008)	(0.026)
Observations	541	537	534	532	534	533
R2/ Pseudo-R2	0.183	0.064	0.479	0.081	0.145	0.113
Dist FE?	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Additional covariates controlled for in all specifications, but not reported here, are: number of younger and older siblings, age and education of father and mother, household size, grandparents dummy, village population and district fixed effects. OLS coefficients reported in columns 1 and 2, Probit marginal effects reported in columns 3-6. R^2 refers to OLS, Pseudo-R^2 to Probit regressions. Standard errors in

Relation between children's and parents' preferences

Table 7 shows the association between children's and each parent's preferences in order to study in more detail how economic preferences are linked within families and potentially transmitted across generations.

All the preference measures for time, risk and social preferences of children are positively and significantly associated with at least one parent's preference.

In fact, in the majority of cases there is a significant relation to both mothers and fathers, thus confirming the correlation analysis shown earlier.

In the Appendix Table A.9, we show that the relation of parents' and children's preferences remains practically the same if we drop all control variables and only regress children's preferences on parents' preferences.

Similarly, we also find that the mother's (the father's) preferences remain significant if the other parent's preferences were excluded from the regressions shown in Table 7.

Table: 7: Children's preferences and their relation to parental preferences

	No of patient choices	Lottery # picked	Spiteful	Egalitarian	Altruistic	Selfish
Parent's pref. - father	0.036***	0.074	0.056	0.072**	0.053*	0.085**
	(0.011)	(0.049)	(0.043)	(0.034)	(0.034)	(0.040)
Parent's pref. - mother	0.047***	0.109**	0.336***	0.107**	0.108***	0.127***
	(0.012)	(0.052)	(0.054)	(0.051)	(0.047)	(0.037)
Gender (Male 1)	-0.295**	-0.021	0.019	0.021	0.004	0.008
	(0.141)	(0.153)	(0.025)	(0.024)	(0.015)	(0.032)
Age of respondent	0.033	-0.115**	-0.011	0.008	0.005	0.006
	(0.057)	(0.058)	(0.009)	(0.009)	(0.005)	(0.012)
Yrs of schooling	-0.099*	0.089	0.022**	-0.008	-0.004	-0.000
	(0.053)	(0.058)	(0.010)	(0.009)	(0.005)	(0.012)
Attending school (=1)	-0.070	0.123	0.004	0.051	0.000	-0.094
	(0.268)	(0.371)	(0.054)	(0.042)	(0.028)	(0.067)
Father's yrs of sch	0.012	-0.031	-0.006	-0.005	0.002	0.004
	(0.025)	(0.024)	(0.004)	(0.004)	(0.002)	(0.005)
Mother's yrs of sch	0.000	0.021	0.005	0.005	-0.002	0.001
	(0.029)	(0.031)	(0.005)	(0.005)	(0.003)	(0.007)
Household size	-0.020	0.098	-0.002	-0.025*	-0.012*	0.058***
	(0.088)	(0.097)	(0.014)	(0.013)	(0.007)	(0.017)
Per cap inch x 10-4	0.596	-0.760	-0.001	0.064	0.047	-0.122
	(0.406)	(0.504)	(0.074)	(0.089)	(0.034)	(0.098)

Notes: Additional covariates controlled for in all specifications, but not reported here, are: number of younger

Table: 7: Children's preferences and their relation to parental preferences (cont.)

	No of patient choices	Lottery # picked	Spiteful	Egalitarian	Altruistic	Selfish
FSIQ measure of child	-0.398***	-0.071	0.018	0.057***	-0.012	-0.078***
	(0.107)	(0.114)	(0.020)	(0.020)	(0.010)	(0.026)
Conscientiousness	-0.025	0.133*	0.008	0.000	0.009	0.002
	(0.080)	(0.077)	(0.015)	(0.013)	(0.009)	(0.017)
Extraversion	-0.213***	-0.057	-0.019	0.018	0.006	-0.017
	(0.074)	(0.076)	(0.013)	(0.013)	(0.007)	(0.016)
Agreeableness	-0.089	0.009	-0.029**	0.033**	-0.007	-0.015
	(0.077)	(0.085)	(0.014)	(0.014)	(0.007)	(0.017)
Openness	0.092	0.011	0.023*	-0.024**	0.005	0.019
	(0.071)	(0.082)	(0.013)	(0.012)	(0.007)	(0.017)
Neuroticism	0.016	0.079	0.008	-0.000	-0.004	0.017
	(0.070)	(0.080)	(0.013)	(0.011)	(0.008)	(0.016)
Locus of control	0.027	-0.035	-0.041**	0.017	-0.006	0.027
	(0.069)	(0.078)	(0.015)	(0.013)	(0.007)	(0.018)
Observations	906	456	904	904	904	904
R2/ Pseudo-R2	0.148	0.077	0.394	0.081	0.083	0.155
Dist FE?	Yes	Yes	Yes	Yes	Yes	Yes
Father = Mother	0.525	0.638	0.001	0.600	0.372	0.448

Notes: Additional covariates controlled for in all specifications, but not reported here, are: number of younger and older siblings, age and education of father and mother, household size, grandparents dummy, village population and district fixed effects. OLS coefficients reported in columns 1 and 2, Probit marginal effects

Relation between children's and parents' pref. (cont.)

The relationship to the child's preferences is practically the same for mothers and for fathers (with one exception, see the test statistics at the bottom of Table 7).

It is not the case that mothers have a stronger relation to daughters, or fathers to sons, with respect to their economic preferences Table A.10.

Per-capita income of households does not have any significant relationship with single economic preferences of children.

Similarly, parents' education (years of schooling) is insignificant.

Overall, Table 7 shows that socio-economic status of parents is practically unrelated to the economic preferences of children when we consider each preference separately.

4. Channels of inter-generational transmission

We look at several factors that one might subsume under the notion of environmental factors.

We first analyze whether parenting styles of parents can explain children's economic preferences, so that the way in which parents treat and raise their children affects the children's preferences.

Second, we look into whether parents who have similar economic preferences have a different relation to their children's economic preferences than parents with relatively dissimilar economic preferences.

Third, we control for an indirect influence of parents working through older siblings.

Finally we analyze whether our results are robust to controlling for peer effects within one's village.

Note that we conducted an econometric exercise (Appendix B) that discusses what our data might imply with respect to the genetic transmission of preferences. There we show that our data are not consistent with a story of pure genetic transmission.

Parenting styles

The questions to assess the parenting style were taken from the Panel Analysis of Intimate Relationships and Family Dynamics (pairfam; Wendt et. al., 2011).

There are 18 items in the questionnaire (see the end of Appendix C) that can be used to score a family on each of six different parenting styles: Emotional warmth, monitoring, inconsistent parenting, negative communication, psychological control, and strict control.

We then used a principal components analysis (PCA) to classify households with respect to the extent of a positive and negative parenting style.

We use the PCA-index for both styles as explanatory variables in Table 8 (that is based on Table 7, but adds parenting styles as controls).

We see that neither positive nor negative parenting is significantly related to children's preferences, nor are they jointly significant (as can be seen in the last row of Table 8).

Table: 8: Children's preferences and their relation to parental preferences – Taking parenting styles into account

	No of patient choices	Lottery # picked	Spiteful	Egalitarian	Altruistic	Selfish
Parent's preference - father	0.035***	0.071	0.069*	0.091***	0.104***	0.119***
	(0.012)	(0.052)	(0.044)	(0.037)	(0.050)	(0.043)
Parent's preference - mother	0.044***	0.102*	0.427***	0.153***	0.106***	0.206***
	(0.012)	(0.056)	(0.053)	(0.060)	(0.048)	(0.041)
Negative parenting	-0.074	-0.030	0.004	0.002	0.006	0.000
	(0.057)	(0.059)	(0.009)	(0.009)	(0.006)	(0.013)
Positive parenting	-0.010	0.108	-0.001	0.001	0.009	-0.011
	(0.075)	(0.086)	(0.013)	(0.012)	(0.007)	(0.017)
Observations	779	390	776	776	776	776
R2/ Pseudo-R2	0.153	0.084	0.383	0.084	0.078	0.124
Dist FE?	Yes	Yes	Yes	Yes	Yes	Yes
Father = Mother	0.591	0.701	0.000	0.395	0.987	0.155
Joint sig of parents' pref	0.000	0.051	0.000	0.001	0.000	0.000
Joint sig of parenting style	0.422	0.404	0.920	0.962	0.292	0.826

Notes: Additional covariates controlled for in all specifications, but not reported here, are: number of younger and older siblings, age and education of father and mother, household size, grandparents dummy, village population and district fixed effects. OLS coefficients reported in columns 1 and 2, Probit marginal effects reported in columns 3-6. R^2 refers to OLS, Pseudo-R^2 to Probit regressions. Standard errors in parentheses are clustered at household level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Assortativity of parents

We follow Dohmen et al.'s (2012) approach and categorize parents into two categories – homogeneous parents where the absolute difference in preferences between husband and wife is less than one standard deviation of the overall sample, and heterogeneous parents if the absolute difference is greater than or equal to one standard deviation.

We predict each adult's preference based on the covariates that we employed to explain preferences of children.

We then repeat the main regressions presented in Table 7 by taking into account this separation into homogeneous and heterogeneous parents.

Overall, the evidence (Table 9) suggests that the degree of parents' assortativity with respect to their own economic preferences (dichotomized here as homogeneous or heterogeneous) does not matter much for the relation to their children's preferences.

Table: 9: Children's preferences and their relation to parental preferences – Adding homogeneity/heterogeneity of parents

	No of patient choices	Lottery # picked	Spiteful	Egalitarian	Altruistic	Selfish
Father's preference	0.045**	0.034	-0.024	0.074**	0.008	0.112**
	(0.018)	(0.064)	(0.053)	(0.036)	(0.033)	(0.052)
Mother's preference	0.053***	0.093	0.504***	0.037	0.152***	0.130***
	(0.020)	(0.068)	(0.093)	(0.049)	(0.068)	(0.046)
Father's preference x	-0.030	0.082	0.150*	-0.034	0.120*	-0.034
Parents homogeneity	(0.049)	(0.155)	(0.107)	(0.070)	(0.098)	(0.074)
Mother's preference x	0.012	0.013	-0.110**	0.160	-0.037	-0.033
Parents homogeneity	(0.049)	(0.169)	(0.032)	(0.137)	(0.022)	(0.069)
Parents homogeneity (=1)	0.194	-0.553	0.041	0.015	-0.011	-0.092*
	(0.327)	(0.564)	(0.050)	(0.037)	(0.016)	(0.047)
Observations	896	452	888	889	895	889
R2/ Pseudo-R2	0.138	0.067	0.394	0.072	0.080	0.155
Dist FE?	Yes	Yes	Yes	Yes	Yes	Yes
Father = Mother	0.676	0.445	0.000	0.519	0.053	0.782

Notes: Additional covariates controlled for in all specifications, but not reported here, are: number of younger and older siblings, age and education of father and mother, household size, grandparents dummy, village population and district fixed effects. OLS coefficients reported in columns 1 and 2, Probit marginal effects reported in columns 3-6. R^2 refers to OLS, Pseudo-R^2 to Probit regressions. Standard errors in parentheses are clustered at household level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

The role of older siblings

It is not only parents, siblings can influence each other shaping children's preferences within families.

We examine the potential influence of older siblings on younger siblings for 367 families where we interviewed two children.

We do this in two steps:

- First, using the specification of Table 7, we regress the older sibling's preference on parents' preferences and estimate the residuals.
- Second, we use the older sibling's residuals as explanatory variables in estimating the younger sibling's preferences.

Note that all other variables, including parental preferences, remain unchanged. Table 10 shows the results.

The older sibling's preferences are significantly related to the younger sibling's time and risk preferences, but there is no relation to social preferences.

Father's preferences turn insignificant almost in all columns, but the mother's preference remains significant (in almost all columns).

Table: 10: Children's preferences and their relation to parental preferences – Estimating the older sibling's influence

	No of patient choices	Lottery # picked	Spiteful	Egalitarian	Altruistic	Selfish
Father's preference	0.019	0.182	-0.048	0.044	0.050	0.114*
	(0.017)	(0.115)	(0.050)	(0.044)	(0.056)	(0.063)
Mother's preference	0.056***	0.354***	0.484***	0.039	0.166***	0.126**
	(0.017)	(0.123)	(0.106)	(0.055)	(0.090)	(0.062)
Older's siblings pref. residuals	0.318***	0.274**	0.006	-0.086	-0.036	0.060
	(0.054)	(0.134)	(0.046)	(0.214)	(0.049)	(0.047)
Observations	363	90	338	359	359	359
R2/ Pseudo-R2	0.229	0.414	0.450	0.140	0.148	0.182
Dist FE?	Yes	Yes	Yes	Yes	Yes	Yes
Father = Mother	0.174	0.286	0.000	0.924	0.289	0.885
Joint sig of parents' pref	0.001	0.009	0.000	0.341	0.011	0.018

Notes: Additional covariates controlled for in all specifications, but not reported here, are: number of younger and older siblings, age and education of father and mother, household size, grandparents dummy, village population and district fixed effects. OLS coefficients reported in columns 1 and 2, Probit marginal effects reported in columns 3-6. R^2 refers to OLS, Pseudo-R^2 to Probit regressions. Standard errors in parentheses are clustered at household level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Peer preferences

Since most of our families' social life takes place within their villages , it is natural to assume that preferences of surrounding villagers might play an important role and thus influence the transmission of preferences within families.

We treat each village as a separate community and construct the average village preference for each preference type, by taking the average of all villagers, including both children and parents.

However, to avoid the reflection problem, we exclude a child's and his or her parents' preferences in calculating the village average (similar to Dohmen et al., 2012).

As expected, Table 11 shows that children's preferences are highly positively associated with the average preference in the village, indicating a significant relation to their peers.

Yet, even when we control for peer effects within villages, the positive association observed between children's and their parents' preferences still remains significant.

Table: 11: Children's preferences and their relation to parental preferences – Taking into account peers in one's village

	No of patient choices	Lottery # picked	Spiteful	Egalitarian	Altruistic	Selfish
Father's preference	0.031***	0.071	0.036	0.062*	0.057**	0.073*
	(0.011)	(0.049)	(0.040)	(0.034)	(0.036)	(0.040)
Mother's preference	0.041***	0.105**	0.239***	0.099**	0.122***	0.114***
	(0.011)	(0.052)	(0.052)	(0.050)	(0.054)	(0.037)
Avg vill pref	0.297***	-0.056	0.337***	0.174**	-0.047	0.165**
	(0.074)	(0.103)	(0.065)	(0.076)	(0.074)	(0.081)
Observations	902	454	900	900	900	900
R2/ Pseudo-R2	0.168	0.074	0.426	0.088	0.085	0.159
Dist FE?	Yes	Yes	Yes	Yes	Yes	Yes
Father = Mother	0.567	0.650	0.008	0.560	0.322	0.453
Joint sig. of parents pref	0.000	0.031	0.000	0.014	0.001	0.001

Notes: Additional covariates controlled for in all specifications, but not reported here, are: number of younger and older siblings, age and education of father and mother, household size, grandparents dummy, village population and district fixed effects. OLS coefficients reported in columns 1 and 2, Probit marginal effects reported in columns 3-6. R^2 refers to OLS, Pseudo-R^2 to Probit regressions. Standard errors in parentheses are clustered at household level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

5. Identifying family clusters

In the following, we, first, study the relationships of different economic preferences within individuals, which has not been investigated so far.

Second, we examine whether we can identify different clusters of families and

Whether we can identify socio-economic and demographic determinants of the assignment to a particular cluster.

Correlations across preference domains

- Table 12 shows that within individuals, our measures for three different domains of economic preferences are related in a consistent manner for husbands, wives, and children.
- More patient individuals are typically more risk tolerant (significant for wives and children) and that both risk and time preferences are also related to social preferences.
- Spiteful subjects are less patient and less risk taking. In other words, spiteful individuals are typically relatively impatient and risk averse.

Table: 12. Correlations across preferences (within individuals)

	No of patient choices	Lottery # picked	Spiteful	Egalitarian	Altruistic	Selfish
Husband						
Gamble # picked	0.010					
Spiteful	-0.230***	-0.121***				
Egalitarian	-0.078*	-0.054	-0.256***			
Altruistic	0.107**	0.010	-0.158***	-0.171***		
Selfish	0.136***	0.145***	-0.301***	-0.326***	-0.202***	
Unclassified	0.073*	0.005	-0.257***	-0.278***	-0.172***	-0.328***
Wife						
Gamble # picked	0.112***					
Spiteful	-0.292***	-0.108**				
Egalitarian	-0.053	-0.085**	-0.167***			
Altruistic	0.042	-0.029	-0.137***	-0.083*		
Selfish	0.171***	0.167***	-0.396***	-0.241***	-0.198***	
Unclassified	0.097**	-0.010	-0.314***	-0.191***	-0.157***	-0.454***
Children						
Gamble # picked	0.124***					
Spiteful	-0.062*	-0.044				
Egalitarian	-0.213***	-0.074	-0.229***			
Altruistic	0.011	0.007	-0.137***	-0.122***		
Selfish	0.197***	0.043	-0.336***	-0.300***	-0.180***	
Unclassified	0.026	0.055	-0.294***	-0.262***	-0.157***	-0.386***

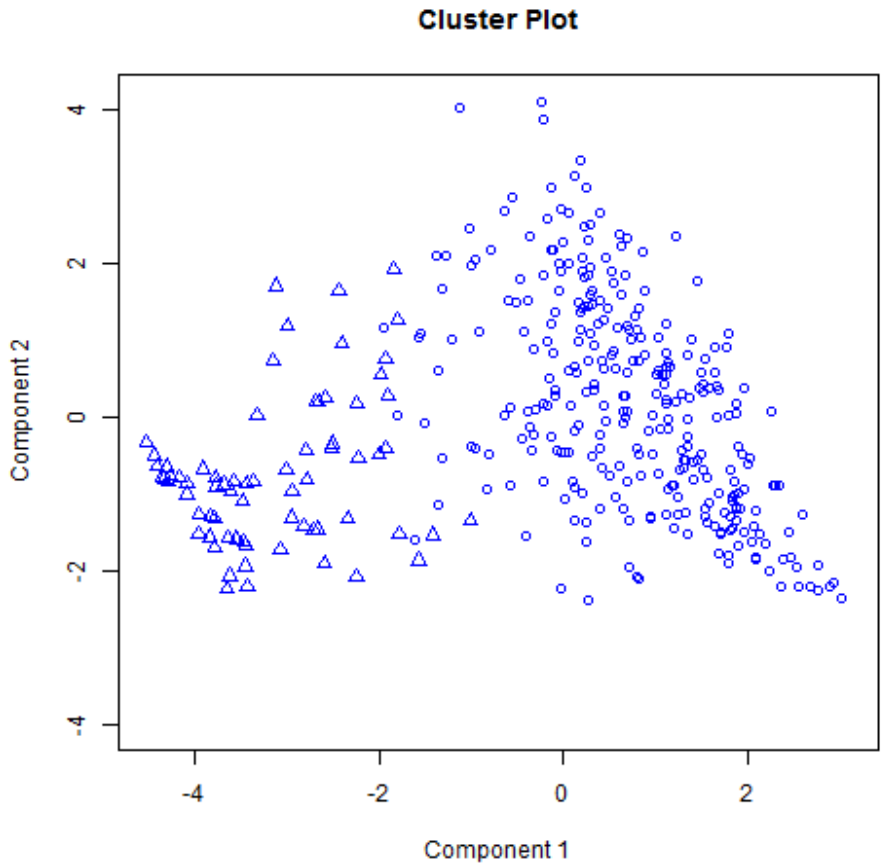
Family clusters (cont.)

- We use a k-medoids clustering algorithm, which provides two as the optimal number of clusters, which implies classifying families into two types of families – concerning the pattern of how risk, time and social preferences of family members look like.
- Accordingly, each family is assigned to one of two clusters that differ with respect to economic preferences within a family.
- The two clusters of groups of families that we can identify are markedly different (Table 13). 431 families are classified into Cluster 1, and 111 families into Cluster 2.
- Cluster 1-families are significantly more patient, more risk taking, less often spiteful, and more often altruistic or selfish (while for egalitarian social preference types there is no significant difference).
- Cluster 2-families are more impatient, more risk averse and in particular more often spiteful.

Table: 13. Summary of characteristics represented in two clusters

	Cluster 1	Cluster 2	Difference	p-value
Number of patient choices children	2.93	2.51	0.42	0.04
Number of patient choices father	7.82	2.36	5.46	0.00
Number of patient choices mother	9.19	2.34	6.85	0.00
Gamble number picked children	3.94	3.67	0.26	0.17
Gamble number picked father	4.12	3.25	0.87	0.00
Gamble number picked mother	4.00	3.58	0.42	0.02
Spiteful children	0.08	0.68	-0.60	0.00
Spiteful father	0.03	0.77	-0.73	0.00
Spiteful mother	0.04	0.87	-0.83	0.00
Egalitarian children	0.19	0.12	0.07	0.04
Egalitarian father	0.23	0.16	0.07	0.10
Egalitarian mother	0.11	0.02	0.09	0.00
Altruistic children	0.08	0.00	0.08	0.00
Altruistic father	0.12	0.01	0.11	0.00
Altruistic mother	0.08	0.01	0.07	0.01
Selfish children	0.36	0.11	0.25	0.00
Selfish father	0.34	0.05	0.30	0.00
Selfish mother	0.45	0.05	0.41	0.00
Unclassified social preference child	0.26	0.08	0.18	0.00
Unclassified social preference father	0.23	0.02	0.22	0.00
Unclassified social preference mother	0.28	0.04	0.25	0.00
Number of families	431	111		

Figure 1: The two family clusters (circles and triangles indicate families that are assigned to Cluster 1, Cluster 2, respectively)



Component 1 on the horizontal axis can be interpreted as a factor capturing spitefulness, risk and time preferences. Negative values represent more spiteful, risk averse and impatient families, positive values less spiteful, more risk tolerant and more patient families.

Component 2 (the other factor with a loading larger than one) has no straightforward interpretation.

Table: 14. Determinants of families belonging to Cluster 2 (impatient, risk averse, and spiteful), depending upon parents' background characteristics – probit regression

	Marginal effects at mean	Std. Error
Per capita income per month in 2016 x 10^{-4}	-0.260**	0.123
Household size	-0.028**	0.014
Age father (in years)	0.005	0.003
Age mother (in years)	-0.000	0.004
Schooling father (in years)	0.004	0.006
Schooling mother (in years)	0.016**	0.007
Full scale IQ father	0.008	0.024
Full scale IQ mother	0.034	0.024
N	538	

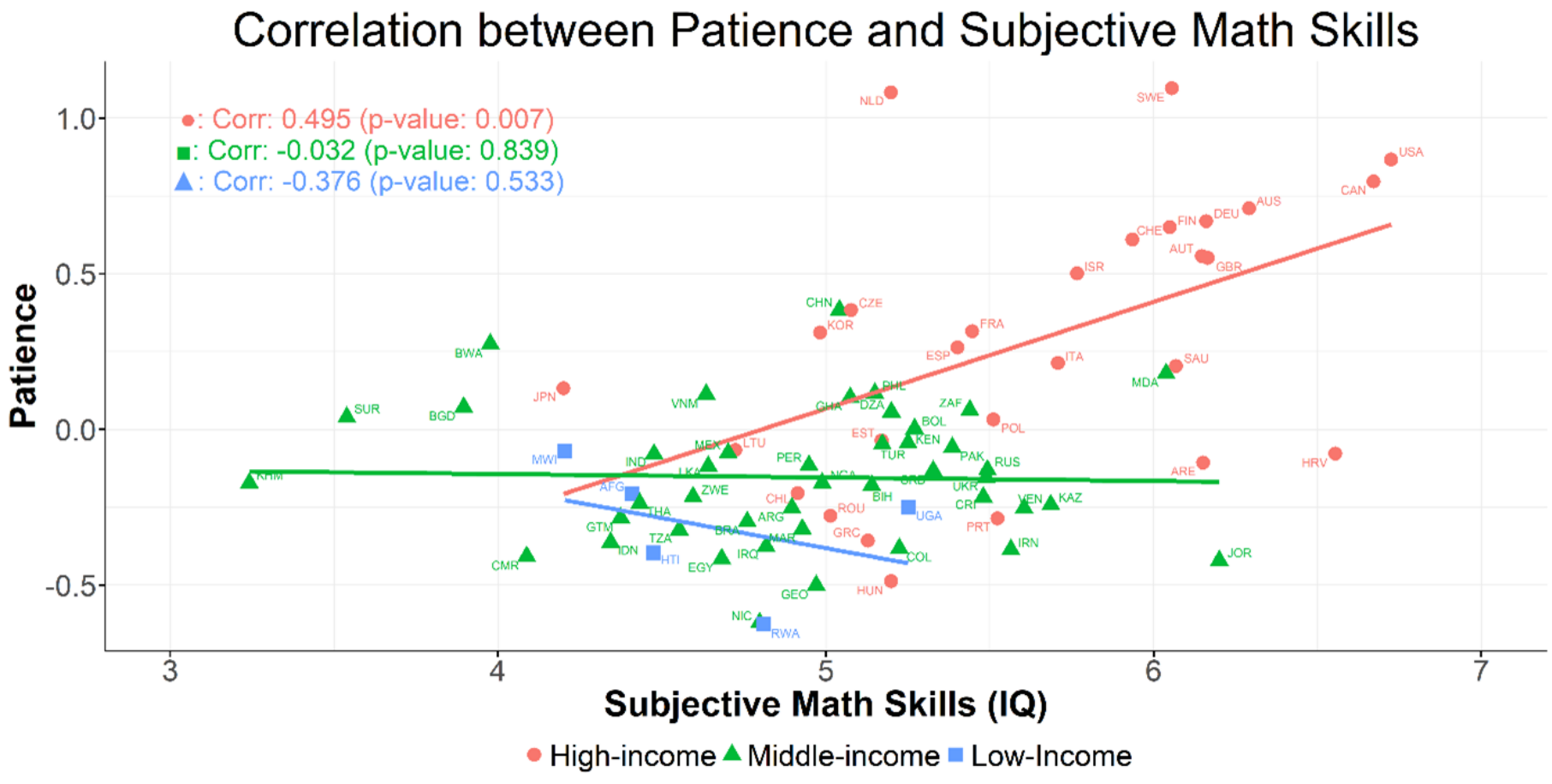
Pseudo $R^2 = 0.067$; Log likelihood = -255.57; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

- Richer households are more likely to be classified in Cluster 1 (with more patient, more risk tolerant and less spiteful members).
- More years of schooling of mothers make it more likely to belong to Cluster 2.

6. Differences between Bangladesh and rich countries

- Our finding of a negative correlation between IQ or schooling and patience is at odds with evidence from rich countries (e.g., Mischel and Metzner, 1962, Falk et al., 2021).
- A higher IQ goes hand in hand with higher patience in developed and rich economies, because patience pays off in general in such a stable environment (Moffitt et al., 2011; Golsteyn et al., 2014).
- Yet, in poor countries, patience might not be a good strategy for survival. Subjects might be well-advised to grab what is available at present because there might only be worse options available in the future.
- A higher IQ might make it all the clearer that this strategy (of grabbing what is available) is a reasonable strategy for survival, which then would go hand in hand with impatience.
- Such a pattern is what we observe in Figure 2.

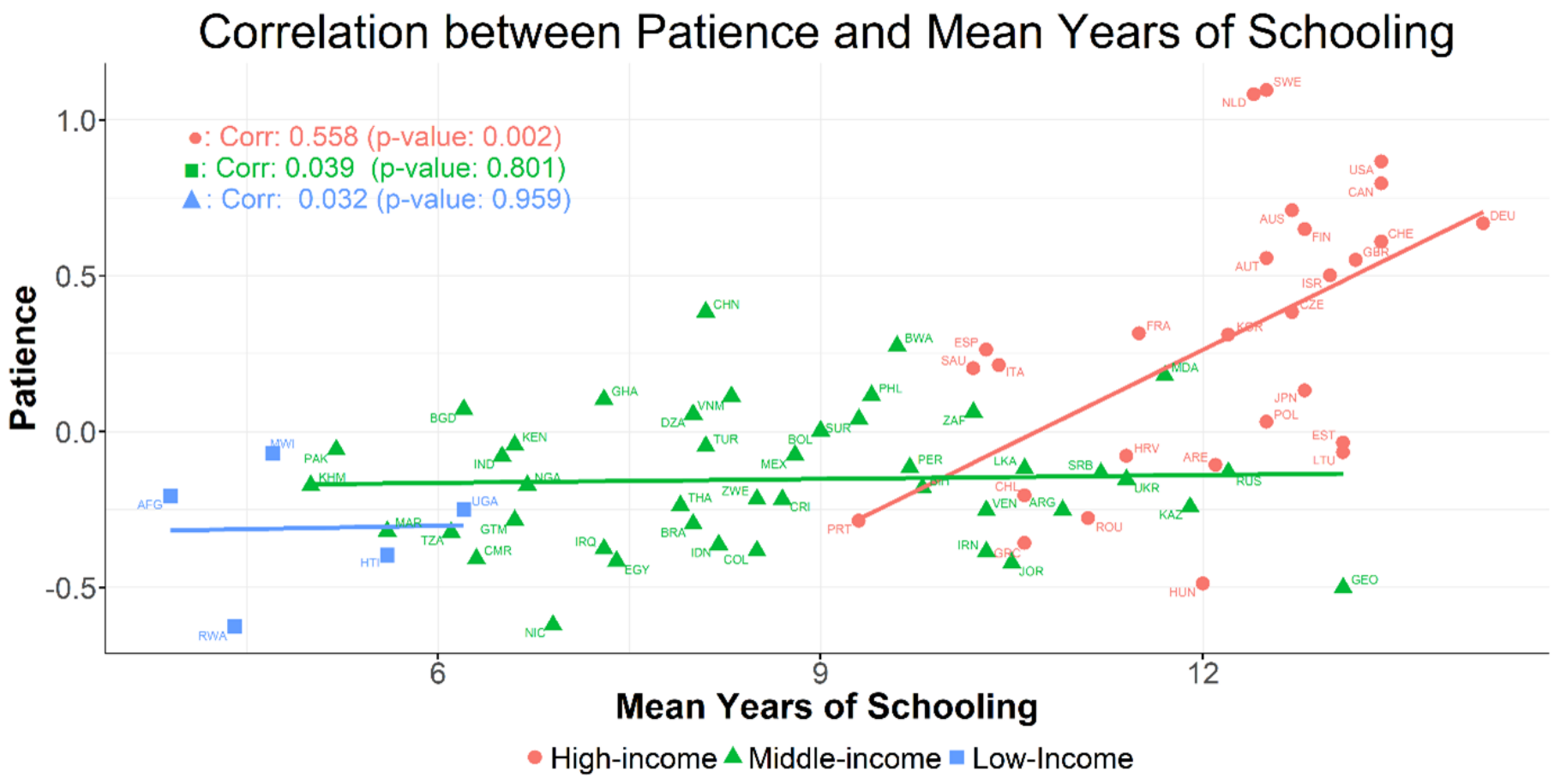
Figure 2: Relationship between IQ and patience, conditional on income level of country



6. Differences (cont.)

- Another surprising finding is the negative influence of mothers' education on the likelihood of a family to be in the cluster with more patient, more risk tolerant and less spiteful members.
- In Figure 3, we plot the relation between the level of patience and the average years of schooling in a particular country.
- For high-income countries, we see a clearly positive relationship: the average level of patience increases with the length of schooling.
- However, for middle-income and low-income countries, we do not see a positive relationship in the aggregate.
- In fact, for Bangladesh there is a negative correlation ($r = -0.021$; $p = 0.19$) between years of schooling and patience if we look at the individual country level.

Figure 3: Relationship between years of schooling and patience, conditional on income level of a country



7. Conclusions

- The formation of economic preferences has become a major subject of examination in the economics literature in recent years (e.g., Heckman, 2006; Dohmen et al., 2012; Bauer et al., 2014; Almas et al., 2016; Alan et al., 2017; Falk et al., 2021).
- The topic has become so prominent for two reasons:
  - First, economic preferences, like time, risk, or social preferences, have been found to be very important for a subject's success in life (e.g., Burks et al., 2009; Mischel, 2014; Kosse and Tincani, 2020).
  - Second, given their importance, a new literature has started to investigate how policy interventions in schools (Alan and Ertac, 2018) or families (Kosse et al., 2020) can shape and influence the economic preferences of children and adolescents.
- For both reasons, it is important to understand how economic preferences are formed.

7. Conclusions (cont.)

- We have found that the economic preferences of mothers and fathers are in almost all cases positively and significantly related to their children's economic preferences.
- In almost all cases of economic preferences, the correlation between children and parents is equally strong for fathers and for mothers, clearly indicating that both parents are important in the formation of children's economic preferences.
- In the context of Bangladesh, our findings of equally strong relationships of mothers and fathers are also noteworthy because most mothers work at home as housewives and spend much more time with their children than fathers do.

7. Conclusions (cont.)

- Our joint analysis of how time, risk, and social preferences look like within families has yielded strong support for the existence of two clearly distinct clusters of families:
  - One cluster, covering about four out of five families, is characterized by relatively patient, risk tolerant and non-spiteful economic preferences of all family members.
  - The other cluster, applying to about one in five families, has members who are fairly impatient, risk averse, and have spiteful social preferences.
- Richer households are more likely to have more patient, more risk tolerant and less spiteful members.

7. Conclusions (cont.)

- Importantly, some of our results look different from well-known patterns from rich countries
  - Negative relationship between IQ (and schooling) and patience;
  - Negative influence of (mothers') education on being assigned to the cluster with more patient, more risk tolerant and more prosocial family members.
- It seems important to extend our knowledge of how economic preferences are formed and related to each other in poor countries.
- Better knowledge may ultimately help identifying children and families whose preferences are non-conducive to economic success.
- As such it might become important for designing policy interventions to promote a configuration of economic preferences that leads to long-term success in life (Alan and Ertac, 2018; Kosse et al., 2020).

Thank You!

Table A.9

back

Table: A9: Children's preferences and their relation to parental preferences

	No of patient choices	Lottery # picked	Spiteful	Egalitarian	Altruistic	Selfish
Parent's pref - father	0.039***	0.059	0.087**	0.070**	0.056*	0.098**
	(0.012)	(0.047)	(0.045)	(0.034)	(0.036)	(0.040)
Parent's pref - mother	0.049***	0.113**	0.353***	0.113**	0.104***	0.123***
	(0.012)	(0.049)	(0.052)	(0.051)	(0.047)	(0.037)
Observations	902	454	903	903	903	903
R2/ Pseudo-R2	0.056	0.028	0.352	0.025	0.039	0.098
Dist FE?	Yes	Yes	Yes	Yes	Yes	Yes
Father = Mother	0.599	0.444	0.001	0.510	0.450	0.641

Note: OLS coefficients reported in columns 1 and 2, Probit marginal effects reported in columns 3-6. Standard errors in parentheses are clustered at household level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A.10

back

Table: A.10: Interacting parent's gender and child's gender

	No of patient choices	Lottery # picked	Spiteful	Egalitarian	Altruistic	Selfish
Parent's pref. - Father	0.041**	0.033	0.109**	0.092**	0.052	0.123**
	(0.016)	(0.069)	(0.051)	(0.045)	(0.054)	(0.056)
Parent's pref. - Mother	0.055***	0.141*	0.386***	0.161**	0.054	0.094*
	(0.016)	(0.075)	(0.064)	(0.075)	(0.059)	(0.049)
Gender (girls= 1)	-0.155	-0.164	0.026	0.037	0.002	0.003
	(0.243)	(0.512)	(0.022)	(0.028)	(0.018)	(0.036)
Father's pref. × Boys	-0.009	0.091	-0.022	-0.045	0.017	-0.074
	(0.021)	(0.087)	(0.070)	(0.063)	(0.083)	(0.071)
Mother's pref. × Girls	-0.015	-0.058	-0.071	-0.136	0.074	0.061
	(0.021)	(0.097)	(0.065)	(0.106)	(0.092)	(0.064)
Observations	896	452	897	897	897	897
R2/ Pseudo-R2	0.149	0.079	0.429	0.078	0.041	0.173
Dist FE?	Yes	Yes	Yes	Yes	Yes	Yes
Father = Mother	0.577	0.314	0.005	0.436	0.976	0.707
Joint sig.	0.000	0.138	0.000	0.010	0.360	0.010

Notes: Standard errors in parentheses are clustered at household level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$