



**LAURA BREITKOPF
SHYAMAL CHOWDHURY
SHAMBHAVI PRIYAM
HANNAH SCHILDBERG-
HÖRISCH
MATTHIAS SUTTER**

**Discussion Paper
2024/9**

**DO ECONOMIC
PREFERENCES OF
CHILDREN PREDICT
BEHAVIOR?**

Do Economic Preferences of Children Predict Behavior?

Laura Breilkopf^{*} Shyamal Chowdhury^{†,‡} Shambhavi Priyam[§]
Hannah Schildberg-Hörisch^{*,‡,¶} Matthias Sutter^{*,||}

February 24, 2024

Abstract

We use novel data on nearly 6,000 children and adolescents aged 6 to 16 that combine incentivized measures of social, time, and risk preferences with rich information on child behavior and family environment to study whether children's economic preferences predict their behavior. Results from standard regression specifications demonstrate the predictive power of children's preferences for their prosociality, educational achievement, risky behaviors, emotional health, and behavioral problems. In a second step, we add information on a family's socio-economic status, family structure, religion, parental preferences and IQ, and parenting style to capture household environment. As a result, the predictive power of preferences for behavior attenuates. We discuss implications of our findings for research on the formation of children's preferences and behavior.

Keywords: social preferences, time preferences, risk preferences, experiments with children, origins of preferences, human capital, behavior

JEL classification: C91, D01

^{*}Max Planck Institute for Research on Collective Goods, Bonn, Germany

[†]University of Sydney, Australia

[‡]IZA Institute of Labor Economics, Bonn, Germany

[§]World Bank, Washington DC, US

[¶]Heinrich Heine University Düsseldorf (DICE), Germany

^{||}University of Cologne, Germany, and University of Innsbruck, Austria

We thank Sule Alan, Daniel Kamhöfer, Lukas Kiessling, Fabian Kosse, and Ulf Zölitz as well as participants of the M-BEPS 2019 conference for helpful comments. Financial support by the German Research Foundation (Deutsche Forschungsgemeinschaft, DFG) through grant SCHI-1377/1-1, project number 392529304, is gratefully acknowledged. We declare no competing financial interests. IRB approval (Heinrich Heine University Düsseldorf) was granted under study number 6212. Corresponding author: Laura Breilkopf (breilkopf@coll.mpg.de).

1 Introduction

Economic preferences are a key concept in economic theory and empirical research largely supports their predictive power for major life outcomes and behaviors. While the corresponding evidence is comprehensive for adults,¹ much less is known about their relevance for the behavior of children and adolescents. In childhood and adolescence, preferences emerge before they become more stable in adulthood (Heckman, 2007; Schildberg-Hörisch, 2018). Recently, our understanding of the formation of preferences in childhood and their measurement in incentivized experiments have made significant progress (see, e.g., Heckman, 2007; Sutter et al., 2013; Doepke and Zilibotti, 2017; Alan and Ertac, 2018; Kosse et al., 2020; Cappelen et al., 2020; Falk et al., 2021). We are thus now ready to move forward and explore the link between children’s preferences and field behavior.

First evidence points to an existing relation between economic preferences of children and adolescents and how they act. Impatience is associated with drinking and smoking behavior, adverse health outcomes like a higher body mass index, a lower propensity to save, and worse school performance (Castillo et al., 2011, 2019; Sutter et al., 2013). Risk averse teenagers are less likely to be overweight (Sutter et al., 2013), behave better at school, and are more likely to complete high school (Castillo et al., 2018). Importantly, such associations tend to persist as measures of economic preferences in childhood or adolescence have also been shown to predict adult outcomes (Borghans et al., 2008; Golsteyn et al., 2014).² However, it is not yet clear how robust these associations are and what exactly they reflect, especially given the still malleable and emerging nature of children’s preferences and these preferences’ relation to family environment.

This paper contributes to a better understanding of the link between children’s and adolescents’ preferences and their field behavior and goes beyond previous evidence in several respects. To begin with, we jointly elicit social preferences, time preferences, and risk preferences in incentivized exper-

¹Social preferences are related to cooperative behaviors, e.g., at the work place, donations, repayment of loans, and management of common pool resources (Karlán, 2005; Dohmen et al., 2009; Rustagi et al., 2010; Carpenter and Seki, 2011; Becker et al., 2012; Burks et al., 2016; Deming, 2017; Kosse and Tincani, 2020). Time preferences are linked to criminal behaviors, educational attainment, occupational success, income, wealth, and health outcomes (see, e.g., Bickel et al., 1999; Kirby et al., 1999; Ventura, 2003; DellaVigna and Paserman, 2005; Eckel et al., 2005; Chabris et al., 2008; Golsteyn et al., 2014; Cadena and Keys, 2015; Åkerlund et al., 2016; Dohmen et al., 2018). Risk preferences are associated with labor market success, health outcomes, investment decisions, addictive behaviors, and migration (Barsky et al., 1997; Hong et al., 2004; Bonin et al., 2007; Anderson and Mellor, 2008; Kimball et al., 2008; Jaeger et al., 2010; Dohmen and Falk, 2011; Dohmen et al., 2011; Von Gaudecker et al., 2011; Becker et al., 2012; Hsieh et al., 2017).

²A related literature on childhood temperament in psychology documents that childhood temperament does not only predict functioning in childhood, but that early childhood differences in temperament are also systematically related to a broad range of adult outcomes, possibly due to the existence of some continuity in temperament development from early childhood to early adulthood (Caspi, 2000; Caspi et al., 2003; Moffitt et al., 2011).

iments. This not only allows for providing first evidence on the predictive power of children’s social preferences for their behavior, but is also relevant as decisions typically involve more than one preference dimension. For example, addictive behaviors such as smoking, drinking, or gambling involve risk considerations, but also a trade-off between immediate and delayed gratification (Ida and Goto, 2009; Sutter et al., 2013). Moreover, our novel data cover nearly 6,000 children and their parents in Bangladesh and combine comprehensive measures of preferences with wide-ranging information on child behavior (prosociality, achievement tests, risky behaviors, emotional health, and behavioral problems) and household environment. Children and adolescents in our sample are between the ages 6 and 16, so we cover early primary school age up to the end of adolescence. This unique data set allows us to study within a unified framework whether preferences at a young age translate into observable behavior for many outcome dimensions at once.

A further exceptional feature of our data is that we elicit preferences and behaviors of whole families. What sets our paper apart from previous studies is our estimation of specifications that control for many characteristics of household environment even beyond basic socio-demographics, such as parental preferences and IQ, or parenting style. We hence take a step forward towards a more causal interpretation of the link between child preferences and outcomes. Many facets of household environment may be important for both preference formation and field behavior, among them socio-economic status,³ family structure,⁴ parents’ economic preferences,⁵ parenting style, parental time, monetary, and further investments in their children,⁶ parental values and religiosity,⁷ genetic contributions,⁸ and exposure to stress at the household level.⁹ For example, if risk-averse parents have more risk-averse children and at the same time more strongly restrict their children’s freedom of action, it is not clear how to interpret an observed correlation between children’s risk preferences and their risky behaviors in everyday life.

In a first step of our analysis, we use cross-sectional regression models comparable to those applied in previous work. Our results confirm and add to our knowledge on the predictive power of child preferences for behavior. We are the first to provide evidence on the predictive power of children’s

³Dohmen et al. (2012); Kosse and Pfeiffer (2012); Bauer et al. (2014); Almås et al. (2016); Falk et al. (2021)

⁴Detlefsen et al. (2018)

⁵Bisin and Verdier (2000); Dohmen et al. (2012); Kosse and Pfeiffer (2012); Bauer et al. (2014); Almås et al. (2016); Alan et al. (2017); Brenøe and Epper (2019); Falk et al. (2021); Chowdhury et al. (2022)

⁶Cunha and Heckman (2007); Guryan et al. (2008); Heckman (2008); Heckman and Mosso (2014); Falk and Kosse (2016); Doyle et al. (2017); Cobb-Clark et al. (2019); Falk et al. (2021)

⁷E.g., Brañas-Garza et al. (2014)

⁸E.g., Cesarini et al. (2009); Zyphur et al. (2009)

⁹E.g., Starcke and Brand (2012); Buchanan and Preston (2014); Haushofer and Fehr (2014)

social preferences and observe that children with more pronounced social preferences also show more prosocial behaviors in everyday life (e.g., helping others) and have less pronounced emotional and behavioral problems. Besides, we find that risk-averse children tend to engage in fewer risky behaviors (such as smoking or climbing on trees or the house roof) but have lower emotional health. In the outcome dimension, our results extend the predictive power of child preferences to domains such as emotional health and behavioral problems that have not been studied before. They are measured by the well-established Strength and Difficulties Questionnaire (SDQ) that is highly predictive of educational attainment, unemployment, mental health, and life satisfaction in later adulthood (Layard et al., 2019; Clark and Lepinteur, 2019).

In a second step, we further exploit our rich data to add information on household environment. We assume this information to be correlated with both children's preferences and their behavior. In particular, we include variables such as a family's socio-economic status, family structure, religion, parental preferences and IQ, and parenting style as explicit control variables to the baseline specifications. When thoroughly controlling for household environment, the predictive power of preferences for outcomes in general attenuates. Typically, regression coefficients of estimated associations go down in absolute size (by 11 to 65 percent). This frequently leads to reduced significance since standard errors do not change much across specifications.

Our findings have important implications. First, they inform the debate on how (much) children's preferences are related to their field behavior (Castillo et al., 2011, 2018, 2019; Sutter et al., 2013). This debate is only in its infancy and we contribute with novel data on nearly 6,000 children that are exceptionally broad both with respect to preferences and measures of behavior. Moreover, our results emphasize the importance of family and household environment for the formation of social, time, and risk preferences (see, e.g., Doepke and Zilibotti, 2017; Kosse et al., 2020; Falk et al., 2021). They thus relate to the literature on skill formation (see, e.g., Cunha and Heckman, 2007) that highlights childhood and adolescence as the crucial period for the formation of personality traits and economic preferences.

Taking a broader perspective, our findings raise the fundamental question what experimental measures of childhood preferences ultimately capture. They suggest that measures of children's and adolescents' preferences in part reflect household environment. In our view, this does not imply that concept and measurement of these preferences are redundant. Quite in contrast, our results underline that children's and adolescents' preferences are a valuable tool for the prediction of child behavior. If children's

preferences can predict field behavior precisely because they reflect manifold household characteristics that are hard to quantify comprehensively, we can consider them to be highly useful. Obviously, our findings also emphasize the importance of being careful in making causal claims in such endeavors.

The remainder of the paper is structured as follows. Section 2 discusses sampling and data. Hypotheses are outlined in section 3. Section 4 illustrates our empirical strategy and section 5 presents results. We discuss implications of our findings and conclude in section 6.

2 Data

Data collection took place in rural areas in Bangladesh, the world's eighth most populous country in which 63 percent of the population are living in rural areas.¹⁰

2.1 Sampling procedure and data collection

Data were collected in the districts Netrokona, Sunamganj, Chandpur, and Gopalganj from March to May 2018 with the help of a local, specialized survey firm. These districts represent four of the eight administrative divisions of the country. 11 subdistricts were chosen based on the availability of NGOs willing to collaborate (by implementing later payments to participants) and 150 villages were randomly drawn from these 11 subdistricts. In order to establish a new sample of families, the 150 villages were visited in 2018 and a public primary school suitable for sampling school children was chosen. Typically, there was one school per village and five students each were drawn from grades 2 to 5 via class lists, using a simple random sampling procedure. From 2018 onwards, we surveyed the 3,000 households of these newly sampled students, along with 1,001 households already sampled and interviewed in 2014/16 (see Chowdhury et al., 2014, 2022). Section A in the appendix contains further details on the sampling. Compared to Chowdhury et al. (2022), this paper exclusively uses novel data elicited in 2018 or later and newly elicited outcome variables, namely measures of children's prosocial behaviors, children's scores in achievement tests, a 16-item risky behaviors scale, as well as measures of emotional and behavioral problems. Most importantly, Chowdhury et al. (2022) do not consider any field behavior and how it may be related to economic preferences.

¹⁰Data from 2019. See United Nations country data: <http://data.un.org/en/iso/bd.html>. Last accessed on February 24, 2024.

A key aim of the data collection was to establish a large sample of families in which we measure both children’s and parents’ skills as comprehensively as possible.¹¹ We therefore elicited economic preferences (social, time, and risk preferences), personality traits, cognitive skills, and behaviors via paper-and-pencil interviewing, for up to four household members (one or two children aged 6 to 16 and their parents). In particular, we were able to elicit preferences for 5,989 children from 3,771 households. In a subsequent elicitation wave, we also collected data on children’s educational achievement.

We complement this extraordinarily rich data on skills of whole families with a questionnaire that mothers answered about their children and a general household survey. The comprehensive household questionnaire covered socio-demographics, income, expenditures, employment, land ownership, credits and savings, assets, health, and shocks. It was answered by either the household head or his/her spouse (whoever was the most knowledgeable person for the respective part). The mother questionnaire covered information on parenting style. For details on the parenting style measure and a complete list of items, see section D in the appendix. Moreover, mothers assessed their children’s strengths and difficulties as well as further personality traits (for children up to age 13).¹²

2.2 Experiments: social, time, and risk preferences

Children participated in a sequence of experiments designed to measure the three core dimensions of economic preferences: social, time, and risk preferences. Experimentally elicited preference measures have important advantages. On top of being incentivized, they are constructed from revealed preferences in well-defined and controlled contexts. This gives them a readily-interpretable metric and allows for a straightforward comparison across individuals.

To elicit preferences, we relied on well-established measurement tools that, in the case of time and risk preferences, have been used in developing countries before. We still carefully pre-tested them in our context and adapted them to the children’s ages. We used standardized control questions to verify that participating children understood the instructions.¹³

¹¹Moreover, during the school year 2019, we implemented a social and emotional learning program as a randomized, school-based intervention, that we do not analyze here. The paper at hand largely relies on pre-treatment data.

¹²Older children answered comparable scales themselves.

¹³Interviewers asked children in between (once for the social preferences game, four times for the time preferences game, and once for the risk preferences game) to repeat the explanations. Each time, the interviewer noted down whether the child understood the game after the first, second, or third explanation, or whether they did not understand the game at this point. We consider children who answered each of the control questions correctly after at most three explanations given by the interviewer as having understood a game. Out of the 5,989 children, 223 (662) [439] did not fully understand the rules of the games that we use to measure social (time) [risk] preferences after possibly repeated explanations. We exclude these children from our main analyses. 5,079 children understood all games.

The order of the experiments was randomly determined by rolling a die. Children were able to earn money or stars which were transformed into money after the experiments using age-specific exchange rates (one star’s value equals approximately half of children’s average weekly pocket money). Each child (and adult) received one star as a participation fee. All experiments took place in one-on-one settings in the families’ homes. The interviewers ensured that members from the same household could not influence each other’s decisions. Appendix section I provides the detailed experimental protocols.

Social preferences. To assess children’s social preferences, we followed an experimental protocol inspired by Fehr et al. (2008) and extended by Bauer et al. (2014). Children had to make four allocation choices dividing stars between themselves (x) and another child (y) of the same gender and roughly the same age, but unknown and unrelated (see Table 1). In each of the four choices (x,y), one option was the allocation (1,1), while the alternative allocation was designed to benefit one of the children (more).

For our analyses, we aggregate all games into a single measure: we count the number of stars a child allocated to herself and to the other child and then calculate the *share of stars the child has given to the other child* across all four games, i.e., $\frac{\text{stars given to other child}}{\text{stars given and kept}}$. This share varies between 0.29 and 0.58. Higher values indicate more pronounced social preferences.

Table 1: Social preferences experiment for children

Costly prosocial game	1 star for me	vs.	2 stars for me
	1 star for the other child (1,1)		0 stars for the other child (2,0)
Costless prosocial game	1 star for me	vs.	1 star for me
	1 star for the other child (1,1)		0 stars for the other child (1,0)
Costless envy game	1 star for me	vs.	1 star for me
	1 star for the other child (1,1)		2 stars for the other child (1,2)
Costly envy game	1 star for me	vs.	2 stars for me
	1 star for the other child (1,1)		3 stars for the other child (2,3)

Appendix section B displays the distributions of all variables capturing children’s economic preferences for our estimation sample. Figure B.1 refers to social preferences. Across games, the fraction of children who chose the more prosocial option lies in between 38 and 66 percent. For the two prosocial

games, these fractions are comparable to what Fehr et al. (2008) find in their sample of Swiss children between the ages 5 and 8 and Bauer et al. (2014) in their sample of Czech children aged 4 to 12. For the costly envy game, our results are in line with the observations of Fehr et al. (2008). The costless envy game is only played by Bauer et al. (2014), whose fraction of the egalitarian choice is, akin to our sample, close to 50 percent.

Time preferences. In order to measure children’s time preferences we followed a simple choice list approach, used by, e.g., Bauer et al. (2012) in a similar form for adults in rural India. Each child had to make six choices which consisted of trade-offs between smaller, sooner and larger, later rewards (see Table 2). The six choices were grouped into three choice sets, each consisting of two choices with the same time delay. The early payment took place either on the next day (choice sets 1 and 2) or in a month (choice set 3), the later payment in three weeks (choice set 1), three months (choice set 2), or four months (choice set 3), respectively. The choice sets were ordered randomly.

For our analyses, we construct three variables from the six choices. The variable *patience* reflects the total number of patient choices; it is a simple count of the larger, but later reward choices among all six choices and hence ranges from 0 to 6. Children are classified as *time-consistent* if they make identical choices for choice sets 2 and 3 with the same three-month delay, implying that their current and future discount rates are equal, and children are classified as time-inconsistent otherwise. Additionally, to disentangle time-consistency from extreme impatience, we refine our analysis by including an indicator (*never patient*) for whether a child has never made a patient choice in any of the choice sets (i.e., patience equals 0) as control. That way, we also account for the possibility that moving from being very impatient to showing some degree of patience is potentially different from the assumed linear impact when moving from making at least one patient choice to making up to six patient choices.

Table 2: Time preferences experiment for 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

Figure B.2 in the appendix displays the distributions of time preferences for our estimation sample. 64 percent of children are classified as time-consistent, which is comparable to previous findings among children (Alan and Ertac, 2018). Regarding patience, about a third of children made not a single patient choice, while the share of children with a positive number of patient choices (from 1 to 6) ranges from 5 to 18 percent and is typically around 10 percent.

Risk preferences. For the elicitation of children’s risk preferences we applied a setup originally designed by Binswanger (1980) and widely used in developing countries, e.g., by Bauer et al. (2012) in India. Each child had to choose one out of six gambles that yielded either a high or a low payoff with equal probability (see Table 3). The low payoff was decreasing and the high payoff was increasing for each successive gamble. Choices of higher gamble numbers were associated with a higher willingness to take risks: in gambles 1 to 5, the expected value increased jointly with the variance, and in gamble 6 only the variance increased in comparison to gamble 5.

For our analyses, we use an indicator for being *risk-averse* (choosing one of the first four gambles) as opposed to risk-neutral or risk-seeking (choosing gamble number 5 or 6). As a robustness check, we provide estimation results including indicators for being risk-neutral or risk-seeking instead of the risk-aversion dummy variable in the appendix (section H.3). Results remain similar.

Table 3: Risk preferences experiment for children (example for ages 10 to 11)

Age	Low amount (50% chance)	High amount (50% chance)	
10 to 11			
Gamble 1	25	25	} <i>risk-averse</i>
Gamble 2	22	48	
Gamble 3	20	60	
Gamble 4	15	75	
Gamble 5	5	95	} <i>risk-neutral</i>
Gamble 6	0	100	} <i>risk-seeking</i>

Figure B.3 in the appendix shows that 41 percent of children in our estimation sample are risk-averse. The other 59 percent are evenly distributed across being risk-neutral and risk-seeking. This distribution closely resembles the findings of Castillo (2020) who elicits risk preferences in a similar manner among 8-year-old Peruvian children and Falk et al. (2021) for 7- to 9-year-old German children (who use a different risk preferences game though).

Preference measures for adults. While children’s preferences are at the core of our analysis, we additionally measured parents’ preferences to grasp children’s everyday household environment as comprehensively as possible. Elicitation of preferences for adults followed very similar or even identical protocols as for children. Details and experimental protocols can be found in the appendix (sections C and I).

2.3 IQ

For children and their parents, we elicited measures of crystallized and fluid IQ, which together form overall IQ (Cattell, 1971). We measured fluid IQ using the standard progressive matrices, digit span, and symbol search tests of the well-established Wechsler Intelligence Scale for Children (WISC-IV) or the Wechsler Adult Intelligence Scale (WAIS-IV). For crystallized IQ, we used the word similarities test for children and the corresponding word meaning test for adults that are both subtests of the respective Wechsler Intelligence Scales (Wechsler, 2003).¹⁴ IQ is standardized to a mean of zero and standard deviation of one across our children sample or these children’s fathers and mothers, respectively.

2.4 Child outcome variables

For adults, preferences have been shown to predict key life outcomes such as cooperative behaviors, educational attainment, labor market success, health status, health-related behaviors, and life satisfaction (see footnote 1). We therefore collected similar and equally multifaceted information on child behavior, spanning prosocial behaviors, educational performance, risk-taking, as well as emotional and behavioral problems.

Prosociality. We make use of the prosociality scale of the well-established and widely used Strengths and Difficulties Questionnaire (SDQ) to measure the extent to which children behave prosocially, i.e., interact with others in a positive and cooperative way in their daily routine. Mothers rated five items related to their children’s prosocial behaviors on a three-point scale such as “Considerate of other people’s feelings” or “Shares readily with other children (treats, toys, pencils, etc.).” We followed the recommendation to use a parent- as opposed to child-rated version of the SDQ for children below the age of 11. To guarantee a uniform approach within our sample, we use the mother-rated version also for children aged 11 or above, an age range in which child and parent ratings are equally accepted. For

¹⁴The tests got adapted to the Bangladeshi context by local academics with expertise in the adaptation and use of WISC version IV (Professor Salim Hossain of the Dep. of Psychology, Dhaka University, and his team).

a complete list of the prosociality items see section E.1 in the appendix. Answers are combined with equal weighting into one scale. The variable is standardized to a mean of zero and standard deviation of one across our children sample.

Achievement tests. In order to elicit an objective measure of children’s educational attainment, we conducted achievement tests in the primary schools of our sample (i.e., for children up to age 12). The tests were developed in cooperation with local education professionals and covered Bangla (the nation’s language) and math skills that children should have acquired according to the curriculum. They lasted 60 minutes per subject and consisted of multiple choice questions and questions with written answers. The whole testing procedure, including marking the answers, was organized by externally hired staff.

The tests were conducted in December 2019, at the end of the school year 2019, in which we implemented a randomized, school-based intervention, a social and emotional learning program, in our sample. We therefore restrict our analysis of achievement test scores—the only post-intervention data we use—to children from schools in the control group to ensure that program participation cannot affect our estimates. To aggregate the test results, we standardize test scores for both subjects separately, average across these standardized Bangla and math test scores, and standardize the summary score again. Reassuringly, children’s IQ is predictive for their performance in the achievement tests, raising the trust in our measure of educational attainment.

Risky behaviors. For the purpose of this study, we developed a 16-item scale on behaviors that are considered to be risky in Bangladesh. The questions were developed in focus-group discussions with respondents similar to those in our sample and pre-tested in villages similar to our study villages. Section E.2 in the appendix contains the list of all items eliciting risky behaviors. Using standard questions from Western countries is often not appropriate or meaningful. We included, for example, the question “Do you smoke?” as a frequently used measure of risk-taking behavior, but nearly all children and adolescents answered “no.” Drinking alcohol, another popular indicator for risk-seeking behavior, is forbidden due to religious reasons. We therefore include items like “Do you eat pan/jorda/supari?” (stimulating substances similar to tobacco (betel nut) that cause health problems including oral cancers), “Do you jump from a tree/bridge/saqa/troller into a river or canal?,” or “Do you gamble/bet/play lottery?.” Following previous work (see, e.g., Sutter et al., 2013), we decided to ask children and adolescents themselves to answer questions related to risky behaviors. Mothers are unlikely to be perfectly informed about these types of behaviors.

For our analysis, we use the fraction of questions related to engaging in risky behaviors answered with “yes,” conditional on being answered. The variable is standardized to a mean of zero and standard deviation of one across our children sample. Risky behaviors were only elicited from age 10 onwards as several included questions are not suitable for younger children.

Emotional and behavioral difficulties. We use the two-scale division of the total difficulties score based on the Strengths and Difficulties Questionnaire (SDQ). The SDQ score captures emotional and behavioral difficulties and was originally developed by psychologists as a brief screening tool for mental health problems.¹⁵ In recent times, economists have frequently used the SDQ (Gupta and Simonson, 2010; Flèche, 2017; Cornelissen and Dustmann, 2019; Kühnle and Oberfichtner, 2020; Attanasio et al., 2020; Briole et al., 2020). Its predictive power for child psychiatric disorders as well as adult outcomes such as educational attainment, unemployment, mental health, and life satisfaction (Layard et al., 2019; Clark and Lepinteur, 2019) makes it a valuable outcome dimension.

The full SDQ score comprises the four subscores “emotional symptoms,” “peer problems,” “hyperactivity,” and “conduct problems” and was elicited asking mothers about their children. For each subscore, mothers rated five items on a three-point scale. Questions are referring to whether children are easily worried, often nervous or unhappy, how well they are socially embedded, how well children can concentrate, and whether they tend to have temper tantrums, lie, cheat, or steal (see section E.3 in the appendix for a complete list of items). Answers are combined with equal weighting into the four subscores. According to Goodman et al. (2010), for low-risk samples it can be advisable to split the full SDQ score into two broader dimensions, grouping the emotional and peer items into an “internalizing” subscale to measure emotional or mental health, and the hyperactivity and conduct items into an “externalizing” subscale which is referring to conspicuous behaviors. As Briole et al. (2020), we follow this approach to allow for a more differentiated mapping of preferences into emotional health and behavioral problems and discuss estimation results for the full SDQ score as a robustness check. The variables are standardized to a mean of zero and standard deviation of one across our children sample. Higher values indicate more emotional or behavioral problems and hence a more negative outcome.

¹⁵Its reliability and validity has been confirmed in numerous studies across Europe, Asia, Australia, and South America (see, e.g., Hoosen et al., 2018, for an extensive overview). Bangladesh received special attention as data collected in its capital Dhaka have played an important role in documenting that the SDQ can be purposefully applied and interpreted in different cultural settings (Goodman et al., 2000; Mullick and Goodman, 2001).

2.5 Sample characteristics

Tables F.1 and F.2 in appendix section F display relevant descriptives and household characteristics of our sample. The number of observations differs slightly across variables depending on the survey part and availability of household members to be interviewed. Since most children were sampled via primary schools, mean age of child participants is 10 years and more than 95 percent are able to read and write. The sample is well-balanced in terms of gender. On average, yearly household income is around 197,374 Taka (approx. 1,800 USD). 92 percent of households have an electricity connection. Fathers' mean age is 43, mothers' mean age is 36. 55 percent of fathers and 65 percent of mothers can read and write. On average, 3.5 children are living in the household and 20 percent of households have a senior living with the family. About 82 percent of households are Muslim households, the others are mainly Hindu.

3 Hypotheses

Reflecting the three core dimensions of economic preferences, we formulate hypotheses that link social, time, and risk preferences to the behavior of children and adolescents.

HYPOTHESIS 1. Children with more pronounced social preferences exhibit more prosocial behaviors.

While the above hypothesis seems intuitive, we are not aware of any empirical evidence linking experimentally elicited social preferences of children and adolescents to their field behavior. For adults, social preferences have been shown to predict prosocial behaviors and outcomes such as donating, volunteering time, assisting strangers, helping friends and relatives, or family ties (Falk et al., 2018).

HYPOTHESIS 2. More patient and time-consistent children score higher on educational achievement tests.

In a wide range of studies from many disciplines, researchers have established an association between non-cognitive skills and academic outcomes for adults (Bowles and Gintis, 2002; Heckman et al., 2006; Lleras, 2008). Patience and self-control have attracted particular attention regarding educational outcomes. Golsteyn et al. (2014), for example, link adolescents' time preferences to school performance. Castillo et al. (2019) show that higher discount rates are associated with a lower probability of graduating from high school. Moreover, children's time preferences are related to future disciplinary referrals

(Castillo et al., 2011; Alan and Ertac, 2018) which in turn predict high school graduation (Rumberger, 1995). We therefore expect time preferences to predict achievement test scores.

HYPOTHESIS 3. More risk-averse children engage in fewer risky behaviors.

It is straightforward to assume that more risk-averse children are more likely to refrain from risky behaviors. There is not much empirical evidence, however, linking children's risk preferences and their field behavior. Sutter et al. (2013) show for Austrian adolescents that risk-aversion is a significant predictor of body mass index but not of smoking, alcohol consumption, saving behavior, or conduct at school. Using data on 8th graders from the US, Castillo et al. (2018) find that more risk-averse children are less likely to have future disciplinary referrals and more likely to complete high school. We add to these studies by investigating the link between risk preferences and a comprehensive measure of risky behaviors.

HYPOTHESIS 4. All economic preferences have predictive power for emotional and behavioral difficulties. The more pronounced children's social preferences are, the fewer difficulties they exhibit both with respect to the internalizing and externalizing dimension of the SDQ. More patient and time-consistent children exhibit less behavioral difficulties measured by the SDQ externalizing subscale. More risk-averse children have fewer conduct problems picked up by the externalizing subscale, but more emotional problems captured by the internalizing subscale.

We expect more prosocial children to exhibit less difficulties, both with respect to the internalizing and externalizing dimension of the SDQ. Peer problems (being solitary, not being liked, being picked on, or bullied) and conduct problems (being disobedient, fighting with or bullying other children, lying, cheating, or stealing) may both be less likely for children with more pronounced social preferences. Besides, since patience and time-consistency are closely related to higher self-control, we expect more patient and time-consistent children to have fewer behavioral difficulties (Moffitt et al., 2011), with children exhibiting less hyperactivity, suffering less from hot tempers, and making less myopic decisions such as cheating or stealing. Studies linking impatience to criminal behaviors or poor school conduct (e.g., Castillo et al., 2011; Åkerlund et al., 2016) support this notion. For risk preferences, expectations are ambiguous. Following the idea that risk-averse individuals are less likely to get into conflict with rules and other children (as the study by Castillo et al., 2018, suggests), they should also

score lower on the externalizing subscale of the SDQ, i.e., display less behavioral problems. However, risk-aversion might as well go hand in hand with emotional symptoms (being worried, nervous, easily losing confidence, easily being scared), leading to higher values on the internalizing subscale. Despite the strong predictive power of the SDQ for adult outcomes (Layard et al., 2019; Clark and Lepinteur, 2019), we are not aware of any previous work that investigates the predictive power of children’s economic preferences for the SDQ.

4 Empirical strategy

Analyses are conducted by estimating the following OLS regression model:

$$y_{ij} = \alpha + \beta_P P_{ij} + \beta_C C_{ij} + \beta_X X_{ij} + \beta_H H_j + \varepsilon_{ij} \quad (1)$$

where y_{ij} is the outcome (prosociality, achievement test scores, risky behaviors, or emotional and behavioral difficulties) of individual i in family j , P_{ij} is the vector of a child’s social, time, and risk preferences, C_{ij} captures cognitive skills, i.e., IQ, X_{ij} is a vector of exogenous control variables (gender and age fixed effects (age FE)), and ε_{ij} is the error term. H_j is a vector of household environment variables that we include in a set of broader specifications but omit in the baseline regressions. It comprises household socio-demographics (income, parents’ age and literacy, number of siblings, whether a grandparent is living in the household, whether the household has an electricity connection, whether it is a Muslim household), parents’ preferences (social, time, and risk preferences, analogous to children’s preferences), parents’ IQ and parenting style (six dimensions: emotional warmth, inconsistent parenting, monitoring, negative communication, psychological control, strict control). Section G in the appendix provides details on the exact definitions of the household environment variables. For all specifications, standard errors are clustered at the village level to reflect that families were sampled from randomly drawn villages.

5 Results

In a first step, section 5.1 follows previous work by presenting baseline regressions of child behavior on preferences as well as IQ, gender, and age FE (with age 6 or 10 as omitted base category, depending on the outcome variable’s lower age range) to investigate the predictive power of children’s preferences

for their field behavior. We then go beyond existing work in section 5.2 by including rich household environment variables in our specifications.

5.1 Baseline specifications

Results for prosociality, achievement test scores, and risky behaviors are displayed in columns (1), (3), and (5) of Table 4, and those for the internalizing and externalizing behavior scales in columns (1) and (3) of Table 5. They contain OLS regressions of the five outcome variables on our key explanatory variables: social, time, and risk preferences. Coefficients of main explanatory variables of interest for each outcome (cf. section 3 on hypotheses) are printed in bold. Additionally, we are controlling for cognitive skills (IQ) as well as basic exogenous variables that are unrelated to household environment (gender and age fixed effects¹⁶).

We are the first to connect social preferences and field behavior of children and adolescents. An increase in the share of stars given to the other child by 10 percentage points is associated with a 6 percent of a standard deviation higher prosociality score as well as 6 and 9 percent of a standard deviation lower SDQ scores in the internalizing and externalizing dimension, respectively. Hence, as hypothesized, more pronounced social preferences are positively associated with prosocial behaviors and negatively related to emotional and behavioral problems. Besides, children with more pronounced social preferences perform significantly better on educational achievement tests and engage less in risky behaviors.

Time preferences are not significantly associated with educational achievement. This contrasts expectations based on previous findings in richer, Western countries. Recall, however, that our data originate from Bangladesh and that there is very little evidence about the patterns of economic preferences in such countries. Actually, the Global Preference Survey by Falk et al. (2018) reveals as well that Bangladesh belongs to the about one-fourth of 76 covered countries in the world in which adults' patience is not predictive of education outcomes.¹⁷ Patience is, again surprisingly, positively associated with risky behaviors and behavioral problems, while time-consistent children tend to have less behavioral problems, just as hypothesized. The *never patient* indicator variable that captures extreme impatience (also to separate it from the time-consistency indicator) is not predictive of the outcomes under consideration.

¹⁶Including age and age² instead does not change our results.

¹⁷Specifically, the upper right panel of Figure 7 in the online appendix of Falk et al. (2018) shows an estimated coefficient of -0.021 for the relation between standardized patience and education (two-sided test: $p = 0.19$).

Table 4: Regressions of PROSOCIALITY, ACHIEVEMENT TEST SCORES, and RISKY BEHAVIORS on children’s economic preferences in baseline vs. enriched household environment (HH env) specifications

	PROSOCIALITY ^{†,‡}		ACHIEVEMENT TESTS ^{†,‡}		RISKY BEHAVIORS ^{†,‡}	
	(1) Baseline	(2) HH env	(3) Baseline	(4) HH env	(5) Baseline	(6) HH env
Preferences[†]						
share of stars given	0.632*** (0.198)	0.491** (0.198)	1.271** (0.533)	1.063* (0.582)	-0.662** (0.272)	-0.204 (0.286)
patience	0.019 (0.012)	0.027** (0.012)	-0.029 (0.029)	-0.035 (0.035)	0.032** (0.014)	0.026* (0.015)
time-consistent	0.016 (0.042)	0.002 (0.041)	-0.083 (0.104)	-0.075 (0.114)	-0.021 (0.043)	-0.007 (0.041)
never patient	0.013 (0.066)	0.006 (0.069)	0.151 (0.157)	0.088 (0.185)	-0.038 (0.074)	-0.011 (0.078)
risk-averse	0.119*** (0.033)	0.071** (0.029)	-0.042 (0.079)	-0.000 (0.093)	-0.068* (0.034)	-0.052 (0.036)
<i>p</i> -value joint significance						
time preferences	0.264	0.018	0.115	0.328	0.000	0.028
all preferences	0.000	0.000	0.019	0.209	0.000	0.036
Cognitive skills^{†,‡}						
IQ	0.141*** (0.022)	0.033 (0.020)	0.238*** (0.058)	0.240*** (0.064)	-0.144*** (0.024)	-0.099*** (0.024)
Control variables: gender and age (FE)^{††}						
female	0.094***	0.112***	0.303***	0.307***	-0.828***	-0.835***
age 6	<i>base</i>	<i>base</i>	<i>base</i>	<i>base</i>		
age 7	0.229***	0.080	0.191	0.142		
age 8	0.309***	0.189**	0.149	0.246		
age 9	0.270***	0.129*	0.170	0.236		
age 10	0.372***	0.253***	0.173	0.351	<i>base</i>	<i>base</i>
age 11	0.425***	0.293***	0.191	0.306	-0.088	-0.019
age 12	0.497***	0.304***	0.001	-0.103	-0.144***	-0.145***
age 13	0.575***	0.389***			-0.190***	-0.088*
age 14	0.659***	0.481***			-0.365***	-0.301***
age 15	0.653***	0.507***			-0.437***	-0.386***
age 16	0.598***	0.445***			-0.553***	-0.435***
Household environment (HH env)^{‡‡}						
socio-demographics	X	✓	X	✓	X	✓
<i>p</i> -value joint significance		0.185		0.599		0.129
parents’ preferences	X	✓	X	✓	X	✓
<i>p</i> -value joint significance		0.000		0.851		0.001
parents’ IQ	X	✓	X	✓	X	✓
<i>p</i> -value joint significance		0.000		0.623		0.001
parenting style	X	✓	X	✓	X	✓
<i>p</i> -value joint significance		0.000		0.649		0.000
Constant						
constant	-0.841***	-0.247	-0.894***	-1.488*	0.866***	0.034
Observations	4,837	4,072	607	511	2,979	2,425
R^2	0.037	0.194	0.101	0.127	0.221	0.305
adj. R^2	0.034	0.184	0.081	0.046	0.218	0.292
F	8.906	14.313	4.786	3.345	65.963	31.254

Notes: Standard errors (in parentheses) are clustered at village level for all specifications. [†]Outcomes, preferences, and cognitive skills measures are defined as described in sections 2.2-2.4. [‡]Prosociality, achievement test results, risky behaviors, and IQ are standardized to a mean of zero and standard deviation of one across all available observations in our children sample. ^{††}Female is an indicator for being a girl, age is measured in years and included as fixed effects (FE), i.e., in the form of dummy variables for each age except the base category. ^{‡‡}Household (HH) socio-demographics comprise HH income, parents’ age and literacy, the number of siblings in the HH, whether a senior is living in the HH, whether the HH has an electricity connection, and religion; parents’ preferences and IQ comprise variables analogous to children’s measures (see sections 2.2 and 2.3 as well as section C in the appendix); parenting style comprises the six dimensions emotional warmth, inconsistent parenting, monitoring (intensity), negative communication, psychological control, and strict control as described in appendix section D. All columns display OLS regressions. Coefficients of main explanatory variables of interest for each outcome (cf. section 3 on hypotheses) are printed in bold. Significance at * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 5: Regressions of SDQ INTERNALIZING (emotional problems) and EXTERNALIZING (behavioral problems) SUBSCALES on children’s economic preferences in baseline vs. enriched household environment (HH env) specifications

	SDQ INTERNALIZING SCALE ^{†,‡}		SDQ EXTERNALIZING SCALE ^{†,‡}	
	(1) Baseline	(2) HH env	(3) Baseline	(4) HH env
Preferences[†]				
share of stars given	-0.638** (0.246)	-0.269 (0.199)	-0.866*** (0.235)	-0.511*** (0.188)
patience	-0.004 (0.013)	-0.013 (0.012)	0.026** (0.013)	0.009 (0.012)
time-consistent	-0.079 (0.048)	-0.042 (0.049)	-0.075* (0.042)	-0.049 (0.041)
never patient	-0.075 (0.066)	-0.095 (0.072)	0.049 (0.068)	0.012 (0.068)
risk-averse	0.056* (0.032)	0.050 (0.030)	-0.004 (0.028)	0.000 (0.029)
<i>p</i> -value joint significance				
time preferences	0.009	0.036	0.036	0.299
all preferences	0.001	0.034	0.000	0.013
Cognitive skills^{†,‡}				
IQ	-0.155*** (0.024)	-0.075*** (0.023)	-0.129*** (0.022)	-0.042** (0.020)
Control variables: gender and age (FE)^{††}				
female	0.018	0.019	-0.227***	-0.231***
age 6	<i>base</i>	<i>base</i>	<i>base</i>	<i>base</i>
age 7	-0.103	0.066	-0.299***	-0.136*
age 8	-0.028	0.027	-0.225***	-0.142*
age 9	-0.085	0.033	-0.247***	-0.118
age 10	-0.108	0.013	-0.332***	-0.217***
age 11	-0.224**	-0.059	-0.421***	-0.257***
age 12	-0.287***	-0.108	-0.503***	-0.335***
age 13	-0.306***	-0.103	-0.520***	-0.332***
age 14	-0.447***	-0.236***	-0.756***	-0.568***
age 15	-0.409***	-0.209**	-0.709***	-0.569***
age 16	-0.436***	-0.132	-0.779***	-0.599***
Household environment (HH env)^{††}				
socio-demographics	✗	✓	✗	✓
<i>p</i> -value joint significance		0.184		0.001
parents’ preferences	✗	✓	✗	✓
<i>p</i> -value joint significance		0.207		0.000
parents’ IQ	✗	✓	✗	✓
<i>p</i> -value joint significance		0.038		0.359
parenting style	✗	✓	✗	✓
<i>p</i> -value joint significance		0.000		0.000
Constant				
constant	0.546***	-0.070	0.895***	0.347
Observations	4,837	4,072	4,837	4,072
<i>R</i> ²	0.035	0.243	0.055	0.231
adj. <i>R</i> ²	0.031	0.234	0.051	0.222
<i>F</i>	8.410	13.404	17.628	16.596

Notes: Standard errors (in parentheses) are clustered at village level for all specifications. [†]Outcomes, preferences, and cognitive skills measures are defined as described in sections 2.2-2.4. [‡]SDQ subscales and IQ are standardized to a mean of zero and standard deviation of one across all available observations in our children sample. ^{††}Female is an indicator for being a girl, age is measured in years and included as fixed effects (FE), i.e., in the form of dummy variables for each age except the base category. ^{†††}Household (HH) socio-demographics comprise HH income, parents’ age and literacy, the number of siblings in the HH, whether a senior is living in the HH, whether the HH has an electricity connection, and religion; parents’ preferences and IQ comprise variables analogous to children’s measures (see sections 2.2 and 2.3 as well as section C in the appendix); parenting style comprises the six dimensions emotional warmth, inconsistent parenting, monitoring (intensity), negative communication, psychological control, and strict control as described in appendix section D. All columns display OLS regressions. Coefficients of main explanatory variables of interest for each outcome (cf. section 3 on hypotheses) are printed in bold. Significance at **p* < 0.10, ***p* < 0.05, ****p* < 0.01.

Being risk-averse instead of risk-neutral or risk-seeking comes along with a 7 percent of a standard deviation reduction in the fraction of risky behaviors children engage in ($p < 0.1$). Thus, pursuant to our hypothesis, children's risk-aversion is accompanied by lower risk-taking behavior in everyday life. This adds to the rather scarce and mixed empirical evidence linking children's risk preferences and field behavior (Sutter et al., 2013; Castillo et al., 2018). Also, risk-averse children score 12 percent of a standard deviation higher on the prosociality scale and 6 percent of a standard deviation higher on the internalizing SDQ scale ($p < 0.1$) than risk-neutral or risk-seeking children, and thus, just as expected, tend to show more emotional struggles such as being worried, nervous, or easily scared.

Finally, IQ is predictive of all outcome measures and higher IQ scores are associated with more favorable outcomes throughout—in line with previous evidence that IQ is a strong indicator for a variety of outcomes such as school performance (Reynolds et al., 2010; Almlund et al., 2011; Humphries and Kosse, 2017) or later adult life outcomes (Strenze, 2007; Borghans et al., 2008; Golsteyn et al., 2014).

In sum, in the standard baseline specifications, child preferences have predictive power for a broad range of behaviors.¹⁸ Also, all preferences jointly have predictive power for all behaviors under consideration. Our findings thus extend the scarce existing results on the link between children's preferences and behavior to a much broader set of outcome variables than those studied previously, using a large sample of children that covers primary school age to late adolescence. Measuring all three main domains of economic preferences comprehensively, we can incorporate multiple preference domains in joint regressions to control for possibly confounding effects of social, time, and risk preferences in the predictive power of single preferences for field behaviors. Moreover, apart from providing novel results on the relation between preferences and emotional and behavioral problems, we are the first to add evidence regarding the predictive power of children's social preferences. They turn out to be particularly strongly associated with manifold outcome dimensions that range from prosociality and educational attainment to measures of emotional health and behavioral problems.

5.2 Controlling for household environment

Omitted variable bias is likely to affect the estimated associations between children's preferences and behavior. Given the observed predictive power of children's preferences, it is difficult to judge to which

¹⁸Running (ordered) logit and probit regressions for suitable outcome representations such as using raw scores for prosociality, SDQ, and SDQ subscales leads to similar results.

extent preferences cause field behavior and to which extent both measured preferences and field behavior correlate with the same omitted environmental factors.

Exploiting our comprehensive data set, we proceed by presenting suggestive evidence that this source of bias can be reduced by controlling for measurable household environment facets that may be important for both preference formation and field behavior. To characterize children's household environment comprehensively, we control for family structure by including the number of siblings and whether a senior is living in the household, for their parents' age and literacy, for household income and whether the household has an electricity connection reflecting socio-economic status and living conditions, for religion, for their parents' preferences and IQ, and parenting style. Tables 4 and 5 display these enriched household environment regression specifications in columns (2), (4), and, in case of Table 4, (6). Reduced numbers of observations are due to missing values in single variables added to describe household environment (see also the notes to Table G.1).

The main take-away is that we observe attenuation tendencies for all previously significant preference coefficients, suggesting that some of the predictive power of children's preferences reflects that they are picking up household environment. Coefficients for previously significant preference measures decrease by between 11 and 65 percent, turning many coefficients insignificant. At a 95 percent significance level, only social and risk preferences remain significant predictors for prosociality, and only social preferences for behavioral problems. Comparisons of significance are straightforward in our context. Standard errors of estimated preferences and skills coefficients hardly change between specifications. There is, however, a considerable jump in explained variance when adding household environment variables as controls.

It is also worth noting that, when controlling for household environment variables, coefficients of IQ are affected in a similar way as those of economic preferences. Except for achievement test results, which are hardly associated with any preference measure but only and steadily with IQ, IQ coefficients get much smaller as well (up to being reduced to a quarter of their original size).

Table G.1 in appendix section G displays all estimated coefficients. With the exception of achievement test scores, parenting style is highly predictive, often much more than socio-demographics or parental IQ and preferences. Depending on the outcome measure, a change in a single parenting style dimension by one standard deviation can have an impact several times as high as a one standard de-

variation change in child IQ.¹⁹ Assuming that household environment shapes a child's personality and behavior, it is plausible that parenting style, i.e., the atmosphere and direct reactions to attitudes and actions, is of great importance for children's and adolescents' behavior. A child's socio-economic status (his or her parents' income and education) is mostly insignificant. Father's IQ significantly relates to his child's prosociality, risky behaviors, and emotional problems, the mother's IQ to the first and third. Father's and mother's preferences seem equally predictive of children's behavior and the predictive power of parental preferences is similar to that of parental IQ. We refrain from further in-depth interpretations here as household environment variables essentially serve as controls for the relations of interest between children's economic preferences and field behavior.

5.3 Robustness checks

We check the robustness of our findings by modifying (i) our regression samples and (ii) our measures for preferences and field behavior.

(i) Adjusted regression samples. Since understanding of experiments is crucial to reliably infer underlying preferences, we restrict our sample to children who have understood all games according to the control questions (see footnote 13) in our main regressions. As a robustness check, we re-run regressions including children who have not completely understood either single games or all games (see appendix Tables H.1, H.2, and H.3). In general, adding different groups of children (varying in how many and which games they have understood) does not qualitatively change our results. Also, samples do not differ systematically in observed characteristics (see appendix Table H.4). For a more thorough discussion, please see section H.1. Besides, including a broader set of household environment variables into our regressions leads to a reduction in the number of observations due to missing values in single variables. To ensure that it is not the different sample composition that drives our results, we repeat our baseline regressions with the sample of children for whom we have complete information on household environment (see appendix Tables H.5 and H.6). Further, we compare regression samples from baseline and household environment specifications in whether they differ in their mean preferences, IQ, gender composition, age, or field behavior (see appendix Table H.7). Overall, regression results re-

¹⁹For example, a one standard deviation increase in emotional warmth increases a child's prosociality by 20, emotional health (SDQ internalizing subscale) by 19, and conduct (SDQ externalizing subscale) by 17 percent of a standard deviation. Increasing psychological control by one standard deviation reduces emotional health by 37 and conduct by 29 percent of a standard deviation. A one standard deviation higher IQ, in comparison, increases emotional health by 8 and conduct by 4 percent of a standard deviation.

main similar with the exception of how time preferences relate to behavioral problems: their predictive power vanishes in the smaller sample of children for whom we have complete information on household environment. However, changes in coefficients are small and both samples are not significantly different in basic characteristics, including economic preferences and field behavior. For more details, please see section H.2. Overall, our conclusions remain robust when adjusting regression samples.

(ii) Modified preferences and outcome measures. In appendix section H.3, we also use a more nuanced measure to capture risk preferences. Here (see Tables H.8 and H.9), we distinguish between risk-averse, risk-neutral, and risk-seeking children instead of using a single binary indicator variable *risk-averse* only. We also run regressions using the full SDQ score instead of its two subscales for internalizing and externalizing behavior (see Table H.10 in appendix section H.4). Our conclusions are largely robust and results are not more enlightening than for our main analyses.

6 Conclusion

This study provides several important insights for a better understanding of the relation between children's and adolescents' economic preferences and their behavior. Using standard cross-sectional specifications, we first confirm and extend previous findings that establish the predictive power of children's preferences for their field behavior. We thereby rely on novel data of nearly 6,000 children, covering the whole age range from primary school age to the end of adolescence. Our data encompass incentivized experimental measures of social, time, and risk preferences as well as manifold outcome measures of field behavior. In contrast to earlier studies, this allows for a comprehensive investigation of the link between all key preference dimensions and various important child behaviors within a unified framework. We provide first evidence on the considerable predictive power of children's social preferences. In particular, we find that children with more pronounced social preferences also behave in a more prosocial manner in their everyday life, engage in fewer risky behaviors, and display fewer emotional and behavioral problems. Additionally, our baseline findings confirm that children's risk preferences predict risky behaviors.

We proceed by exploiting another exceptional feature of our data, the extensive set of variables measuring household environment. Explicitly controlling for household characteristics such as socio-demographics, parents' preferences and IQ, as well as their parenting style leads to attenuation tendencies for the estimated link between child preferences and behavior.

Our findings hold broad significance. Previous research has shown that household environment matters for both preference formation (Delaney and Doyle, 2012; Bauer et al., 2014; Angerer et al., 2015; Alan et al., 2017; Doepke and Zilibotti, 2017; Cobb-Clark et al., 2019; Kosse et al., 2020; Falk et al., 2021) and child outcomes (Currie, 2001; Bradley and Corwyn, 2002; Case et al., 2002; Currie and Moretti, 2003; Ruhm and Waldfogel, 2012; Aizer and Currie, 2014; Heckman and Mosso, 2014). In that sense, our results that the predictive power of childhood preferences decreases when controlling for household environment may be in line with expectations. However, they firmly demonstrate the importance of finding ways to comprehensively measure family environment when studying the development of children's preferences and behavior. This is inherently difficult especially in quantitative surveys.²⁰ Knowing that family environment is connected to both children's preferences and behavior underlines findings such as the importance of socio-economic status (Falk et al., 2021) regarding children's skills and valuably contributes to the debate on how (much) children's preferences are related to their field behavior (Castillo et al., 2011, 2018, 2019; Sutter et al., 2013).

Our findings also raise the fundamental question what experimental measures of childhood preferences ultimately capture. They suggest that measures of children's and adolescents' preferences in part reflect household environment. Does this make childhood preferences a dispensable concept and recent advances in their measurement (Sutter et al., 2013, 2019) redundant? If children's preferences have predictive power precisely because they reflect manifold household characteristics that are difficult to quantify such as everyday within-family interaction patterns or family members functioning as role models they are helpful in predicting field behavior. Prediction is conducive, e.g., when exploring new contexts or identifying children at risk.

In contrast to the malleable and still emerging preferences of children and adolescents, adult preferences are assumed to be largely stable (Schildberg-Hörisch, 2018) and less responsive to family and social environment. It would thus be interesting to investigate in future research to which extent the predictive power of adult preferences for life outcomes decreases when controlling for household and social environment in a similarly comprehensive manner.

²⁰There exists increasingly more empirical evidence that the social environment beyond the family also plays a significant role in shaping children's preferences. For recent contributions, see Alan and Ertac (2018) for a school-based intervention that boosted patience, Kosse et al. (2020) for the effect of an out-of-school mentoring program and Cappelen et al. (2020) for the effect of early education on social preferences. Rodríguez-Planas (2012) and Kautz et al. (2014) provide overviews on mentoring programs and childhood interventions and their causal impact on children's non-cognitive skills. It is much more difficult to introduce exogenous variation to most aspects of family environment to provide comparable evidence here.

7 Bibliography

- Aizer, A. and Currie, J. (2014). The Intergenerational Transmission of Inequality: Maternal Disadvantage and Health at Birth. *Science*, 344(6186):856–861.
- Åkerlund, D., Golsteyn, B. H., Grönqvist, H., and Lindahl, L. (2016). Time Discounting and Criminal Behavior. *Proceedings of the National Academy of Sciences*, 113(22):6160–6165.
- Alan, S., Baydar, N., Boneva, T., Crossley, T. F., and Ertac, S. (2017). Transmission of Risk Preferences from Mothers to Daughters. *Journal of Economic Behavior & Organization*, 134:60–77.
- Alan, S. and Ertac, S. (2018). Fostering Patience in the Classroom: Results from Randomized Educational Intervention. *Journal of Political Economy*, 126(5):1865–1911.
- Almås, I., Cappelen, A. W., Salvanes, K. G., Sørensen, E. Ø., and Tungodden, B. (2016). Willingness to Compete: Family Matters. *Management Science*, 62(8):2149–2162.
- Almlund, M., Duckworth, A. L., Heckman, J. J., and Kautz, T. D. (2011). Personality Psychology and Economics. In Hanushek, E. A., Machin, S., and Woessmann, L., editors, *Handbook of the Economics of Education*, volume 4, pages 1–181. Elsevier.
- Anderson, L. R. and Mellor, J. M. (2008). Predicting Health Behaviors With an Experimental Measure of Risk Preference. *Journal of Health Economics*, 27(5):1260–1274.
- Angerer, S., Glätzle-Rützler, D., Lergetporer, P., and Sutter, M. (2015). Donations, Risk Attitudes and Time Preferences: A Study on Altruism in Primary School Children. *Journal of Economic Behavior & Organization*, 115:67–74.
- Attanasio, O., Blundell, R., Conti, G., and Mason, G. (2020). Inequality in Socio-Emotional Skills: A Cross-Cohort Comparison. *Journal of Public Economics*, 191:104171.
- Barsky, R. B., Juster, F. T., Kimball, M. S., and Shapiro, M. D. (1997). Preference Parameters and Behavioral Heterogeneity: An Experimental Approach in the Health and Retirement Study. *Quarterly Journal of Economics*, 112(2):537–579.
- Bauer, M., Chytilová, J., and Morduch, J. (2012). Behavioral Foundations of Microcredit: Experimental and Survey Evidence from Rural India. *American Economic Review*, 102(2):1118–1139.
- Bauer, M., Chytilová, J., and Pertold-Gebicka, B. (2014). Parental Background and Other-Regarding Preferences in Children. *Experimental Economics*, 17(1):24–46.
- Becker, A., Deckers, T., Dohmen, T., Falk, A., and Kosse, F. (2012). The Relationship Between Economic Preferences and Psychological Personality Measures. *Annual Review of Economics*, 4:453–478.
- Bickel, W. K., Odum, A. L., and Madden, G. J. (1999). Impulsivity and Cigarette Smoking: Delay Discounting in Current, Never, and Ex-Smokers. *Psychopharmacology*, 146(4):447–454.
- Binswanger, H. P. (1980). Attitudes Toward Risk: Experimental Measurement in Rural India. *American Journal of Agricultural Economics*, 62(3):395–407.
- Bisin, A. and Verdier, T. (2000). “Beyond the Melting Pot”: Cultural Transmission, Marriage, and the Evolution of Ethnic and Religious Traits. *Quarterly Journal of Economics*, 115(3):955–988.
- Bonin, H., Dohmen, T., Falk, A., Huffman, D., and Sunde, U. (2007). Cross-Sectional Earnings Risk and Occupational Sorting: The Role of Risk Attitudes. *Labour Economics*, 14(6):926–937.
- Borghans, L., ter Weel, B., and Weinberg, B. A. (2008). Interpersonal Styles and Labor Market Outcomes. *The Journal of Human Resources*, 43(4):815–858.
- Bowles, S. and Gintis, H. (2002). Schooling in Capitalist America Revisited. *Sociology of Education*, 75(1):1–18.
- Brañas-Garza, P., Espín, A. M., and Neuman, S. (2014). Religious Pro-Sociality? Experimental Evidence from a Sample of 766 Spaniards. *PLoS ONE*, 9(8):e104685.
- Bradley, R. H. and Corwyn, R. F. (2002). Socioeconomic Status and Child Development. *Annual Review of Psychology*, 53:371–399.
- Brenøe, A. A. and Epper, T. (2019). Parenting Values Moderate the Intergenerational Transmission of Time Preferences. IZA Discussion Paper No. 12710.

- Briole, S., Le Forner, H., and Lepinteur, A. (2020). Child's Socio-Emotional Skills: Is There a Quantity-Quality Trade-off? *Labour Economics*, 64:101811.
- Buchanan, T. W. and Preston, S. D. (2014). Stress Leads to Prosocial Action in Immediate Need Situations. *Frontiers in Behavioral Neuroscience*, 8(5):1–6.
- Burks, S. V., Nosenzo, D., Anderson, J. E., Bombyk, M., Ganzhorn, D., Götte, L., and Rustichini, A. (2016). Lab Measures of Other-Regarding Preferences Can Predict Some Related On-the-Job Behavior: Evidence from a Large Scale Field Experiment. IZA Discussion Paper No. 9767.
- Cadena, B. C. and Keys, B. J. (2015). Human Capital and the Lifetime Costs of Impatience. *American Economic Journal: Economic Policy*, 7(3):126–153.
- Cappelen, A., List, J., Samek, A., and Tungodden, B. (2020). The Effect of Early-Childhood Education on Social Preferences. *Journal of Political Economy*, 128(7):2739–2758.
- Carpenter, J. and Seki, E. (2011). Do Social Preferences Increase Productivity? Field Experimental Evidence from Fishermen in Toyama Bay. *Economic Inquiry*, 49(2):612–630.
- Case, A., Lubotsky, D., and Paxson, C. (2002). Economic Status and Health in Childhood: The Origins of the Gradient. *American Economic Review*, 92(5):1308–1334.
- Caspi, A. (2000). The Child is Father of the Man: Personality Continuities from Childhood to Adulthood. *Journal of Personality and Social Psychology*, 78(1):158–172.
- Caspi, A., Harrington, H., Milne, B., Amell, J. W., Theodore, R. F., and Moffitt, T. E. (2003). Children's Behavioral Styles at Age 3 Are Linked to their Adult Personality Traits at Age 26. *Journal of Personality*, 71(4):495–514.
- Castillo, M. (2020). Negative Childhood Experiences and Risk Aversion: Evidence from Children Exposed to Domestic Violence. IZA Discussion Paper No. 13320.
- Castillo, M., Ferraro, P. J., Jordan, J. L., and Petrie, R. (2011). The Today and Tomorrow of Kids: Time Preferences and Educational Outcomes of Children. *Journal of Public Economics*, 95(11–12):1377–1385.
- Castillo, M., Jordan, J. L., and Petrie, R. (2018). Children's Rationality, Risk Attitudes and Field Behavior. *European Economic Review*, 102:62–81.
- Castillo, M., Jordan, J. L., and Petrie, R. (2019). Discount Rates of Children and High School Graduation. *Economic Journal*, 129(619):1153–1181.
- Cattell, R. B. (1971). *Abilities: Their Structure, Growth, and Action*. Boston: Houghton Mifflin.
- Cesarini, D., Dawes, C. T., Johannesson, M., Lichtenstein, P., and Wallace, B. (2009). Genetic Variation in Preferences for Giving and Risk Taking. *Quarterly Journal of Economics*, 124(2):809–842.
- Chabris, C. F., Laibson, D., Morris, C. L., Schuldt, J. P., and Taubinsky, D. (2008). Individual Laboratory-Measured Discount Rates Predict Field Behavior. *Journal of Risk and Uncertainty*, 37(2/3):237–269.
- Chowdhury, S., Guiteras, R. P., and Zimmermann, K. F. (2014). Labor Supply and Productivity in Times of Environmental Shocks: The Case of Arsenic Contamination in Bangladesh. Mimeo.
- Chowdhury, S., Sutter, M., and Zimmermann, K. F. (2022). Economic Preferences across Generations and Family Clusters: A Large-Scale Experiment in a Developing Country. *Journal of Political Economy*, 130(9):2361–2410.
- Clark, A. E. and Lepinteur, A. (2019). The Causes and Consequences of Early-Adult Unemployment: Evidence from Cohort Data. *Journal of Economic Behavior & Organization*, 166:107–124.
- Cobb-Clark, D. A., Salamanca, N., and Zhu, A. (2019). Parenting Style as an Investment in Human Development. *Journal of Population Economics*, 32(4):1315–1352.
- Cornelissen, T. and Dustmann, C. (2019). Early School Exposure, Test Scores, and Noncognitive Outcomes. *American Economic Journal: Economic Policy*, 11(2):35–63.
- Cunha, F. and Heckman, J. J. (2007). The Technology of Skill Formation. *American Economic Review*, 97(2):31–47.
- Currie, J. (2001). Early Childhood Education Programs. *Journal of Economic Perspectives*, 15(2):213–238.

- Currie, J. and Moretti, E. (2003). Mother's Education and the Intergenerational Transmission of Human Capital: Evidence from College Openings. *Quarterly Journal of Economics*, 118(4):1495–1532.
- Delaney, L. and Doyle, O. (2012). Socioeconomic Differences in Early Childhood Time Preferences. *Journal of Economic Psychology*, 33(1):237–247.
- DellaVigna, S. and Paserman, M. D. (2005). Job Search and Impatience. *Journal of Labor Economics*, 23(3):527–588.
- Deming, D. J. (2017). The Growing Importance of Social Skills in the Labor Market. *Quarterly Journal of Economics*, 132(4):1593–1640.
- Detlefsen, L., Friedl, A., Lima de Miranda, K., Schmidt, U., and Sutter, M. (2018). Are Economic Preferences Shaped by the Family Context? The Impact of Birth Order and Siblings' Sex Composition on Economic Preferences. IZA Discussion Paper No. 11949.
- Doepke, M. and Zilibotti, F. (2017). Parenting With Style: Altruism and Paternalism in Intergenerational Preference Transmission. *Econometrica*, 85(5):1331–1371.
- Dohmen, T., Enke, B., Falk, A., Huffman, D., and Sunde, U. (2018). Patience and Comparative Development. Working Paper.
- Dohmen, T. and Falk, A. (2011). Performance Pay and Multi-Dimensional Sorting: Productivity, Preferences and Gender. *American Economic Review*, 101(2):556–590.
- Dohmen, T., Falk, A., Huffman, D., and Sunde, U. (2009). Homo Reciprocans: Survey Evidence on Behavioural Outcomes. *Economic Journal*, 119(536):592–612.
- Dohmen, T., Falk, A., Huffman, D., and Sunde, U. (2012). The Intergenerational Transmission of Risk and Trust Attitudes. *Review of Economic Studies*, 79:645–677.
- Dohmen, T., Falk, A., Huffman, D., Sunde, U., Schupp, J., and Wagner, G. G. (2011). Individual Risk Attitudes: Measurement, Determinants, and Behavioral Consequences. *Journal of the European Economic Association*, 9(3):522–550.
- Doyle, O., Harmon, C., Heckman, J. J., Logue, C., and Moon, S. H. (2017). Early Skill Formation and the Efficiency of Parental Investment: A Randomized Controlled Trial of Home Visiting. *Labour Economics*, 45:40–58.
- Eckel, C., Johnson, C., and Montmarquette, C. (2005). Saving Decisions of the Working Poor: Short- and Long-Term Horizons. In Harrison, G. W., Carpenter, J., and List, J. A., editors, *Field Experiments in Economics (Research in Experimental Economics)*, volume 10, pages 219–260. Emerald Group Publishing Limited.
- Falk, A., Becker, A., Dohmen, T., Enke, B., Huffman, D., and Sunde, U. (2018). Global Evidence on Economic Preferences. *Quarterly Journal of Economics*, 133(4):1645–1692.
- Falk, A. and Kosse, F. (2016). Early Childhood Environment, Breastfeeding and the Formation of Preferences. HCEO Working Paper No. 2016-036.
- Falk, A., Kosse, F., Pinger, P., Schildberg-Hörisch, H., and Deckers, T. (2021). Socio-Economic Status and Inequalities in Children's IQ and Economic Preferences. *Journal of Political Economy*, 129(9):2504–2545.
- Fehr, E., Bernhard, H., and Rockenbach, B. (2008). Egalitarianism in Young Children. *Nature*, 454(7208):1079–1083.
- Flèche, S. (2017). Teacher Quality, Test Scores and Non-Cognitive Skills: Evidence from Primary School Teachers in the UK. CEP Discussion Paper No 1472.
- Golsteyn, B. H., Grönqvist, H., and Lindahl, L. (2014). Adolescent Time Preferences Predict Lifetime Outcomes. *Economic Journal*, 124(580):F739–F761.
- Goodman, A., Lamping, D. L., and Ploubidis, G. B. (2010). When to Use Broader Internalising and Externalising Subscales Instead of the Hypothesised Five Subscales on the Strengths and Difficulties Questionnaire (SDQ): Data from British Parents, Teachers and Children. *Journal of Abnormal Child Psychology*, 38(8):1179–1191.
- Goodman, R., Renfrew, D., and Mullick, M. S. (2000). Predicting Type of Psychiatric Disorder from Strengths and Difficulties Questionnaire (SDQ) Scores in Child Mental Health Clinics in London and Dhaka. *European Child & Adolescent Psychiatry*, 9(2):129–134.

- Gupta, N. D. and Simonsen, M. (2010). Non-Cognitive Child Outcomes and Universal High Quality Child Care. *Journal of Public Economics*, 94(1-2):30–43.
- Guryan, J., Hurst, E., and Kearney, M. (2008). Parental Education and Parental Time with Children. *Journal of Economic Perspectives*, 22(3):23–46.
- Haushofer, J. and Fehr, E. (2014). On the psychology of poverty. *Science*, 344(6186):862–867.
- Heckman, J., Stixrud, J., and Urzua, S. (2006). The Effects of Cognitive and Noncognitive Abilities on Labor Market Outcomes and Social Behavior. *Journal of Labor Economics*, 24(3):411–482.
- Heckman, J. J. (2007). The Economics, Technology, and Neuroscience of Human Capability Formation. *Proceedings of the National Academy of Sciences*, 104(33):13250–13255.
- Heckman, J. J. (2008). Schools, Skills, and Synapses. *Economic Inquiry*, 46(3):289–324.
- Heckman, J. J. and Mosso, S. (2014). The Economics of Human Development and Social Mobility. *Annual Review of Economics*, 6:689–733.
- Hong, H., Kubik, J. D., and Stein, J. C. (2004). Social Interaction and Stock-Market Participation. *Journal of Finance*, 59(1):137–163.
- Hoosen, N., Davids, E. L., de Vries, P. J., and Shung-King, M. (2018). The Strengths and Difficulties Questionnaire (SDQ) in Africa: A Scoping Review of its Application and Validation. *Child and Adolescent Psychiatry and Mental Health*, 12(6).
- Hsieh, C., Parker, S. C., and van Praag, C. M. (2017). Risk, Balanced Skills and Entrepreneurship. *Small Business Economics*, 48(2):287–302.
- Humphries, J. E. and Kosse, F. (2017). On the Interpretation of Non-Cognitive Skills - What Is Being Measured and Why It Matters. *Journal of Economic Behavior & Organization*, 136:174–185.
- Ida, T. and Goto, R. (2009). Simultaneous Measurement of Time and Risk Preferences: Stated Preference Discrete Choice Modeling Analysis Depending on Smoking Behavior. *International Economic Review*, 50(4):1169–1182.
- Jaeger, D. A., Dohmen, T., Falk, A., Huffman, D., Sunde, U., and Bonin, H. (2010). Direct Evidence on Risk Attitudes and Migration. *Review of Economics and Statistics*, 92(3):684–689.
- Karlan, D. S. (2005). Using Experimental Economics to Measure Social Capital and Predict Financial Decisions. *American Economic Review*, 95(5):1688–1699.
- Kautz, T. D., Heckman, J. J., Diris, R., ter Weel, B., and Borghans, L. (2014). Fostering and Measuring Skills: Improving Cognitive and Non-Cognitive Skills to Promote Lifetime Success. OECD Education Working Paper No. 110.
- Kimball, M. S., Sahm, C. R., and Shapiro, M. D. (2008). Imputing Risk Tolerance from Survey Responses. *Journal of the American Statistical Association*, 103(483):1028–1038.
- Kirby, K. N., Petry, N. M., and Bickel, W. K. (1999). Heroin Addicts Have Higher Discount Rates for Delayed Rewards Than Non-Drug-Using Controls. *Journal of Experimental Psychology: General*, 128(1):78–87.
- Kosse, F., Deckers, T., Pinger, P. R., Schildberg-Hörisch, H., and Falk, A. (2020). The Formation of Prosociality: Causal Evidence on the Role of Social Environment. *Journal of Political Economy*, 128(2):434–467.
- Kosse, F. and Pfeiffer, F. (2012). Impatience Among Preschool Children and Their Mothers. *Economics Letters*, 115(3):493–495.
- Kosse, F. and Tincani, M. M. (2020). Prosociality Predicts Labor Market Success Around the World. *Nature Communications*, 11(1):5298.
- Kühnle, D. and Oberfichtner, M. (2020). Does Starting Universal Childcare Earlier Influence Children’s Skill Development? *Demography*, 57:61–98.
- Layard, R., Clark, A. E., Cornaglia, F., Powdthavee, N., and Vernoit, J. (2019). What Predicts a Successful Life? A Life-Course Model of Well-Being. *Economic Journal*, 124(580):F720–F738.
- Lleras, C. (2008). Do Skills and Behaviors in High School Matter? The Contribution of Noncognitive Factors in Explaining Differences in Educational Attainment and Earnings. *Social Science Research*, 37(3):888–902.

- Moffitt, T. E., Arseneault, L., Belsky, D., Dickson, N., Hancox, R. J., Harrington, H. L., Houts, R., Poulton, R., Roberts, B. W., Ross, S., Sears, M. R., Thomson, W. M., and Caspi, A. (2011). A Gradient of Childhood Self-Control Predicts Health, Wealth, and Public Safety. *Proceedings of the National Academy of Sciences*, 108(7):2693–2698.
- Mullick, M. S. and Goodman, R. (2001). Questionnaire Screening for Mental Health Problems in Bangladeshi Children: A Preliminary Study. *Social Psychiatry and Psychiatric Epidemiology*, 36(2):94–99.
- Reynolds, A. J., Temple, J. A., and Ou, S.-R. (2010). Preschool Education, Educational Attainment, and Crime Prevention: Contributions of Cognitive and Non-Cognitive Skills. *Children and Youth Services Review*, 32(8):1054–1063.
- Rodríguez-Planas, N. (2012). Mentoring, Educational Services, and Incentives to Learn: What Do We Know about Them? *Evaluation and Program Planning*, 35(4):481–490.
- Ruhm, C. J. and Waldfogel, J. (2012). Long-Term Effects of Early Childhood Care and Education. *Nordic Economic Policy Review*, 1:23–51.
- Rumberger, R. W. (1995). Dropping Out of Middle School: A Multilevel Analysis of Students and Schools. *American Educational Research Journal*, 32(3):583–625.
- Rustagi, D., Engel, S., and Kosfeld, M. (2010). Conditional Cooperation and Costly Monitoring Explain Success in Forest Commons Management. *Science*, 330(6006):961–965.
- Schildberg-Hörisch, H. (2018). Are Risk Preferences Stable? *Journal of Economic Perspectives*, 32(2):135–54.
- Starcke, K. and Brand, M. (2012). Decision Making Under Stress: A Selective Review. *Neuroscience & Biobehavioral Reviews*, 36(4):1228–1248.
- Strenze, T. (2007). Intelligence and Socioeconomic Success: A Meta-Analytic Review of Longitudinal Research. *Intelligence*, 35(5):401–426.
- Sutter, M., Kocher, M. G., Glätzle-Rützler, D., and Trautmann, S. T. (2013). Impatience and Uncertainty: Experimental Decisions Predict Adolescents' Field Behavior. *American Economic Review*, 103(1):510–531.
- Sutter, M., Zoller, C., and Glätzle-Rützler, D. (2019). Economic Behavior of Children and Adolescents—A First Survey of Experimental Economics Results. *European Economic Review*, 111:98–121.
- Thönnissen, C., Wilhelm, B., Alt, P., Greischel, H., and Walper, S. (2019). Manual of the German Family Panel: Scales and Instruments Manual (Waves 1 to 10), Release 10.0. Report, Panel Analysis of Intimate Relationships and Family Dynamics.
- Ventura, L. (2003). Direct Measures of Time Preferences. *Economic and Social Review*, 34(3):293–310.
- Von Gaudecker, H.-M., van Soest, A., and Wengström, E. (2011). Heterogeneity in Risky Choice Behavior in a Broad Population. *American Economic Review*, 101(2):664–694.
- Wechsler, D. (2003). *The Wechsler Intelligence Scale for Children: Fourth Edition*. London: Pearson.
- Zyphur, M. J., Narayanan, J., Arvey, R. D., and Alexander, G. J. (2009). The Genetics of Economic Risk Preferences. *Journal of Behavioral Decision Making*, 22(4):367–377.

Online Appendix

A Sampling

A.1 New 2018 sample

In 2018, the 150 sample villages (see subsection 2.1) were visited and a public primary school suitable for the selection of school-going children was chosen. A 1:1 village-school matching was typically, but not always possible. Some villages do not have their own primary school such that children attend a school in a neighboring village. Hence, some schools serve multiple villages. In these cases, the school the children from the original sample village attend got selected. In other cases, villages have multiple schools. Here, the school with the majority of students from the village and situated at the village center was selected. This resulted in a selection of 135 primary schools.

Taking these schools as a starting point, in general five students from each of the grades 2 to 5 (i.e., 20 students in total) were selected. In a few instances, not in all grades five students from the connected sample villages could be found. They then got replaced by students from neighboring villages (leading to a higher number of villages than originally selected, with 53 additional villages but always only few children from those villages). If still not enough students from a particular grade could be found, the remaining children got selected from other grades.

Due to the sampling procedure via primary schools, each newly sampled household in 2018 had at least one child at primary school age. If there was more than one child aged 6 to 16 years, a second child was randomly selected for participation in the experiments. Additionally, two adults, typically mother and father of the selected children, from each of the newly sampled households took part in the data collection. In 74 percent of cases, both mother and father of the chosen child participated in the experiments. Only the mother participated in 23 percent, only the father in 1 percent of cases. Other constellations comprise grandparents or other relatives taking part in the experiments if parents were not available. Typically, if only the mother participated, the father was living and working abroad or outside the study area to earn the family's living.

A.2 Total sample

In total, we surveyed 3,935 households in 2018: the 3,000 households newly sampled in 2018 and 935 out of 1,001 (93 percent) households who had already been interviewed in 2014/16 and were successfully re-interviewed in 2018.

In 2014, 4,500 randomly drawn households from the 150 selected villages were interviewed in a general household survey. Among them, 1,500 were randomly selected for further data collection regarding cognitive skills (i.e., IQ tests) in 2014 and non-cognitive skills (i.e., experimental measures of social, time, and risk preferences, and survey measures of some personality traits) in 2016. Out of the 1,500 households, 1,001 had children aged 6 to 16 years. These households were included in the skills surveys in 2014 and 2016 and also re-interviewed from 2018 onwards. Up to four members were chosen here for the elicitation of cognitive and non-cognitive skills: the household head, their spouse, and up to two children aged 6 to 16 in 2014. If there were more than two children aged 6 to 16 in a household, only the youngest and the oldest child were interviewed.

B Distributions

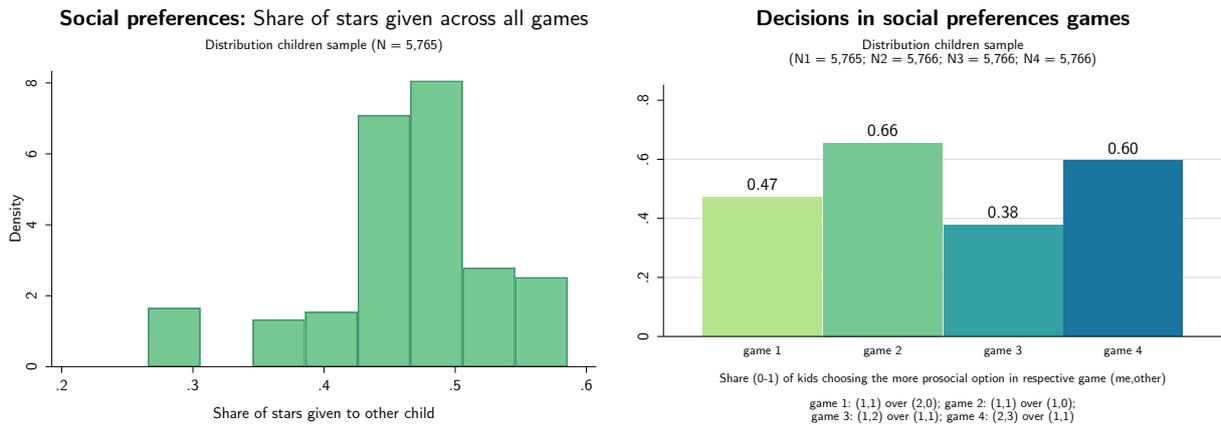


Figure B.1: Distribution of social preferences

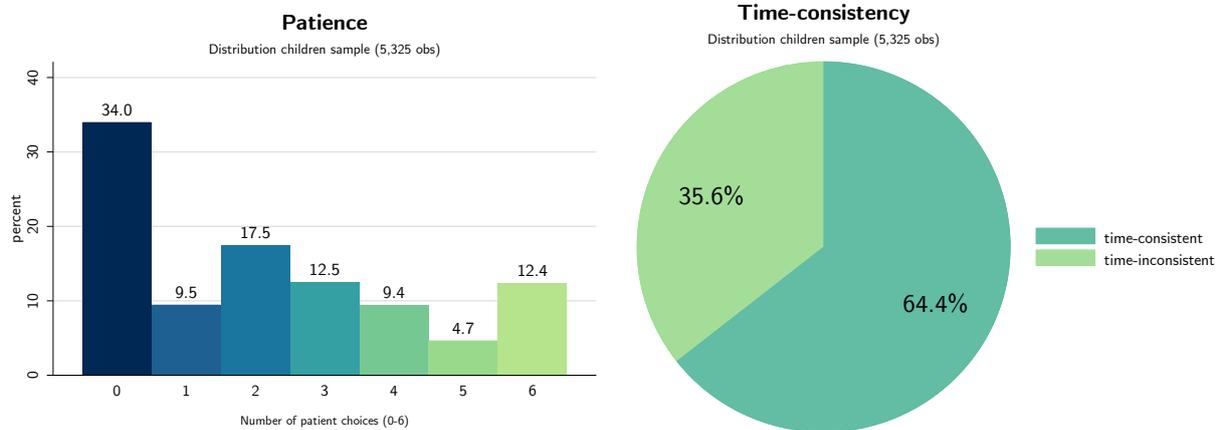


Figure B.2: Distribution of time preferences

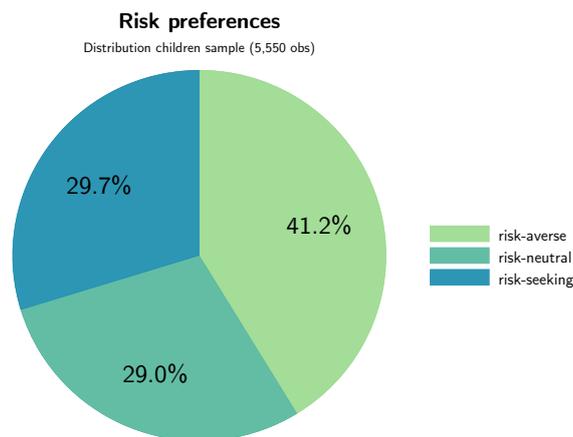


Figure B.3: Distribution of risk preferences

C Preference measures for adults

Social preferences were elicited in the same way for children and adults, except for the conversion rate of stars into Taka (Bangladeshi currency). In our regression specifications, we use the same aggregation of games into the *share of stars given to the other person* across all four games as for children.

For the elicitation of time preferences, adults had to make 18 choices (three choice sets with six choices each) between smaller, sooner and larger, later rewards. All choice sets had three-month time horizons with different starting points: “Tomorrow,” “After 1 month,” “After 1 year.” Within each choice set, participants had to choose between two options, A and B, with increasing annual interest rates (see Table C.1). For our analysis, we also use the total number of patient choices which is a simple count of the larger, but later reward in all 18 choices (variable *patience* ranging from 0 to 18) as well as an indicator for whether adults are *time-consistent*. In order to match the child data, we are also controlling for adults not making any patient choice including a respective indicator variable (dummy variable *never patient*).

Table C.1: Time preferences experiments for adults

Payoff Alternative	Payment Option A (pays amount below)	Payment Option B (pays amount below)	Annual Interest Rate	Choice: A or B?
Set 1:	Tomorrow	After 3 Months	in %	
OR Set 2:	After 1 Month	After 4 Months		
OR Set 3:	After 1 Year	After 1 Year 3 Months		
1	100	105	20	
2	100	110	40	
3	100	120	80	
4	100	125	100	
5	100	150	200	
6	100	200	400	

Regarding risk preferences, we applied the same setup as for children and only adjusted the absolute amounts of money to be paid out (higher amounts than the age-specific payments for children). In our analysis, we again use an indicator for being *risk-averse* (i.e., choosing one of the first four gambles).

D Parenting style

We use well-established measures of parenting style that are described in more detail in Thönnissen et al. (2019) and the references therein. Mothers rated 18 items on a five-point scale, stating the frequency of different actions when raising their children (“Never” to “Very frequently”). These items are combined into six scales by taking the average of the three respective, scale-related items listed below.²¹ The resulting scales are standardized to a mean of zero and standard deviation of one across our children sample. The questionnaire was answered once for each household. The scales are indicating for each mother how much her parenting style is characterized by emotional warmth, inconsistent parenting, monitoring, negative communication, psychological control, and strict control. *Emotional warmth* encompasses the degree of affirmative attention and care in parenting. *Inconsistent parenting* points to inconsistencies in parents’ behavior when bringing up their children. *Monitoring* refers to how well parents are informed about activities and social contacts of their children. *Negative communication* indicates the degree of negative behavior of parents towards their children. *Psychological control* assesses parents’ negative intrusive thoughts, feelings, and behavior towards their children with parents potentially building up psychological pressure. *Strict control* captures how rigorously and harshly parents interact with their children.

Emotional warmth

1. I use words and gestures to show my child that I love him/her.
2. I comfort my child when he/she feels sad.
3. I praise my child.

Inconsistent parenting

1. I threaten my child with punishment, but don’t actually follow through with it.
2. I reduce punishments or lift them ahead of time.
3. It is hard for me to be consistent in my childrearing.

Monitoring

1. I talk to my child about things he/she has done, seen, or experienced when he/she was out.
2. When my child is outside the home, I know exactly where he/she is.
3. I try to actively influence my child’s circle of friends.

Negative communication

1. I criticize my child.
2. I shout at my child when he/she did something wrong.
3. I scold my child when I am angry at him/her.

Psychological control

1. I feel that my child is ungrateful because he/she disobeys.
2. I stop talking to my child for a while when he/she did something wrong.
3. I am disappointed and sad when my child misbehaves.

Strict control

1. I punish my child when he/she was disobedient.
2. I tend to be strict with my child.
3. I make it clear to my child that he/she should not oppose orders and decisions.

²¹Due to a translation issue, the dimension “inconsistent parenting” is reduced to item number 3. Translation of the other two items into Bengali did not properly convey the true meaning.

E Questionnaire items for outcome measures

E.1 Prosociality score

Subscore of the Strengths and Difficulties Questionnaire (SDQ). Mothers rated five items related to prosocial behaviors of selected children between the ages of 6 and 16 on a three-point scale (“Not true,” “Somewhat true,” “Certainly true”): My child...

1. Is considerate of other people’s feelings
2. Shares readily with other children (treats, toys, pencils, etc.)
3. Is helpful if someone is hurt, upset or feeling ill
4. Is kind to younger children
5. Often volunteers to help others (parents, teachers, children)

E.2 Risky behaviors

16 yes/no-questions referring to behaviors considered as risky in Bangladesh and asked from age 10 onwards. The items were developed in cooperation with locals from villages similar to our sample villages.

1. Do you smoke?
2. Do you eat pan/jorda/supari?²²
3. Do you gamble/bet/play lottery?
4. Do you play on the road with car tires?
5. Do you jump from a tree/bridge/saquo/trolley into a river or canal?
6. Do you run behind the motorbike/car/trolley?
7. Do you play danguli?²³
8. Do you climb on trees or your house roof?
9. Do you dive in ponds/rivers?
10. Do you bring flowers or fruits without permission from someone else’s garden?
11. Do you play somersault?
12. Do you blow fire-works?
13. Do you play ha-du-du?²⁴
14. Do you use marijuana/ganja/hashish?
15. Do you drive a car/motorbike?
16. Do you often get into physical fights?

²²Quid to be chewed after eating that contains stimulating substances similar to tobacco (betel nut) and can cause health problems including oral cancers

²³Rough game played with sticks (a similar European game is called “tipcat”)

²⁴National contact team sport in Bangladesh, also known as “Kabaddi”

E.3 SDQ score

The full SDQ (Strengths and Difficulties Questionnaire) score comprises the four subscores “emotional symptoms,” “peer problems,” “hyperactivity,” and “conduct problems” and is elicited asking mothers about their children. For each subscale, mothers rated five items of selected children between the ages of 6 and 16 on a three-point scale (“Not true,” “Somewhat true,” “Certainly true”). Items for emotional symptoms and peer problems can be grouped into an internalizing subscale, items for hyperactivity and behavioral/conduct problems into an externalizing subscale.

Internalizing subscale

Emotional symptoms My child...

1. Often complains of headaches, stomach-ache or sickness
2. Has many worries, often seems worried
3. Is often unhappy, down-hearted or tearful
4. Is nervous or clingy in new situations, easily loses confidence
5. Has many fears, is easily scared

Peer problems My child...

1. Is rather solitary, tends to play alone
2. Has at least one good friend (*reversed*)
3. Is generally liked by other children (*reversed*)
4. Is picked on or bullied by other children
5. Gets on better with adults than with other children

Externalizing subscale

Hyperactivity My child...

1. Is restless, overactive, cannot stay still for long
2. Is constantly fidgeting or squirming
3. Is easily distracted, concentration wanders
4. Thinks things out before acting (*reversed*)
5. Sees tasks through to the end, good attention span (*reversed*)

Conduct problems My child...

1. Often has temper tantrums or hot tempers
2. Is generally obedient, usually does what adults request (*reversed*)
3. Often fights with other children or bullies them
4. Often lies or cheats
5. Steals from home, school or elsewhere

F Summary statistics

Table F.1: Summary statistics for children sample

	Mean	Std. dev.	Min	Max	Obs.
Preferences					
share of stars given	0.472	0.072	0.286	0.583	5,765
patience	2.175	2.081	0	6	5,325
time-consistent	0.644		0	1	5,325
never patient	0.340		0	1	5,325
risk-averse	0.412		0	1	5,550
Cognitive skills					
IQ					
score	20.966	6.902	4	57	5,989
standardized [†]	0	1	-2.458	5.221	5,989
Gender and age					
female	0.520		0	1	5,989
age	10.312	2.635	6	16	5,989
Outcomes: field behavior					
prosociality					
score (0–10)	6.476	2.270	0	10	5,724
standardized [†]	0	1	-2.853	1.552	5,724
achievement test results					
Bangla score (0–50)	34.376	11.140	0	50	716
math score (0–30)	19.343	7.085	0	30	720
std. summary score [†]	0	1	-3.346	1.722	722
risky behaviors					
fraction (0–1)	0.189	0.163	0	0.812	3,447
standardized [†]	0	1	-1.161	3.837	3,447
SDQ internalizing subscale					
score (0–20)	5.570	2.798	0	17	5,724
standardized [†]	0	1	-1.991	4.085	5,724
SDQ externalizing subscale					
score (0–20)	5.963	3.264	0	19	5,724
standardized [†]	0	1	-1.827	3.995	5,724
SDQ full score					
score (0–40)	11.533	5.244	1	32	5,724
standardized [†]	0	1	-2.009	3.903	5,724
Household environment					
income (in 100 Tk) ^{††}	1,973.744	3,212.589	-16806.4	102789	5,970
father: age	43.256	8.184	23	85	5,675
mother: age	35.987	6.286	20	75	5,831
father: literacy	0.551		0	1	5,674
mother: literacy	0.650		0	1	5,831
number of siblings	2.512	1.462	0	10	5,989
senior in HH	0.199		0	1	5,975
homestead area (in sqm) [‡]	392.403	404.669	4	4400	5,975
electricity	0.918		0	1	5,975
Muslim	0.822		0	1	5,975

Notes: See section 2 for details on preferences and outcome measures and appendix section G for details on household environment variables. [‡]Homestead area includes a family's whole property, not only the housing area. However, it does not include cultivable land, further land not suitable for cultivation such as jungle, grazing land, or land lost due to river erosion, and ponds. [†]Reference group for standardization to a mean of zero and standard deviation of one is our children sample. ^{††}Tk = Taka: Bangladeshi currency; 100 Taka \approx 0.9 USD (February 2024). Note that total income values can be negative, if, for example, costs in agricultural businesses such as labor or feedings costs have been higher than income.

Table F.2: Summary statistics for children sample, continued

	Mean	Std. dev.	Min	Max	Obs.
Parents' preferences					
father: share of stars given	0.476	0.065	0.286	0.583	4,334
father: patience	5.504	6.015	0	18	4,222
father: time-consistent	0.667		0	1	4,222
father: never patient	0.403		0	1	4,222
father: risk-averse	0.404		0	1	4,173
mother: share of stars given	0.475	0.069	0.286	0.583	5,489
mother: patience	5.423	5.806	0	18	5,270
mother: time-consistent	0.625		0	1	5,270
mother: never patient	0.381		0	1	5,270
mother: risk-averse	0.437		0	1	5,277
Parents' IQ					
father: IQ					
score	17.370	4.388	6	41	4,488
standardized [†]	0	1	-2.591	5.385	4,488
mother: IQ					
score	16.033	4.192	5	46	5,764
standardized [†]	0	1	-2.632	7.148	5,764
Parenting style					
style emotional warmth					
score	3.270	0.736	1	5	5,912
standardized [†]	0	1	-3.086	2.351	5,912
style incons. parenting					
score	2.919	1.093	1	5	5,912
standardized [†]	0	1	-1.755	1.903	5,912
style monitoring					
score	2.871	0.664	1	5	5,912
standardized [†]	0	1	-2.818	3.206	5,912
style neg. communication					
score	2.491	0.625	1	5	5,912
standardized [†]	0	1	-2.385	4.012	5,912
style psych. control					
score	2.141	0.675	1	5	5,912
standardized [†]	0	1	-1.690	4.232	5,912
style strict control					
score	2.519	0.692	1	5	5,912
standardized [†]	0	1	-2.193	3.583	5,912

Notes: See appendix section G for details on measures and variables. Parents' preferences and IQ are analogous to children's measures. Parenting style comprises the six dimensions (scales) emotional warmth, inconsistent parenting, monitoring (intensity), negative communication, psychological control, and strict control. [†]Reference groups for standardization to a mean of zero and standard deviation of one are our children sample and the sample of these children's parents, respectively.

G Adding household environment variables

Table G.1 displays estimation results of household environment (HH env) specifications for regressions of prosociality, achievement test results, risky behaviors, and SDQ internalizing and externalizing subscales on children's economic preferences and controls.

Table notes. [†]Outcome measures are defined as described in section 2.4. Children's preferences and cognitive skills measures are defined as described in sections 2.2 and 2.3. Prosociality, achievement test results, risky behaviors, SDQ internalizing and externalizing subscales, IQ, and parenting style scales are standardized to a mean of zero and standard deviation of one across available observations in our children sample. [‡]Comprises two variables: Female is an indicator for being a girl, age is measured in years and included as fixed effects (FE), i.e., in the form of dummy variables for each age except the base category. ^{††}Household income is log transformed. Negative income values (if, for example, costs in agricultural businesses such as labor or feedings costs have been higher than income) are set to zero and an indicator variable that equals one if income is positive is added. Income is measured in Bangladeshi Taka (Tk); 100 Taka \approx 0.9 USD (February 2024). Parents' literacy is measured by indicator variables for being able to read and write. Senior in household, electricity, and Muslim are also indicator variables for whether a grandparent is living in the household, a working electricity connection, and whether it is a Muslim household. ^{†††}Parents' preferences are defined analogously to children's preferences and are described in appendix section C. Within our children sample (5,989 observations), we do not have complete parental preferences for all children. For 74 percent of children (4,409 observations) both father and mother participated in the experiments. For 1 percent (79 observations) only the father participated, for 23 percent (1,355 observations) only the mother. The latter cases reflect that often the fathers are away for work while mothers, as the main caretakers, are at home. Applying the missing-indicator method, an indicator is added for availability of father and/or mother values and missing values are set to zero. Missing values are not set to zero if the parent has participated in the experiments but did not understand the respective game to match procedures in our regression sample of children. [¶]Parents' IQ is measured as described in section 2.3. Reference group for the standardization to a mean of zero and standard deviation of one are our sample children's fathers and mothers. [§]Parenting style comprises the six dimensions emotional warmth, inconsistent parenting, monitoring (intensity), negative communication, psychological control, and strict control as described in appendix section D.

Table G.1: Adding household environment variables to regressions of child behavior on economic preferences

	(1)	(2)	(3)	(4)	(5)
	PROSOCIALITY [†]	ACHIEVEMENT TESTS [†]	RISKY BEHAVIORS [†]	SDQ INTERN [†]	SDQ EXTERN [†]
Preferences[†]					
share of stars given	0.491**	1.063*	-0.204	-0.269	-0.511***
patience	0.027**	-0.035	0.026*	-0.013	0.009
time-consistent	0.002	-0.075	-0.007	-0.042	-0.049
never patient	0.006	0.088	-0.011	-0.095	0.012
risk-averse	0.071**	-0.000	-0.052	0.050	0.000
Cognitive skills[†]					
IQ	0.033	0.240***	-0.099***	-0.075***	-0.042**
Controls: gender and age (FE)[‡] <i>not displayed here due to limited space, see Tables 4 and 5 in main part for results</i>					
Household environment					
socio-demographics ^{††}					
logincome	0.025	-0.020	-0.059**	-0.017	-0.003
dummy income positive	-0.251	0.610	0.728**	0.403	0.269
father: age	-0.003	-0.000	0.008**	-0.001	0.007***
mother: age	-0.002	-0.008	-0.006	-0.000	-0.008**
father: literacy	0.058	0.227**	0.004	0.017	-0.083**
mother: literacy	-0.085**	0.035	-0.042	-0.008	0.079**
number of siblings	0.006	0.003	0.013	0.031**	0.033***
senior in household	0.053	-0.013	-0.023	0.063	-0.021
electricity connection	-0.024	-0.069	0.078	-0.028	0.087
Muslim	0.032	0.054	-0.076	-0.024	-0.140**
parents' preferences ^{‡‡}					
dummy father available	-0.368***	0.266	0.528***	0.405**	0.351**
father: share of stars given	0.625**	-0.488	-0.844**	-0.718**	-0.842***
father: patience	0.009	-0.014	-0.005	-0.005	-0.006
father: time-consistent	0.010	0.064	0.019	0.031	0.162***
father: never patient	0.178**	-0.181	-0.190**	-0.128	-0.248***
father: risk-averse	-0.014	0.140	-0.019	0.043	-0.015
dummy mother available	-0.844***	0.420	0.800***	0.069	0.353
mother: share of stars given	0.896***	-0.140	-0.773**	-0.090	-0.629**
mother: patience	0.012**	0.007	-0.004	-0.003	-0.005
mother: time-consistent	-0.035	0.016	0.016	0.114**	0.161***
mother: never patient	0.289***	0.088	-0.078	-0.148**	-0.269***
mother: risk-averse	0.050	-0.027	-0.080**	0.051	-0.034
parents' IQ [¶]					
father: IQ	0.071***	-0.033	-0.089***	-0.044*	-0.026
mother: IQ	0.055**	-0.044	-0.006	0.045**	-0.010
parenting style ^{†,§}					
emotional warmth	0.203***	-0.028	-0.025	-0.194***	-0.165***
inconsistent parenting	0.034	0.039	0.096***	-0.025	-0.005
monitoring	0.148***	-0.027	-0.050**	0.014	-0.029
negative communication	-0.029	-0.091	0.131***	0.083***	0.089***
psychological control	-0.115***	0.013	0.091***	0.371***	0.290***
strict control	0.055*	0.067	-0.081***	0.019	0.010
Constant					
constant	-0.247	-1.488*	0.034	-0.070	0.347
Observations	4,072	511	2,425	4,072	4,072
R^2	0.194	0.127	0.305	0.243	0.231
adj. R^2	0.184	0.046	0.292	0.234	0.222
F	14.313	3.345	31.254	13.404	16.596

Notes: Standard errors are clustered at village level for all specifications. For table notes with detailed information on coefficients, see above (section G). Significance at * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

H Robustness checks

H.1 Including children who did not understand (all) experiments

Tables H.1, H.2, and H.3 display regression results when including children who did not completely understand all preferences games (as picked up by the control questions described in section 2.2). Note that samples vary by outcome due to missing entries in single variables or age restrictions.

Table H.1 presents baseline and household environment specifications when dropping only children who did not completely understand the social (time) [risk] preferences game when considering prosociality (achievement test results) [risky behaviors]. Since SDQ outcomes are not linked to specific groups of preferences (cf. section 3 on hypotheses), SDQ specifications are not adjusted here to include children who understood some of the experiments but not all. Tables H.2 and H.3 show results when including all children for whom we elicited IQ, experimental, or survey measures, irrespective of whether they understood the games completely according to control questions or not. Overall, regression results remain similar.

Dropping children who did not understand the experiments, however, qualifies as main specification as children who did not understand the experiments are likely to choose options at random or at least not in a way such that their decisions reflect the underlying preferences the games are designed to capture. Comparing the sample of children who understood all games (5,079 observations) to the sample of all children participating in the experiments with t-tests (Table H.4) strengthens our faith in the otherwise non-selective nature of the sample restriction process. In nearly all characteristics, children who understood all experiments and hence enter our regression samples do not systematically differ from the sample of all children participating in the experiments. The only exceptions are that children who understood all experiments are on average somewhat older ($p < 0.10$) and are raised with slightly less emotional warmth ($p < 0.10$). Importantly, however, samples are comparable in terms of basic household characteristics and cognitive skills. Given the number of t-tests run, the number of actual differences found is even slightly below the number of differences we expect to find just by chance for a given significance level. For example, we expect to observe $37 \times 0.1 = 3.7$ differences at the 10 percent level and do observe 2 differences.

Table H.1: Adding children who did not understand experiments that are not in focus of the respective outcome—PROSOCIALITY (only dropping children who did not understand the social preferences game), ACHIEVEMENT TEST RESULTS (only dropping children who did not understand the time preferences game), and RISKY BEHAVIORS (only dropping children who did not understand the risk preferences game)

	PROSOCIALITY ^{†,‡}		ACHIEVEMENT TESTS ^{†,‡}		RISKY BEHAVIORS ^{†,‡}	
	(1) Baseline	(2) HH env	(3) Baseline	(4) HH env	(5) Baseline	(6) HH env
Preferences[†]						
share of stars given	0.627*** (0.191)	0.509*** (0.193)	1.262** (0.517)	1.061* (0.576)	-0.610** (0.258)	-0.268 (0.279)
patience	0.012 (0.012)	0.019 (0.012)	-0.031 (0.028)	-0.037 (0.034)	0.031** (0.014)	0.025* (0.015)
time-consistent	0.020 (0.038)	0.008 (0.038)	-0.082 (0.099)	-0.059 (0.110)	-0.021 (0.041)	-0.005 (0.040)
never patient	0.006 (0.062)	-0.009 (0.066)	0.136 (0.152)	0.069 (0.181)	-0.033 (0.073)	-0.011 (0.077)
risk-averse	0.133*** (0.031)	0.074*** (0.028)	-0.027 (0.076)	-0.004 (0.090)	-0.061* (0.033)	-0.052 (0.035)
Cognitive skills^{†,‡}						
IQ	0.156*** (0.020)	0.037* (0.019)	0.235*** (0.056)	0.241*** (0.063)	-0.140*** (0.023)	-0.097*** (0.023)
Control variables: gender and age (FE)^{††}						
female	0.092***	0.112***	0.301***	0.306***	-0.833***	-0.834***
age 6	<i>base</i>	<i>base</i>	<i>base</i>	<i>base</i>		
age 7	0.239***	0.070	0.171	0.157		
age 8	0.359***	0.217***	0.132	0.259		
age 9	0.318***	0.159**	0.164	0.256		
age 10	0.460***	0.288***	0.179	0.378	<i>base</i>	<i>base</i>
age 11	0.505***	0.342***	0.138	0.269	-0.089*	-0.030
age 12	0.610***	0.372***	0.116	-0.093	-0.148***	-0.142***
age 13	0.645***	0.425***			-0.197***	-0.097*
age 14	0.737***	0.531***			-0.367***	-0.302***
age 15	0.747***	0.566***			-0.429***	-0.380***
age 16	0.678***	0.520***			-0.568***	-0.457***
Household environment^{‡‡}						
socio-demographics	X	✓	X	✓	X	✓
parents' preferences	X	✓	X	✓	X	✓
parents' IQ	X	✓	X	✓	X	✓
parenting style	X	✓	X	✓	X	✓
Constant						
constant	-0.894***	-0.321	-0.876***	-1.488*	0.845***	0.114
Observations	5,495	4,398	629	520	3,220	2,552
R ²	0.046	0.197	0.099	0.128	0.225	0.302
adj. R ²	0.043	0.188	0.080	0.049	0.221	0.290
F	11.860	16.623	4.560	3.504	75.402	31.957

Notes: Standard errors (in parentheses) are clustered at village level for all specifications. [†]Outcomes, preferences, and cognitive skills measures are defined as described in sections 2.2-2.4. [‡]Prosociality, achievement test results, risky behaviors, and IQ are standardized to a mean of zero and standard deviation of one across all available observations in our children sample. ^{††}Female is an indicator for being a girl, age is measured in years and included as fixed effects (FE), i.e., in the form of dummy variables for each age except the base category. ^{‡‡}Household (HH) socio-demographics comprise HH income, parents' age and literacy, the number of siblings in the HH, whether a senior is living in the HH, whether the HH has an electricity connection, and religion; parents' preferences and IQ comprise variables analogous to children's measures (see sections 2.2 and 2.3 as well as section C in the appendix); parenting style comprises the six dimensions emotional warmth, inconsistent parenting, monitoring (intensity), negative communication, psychological control, and strict control as described in appendix section D. All columns display OLS regressions, specifications in columns (2), (4) and (6) include HH environment variables. Significance at * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table H.2: Including all children participating in experiments, even children who did not completely understand some or any experiments—PROSOCIALITY, ACHIEVEMENT TEST RESULTS, and RISKY BEHAVIORS

	PROSOCIALITY ^{†,‡}		ACHIEVEMENT TESTS ^{†,‡}		RISKY BEHAVIORS ^{†,‡}	
	(1) Baseline	(2) HH env	(3) Baseline	(4) HH env	(5) Baseline	(6) HH env
Preferences[†]						
share of stars given	0.549 ^{***} (0.191)	0.442 ^{**} (0.194)	0.935 ^{**} (0.466)	0.749 (0.536)	-0.649 ^{**} (0.253)	-0.295 (0.280)
patience	0.008 (0.012)	0.019 (0.012)	-0.028 (0.025)	-0.038 (0.030)	0.036 ^{***} (0.014)	0.029 ^{**} (0.015)
time-consistent	0.029 (0.038)	0.016 (0.038)	-0.061 (0.098)	-0.081 (0.109)	-0.026 (0.040)	-0.009 (0.041)
never patient	-0.024 (0.061)	-0.026 (0.065)	0.172 (0.141)	0.124 (0.162)	-0.009 (0.071)	0.005 (0.077)
risk-averse	0.140 ^{***} (0.031)	0.077 ^{***} (0.028)	-0.029 (0.071)	-0.006 (0.083)	-0.081 ^{**} (0.032)	-0.063 [*] (0.036)
Cognitive skills^{†,‡}						
IQ	0.164 ^{***} (0.019)	0.045 ^{**} (0.019)	0.255 ^{***} (0.050)	0.243 ^{***} (0.060)	-0.142 ^{***} (0.023)	-0.101 ^{***} (0.023)
Control variables: gender and age (FE)^{††}						
female	0.086 ^{***}	0.108 ^{***}	0.295 ^{***}	0.319 ^{***}	-0.819 ^{***}	-0.825 ^{***}
age 6	<i>base</i>	<i>base</i>	<i>base</i>	<i>base</i>		
age 7	0.276 ^{***}	0.105	0.198	0.176		
age 8	0.385 ^{***}	0.252 ^{***}	0.175	0.309 ^{**}		
age 9	0.359 ^{***}	0.208 ^{***}	0.210	0.339 ^{**}		
age 10	0.510 ^{***}	0.341 ^{***}	0.254	0.450 ^{**}	<i>base</i>	<i>base</i>
age 11	0.559 ^{***}	0.393 ^{***}	0.074	0.359	-0.078 [*]	-0.029
age 12	0.656 ^{***}	0.429 ^{***}	0.164	-0.093	-0.144 ^{***}	-0.147 ^{***}
age 13	0.691 ^{***}	0.482 ^{***}			-0.194 ^{***}	-0.100 [*]
age 14	0.778 ^{***}	0.587 ^{***}			-0.353 ^{***}	-0.300 ^{***}
age 15	0.785 ^{***}	0.603 ^{***}			-0.424 ^{***}	-0.386 ^{***}
age 16	0.721 ^{***}	0.573 ^{***}			-0.580 ^{***}	-0.465 ^{***}
Household environment^{‡‡}						
socio-demographics	✗	✓	✗	✓	✗	✓
parents' preferences	✗	✓	✗	✓	✗	✓
parents' IQ	✗	✓	✗	✓	✗	✓
parenting style	✗	✓	✗	✓	✗	✓
Constant						
constant	-0.881 ^{***}	-0.272	-0.789 ^{***}	-1.560 ^{**}	0.839 ^{***}	0.213
Observations	5,711	4,477	722	577	3,432	2,612
R^2	0.048	0.195	0.107	0.147	0.222	0.297
adj. R^2	0.045	0.186	0.091	0.078	0.219	0.286
F	14.456	16.592	6.165	3.907	78.810	30.297

Notes: Standard errors (in parentheses) are clustered at village level for all specifications. [†]Outcomes, preferences, and cognitive skills measures are defined as described in sections 2.2-2.4. [‡]Prosociality, achievement test results, risky behaviors, and IQ are standardized to a mean of zero and standard deviation of one across all available observations in our children sample. ^{††}Female is an indicator for being a girl, age is measured in years and included as fixed effects (FE), i.e., in the form of dummy variables for each age except the base category. ^{‡‡}Household (HH) socio-demographics comprise HH income, parents' age and literacy, the number of siblings in the HH, whether a senior is living in the HH, whether the HH has an electricity connection, and religion; parents' preferences and IQ comprise variables analogous to children's measures (see sections 2.2 and 2.3 as well as section C in the appendix); parenting style comprises the six dimensions emotional warmth, inconsistent parenting, monitoring (intensity), negative communication, psychological control, and strict control as described in appendix section D. All columns display OLS regressions, specifications in columns (2), (4) and (6) include HH environment variables. Coefficients of main explanatory variables of interest for each outcome (cf. section 3 on hypotheses) are printed in bold. Significance at * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table H.3: Including all children participating in experiments, even children who did not completely understand some or any experiments —SDQ INTERNALIZING (emotional problems) and EXTERNALIZING (behavioral problems) SUBSCALES

	SDQ INTERNALIZING SCALE ^{†,‡}		SDQ EXTERNALIZING SCALE ^{†,‡}	
	(1) Baseline	(2) HH env	(3) Baseline	(4) HH env
Preferences[†]				
share of stars given	-0.525** (0.215)	-0.222 (0.180)	-0.771*** (0.217)	-0.493*** (0.186)
patience	-0.001 (0.012)	-0.015 (0.012)	0.022* (0.011)	0.002 (0.012)
time-consistent	-0.069 (0.042)	-0.032 (0.046)	-0.060 (0.038)	-0.041 (0.039)
never patient	-0.056 (0.060)	-0.100 (0.068)	0.057 (0.062)	-0.004 (0.064)
risk-averse	0.046 (0.028)	0.050* (0.029)	-0.029 (0.026)	-0.002 (0.027)
Cognitive skills^{†,‡}				
IQ	-0.152*** (0.022)	-0.079*** (0.021)	-0.148*** (0.020)	-0.057*** (0.020)
Control variables: gender and age (FE)^{††}				
female	0.034 (0.025)	0.019 (0.028)	-0.226*** (0.026)	-0.230*** (0.030)
age 6	<i>base</i>	<i>base</i>	<i>base</i>	<i>base</i>
age 7	-0.154**	-0.024	-0.347***	-0.195***
age 8	-0.121*	-0.086	-0.331***	-0.250***
age 9	-0.160**	-0.084	-0.329***	-0.224***
age 10	-0.173**	-0.069	-0.465***	-0.322***
age 11	-0.269***	-0.147*	-0.494***	-0.340***
age 12	-0.334***	-0.207***	-0.603***	-0.441***
age 13	-0.374***	-0.225***	-0.617***	-0.434***
age 14	-0.474***	-0.344***	-0.838***	-0.667***
age 15	-0.479***	-0.329***	-0.827***	-0.681***
age 16	-0.447***	-0.239**	-0.859***	-0.713***
Household environment^{††}				
socio-demographics	X	✓	X	✓
parents' preferences	X	✓	X	✓
parents' IQ	X	✓	X	✓
parenting style	X	✓	X	✓
Constant				
constant	0.512***	0.022	0.933***	0.550
Observations	5,711	4,477	5,711	4,477
R^2	0.032	0.236	0.060	0.227
adj. R^2	0.029	0.228	0.057	0.218
F	8.247	14.397	23.556	18.022

Notes: Standard errors (in parentheses) are clustered at village level for all specifications. [†]Outcomes, preferences, and cognitive skills measures are defined as described in sections 2.2-2.4. [‡]SDQ subscales and IQ are standardized to a mean of zero and standard deviation of one across all available observations in our children sample. ^{††}Female is an indicator for being a girl, age is measured in years and included as fixed effects (FE), i.e., in the form of dummy variables for each age except the base category. ^{†††}Household (HH) socio-demographics comprise HH income, parents' age and literacy, the number of siblings in the HH, whether a senior is living in the HH, whether the HH has an electricity connection, and religion; parents' preferences and IQ comprise variables analogous to children's measures (see sections 2.2 and 2.3 as well as section C in the appendix); parenting style comprises the six dimensions emotional warmth, inconsistent parenting, monitoring (intensity), negative communication, psychological control, and strict control as described in appendix section D. All columns display OLS regressions, specifications in columns (2) and (4) include HH environment variables. Coefficients of main explanatory variables of interest for each outcome (cf. section 3 on hypotheses) are printed in bold. Significance at * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table H.4: Comparison of children who completely understood all experiments (“u’stood sample”) with all children participating in experiments (“whole sample”) by t-tests

	Mean u’stood sample	Std. dev.	Obs. u’stood sample	Obs. whole sample	Diff. [§]	Std. error
Cognitive skills						
IQ	20.949	6.918	5,079	5,989	0.017	0.132
Gender and age						
female	0.519	0.500	5,079	5,989	0.001	0.010
age	10.401	2.633	5,079	5,989	-0.089*	0.050
Outcomes: field behavior						
prosociality	6.477	2.235	4,848	5,724	-0.001	0.044
test result (CG): Bangla part	34.657	11.057	601	716	-0.282	0.614
test result (CG): math part	19.241	7.129	605	720	0.102	0.392
risky behaviors	0.189	0.164	2,992	3,447	-0.000	0.004
SDQ intern	5.597	2.857	4,848	5,724	-0.027	0.055
SDQ extern	5.979	3.274	4,848	5,724	-0.016	0.064
HH environment						
income (in 100 Tk)	1945.877	2619.894	5,062	5,970	27.867	55.540
father: age	43.348	8.152	4,809	5,675	-0.092	0.160
mother: age	36.056	6.304	4,950	5,831	-0.069	0.122
father: literacy	0.551	0.497	4,808	5,674	0.000	0.010
mother: literacy	0.650	0.477	4,950	5,831	0.000	0.009
number of siblings	2.510	1.450	5,079	5,989	0.003	0.028
senior in HH	0.200	0.400	5,067	5,975	-0.000	0.008
homestead area (in sqm)	391.169	402.573	5,067	5,975	1.234	7.707
electricity	0.921	0.270	5,067	5,975	-0.003	0.005
Muslim	0.822	0.382	5,067	5,975	-0.001	0.007
father: share of stars given	0.475	0.066	3,708	4,334	0.001	0.001
father: patience	5.534	6.036	3,662	4,222	-0.030	0.136
father: time-consistent	0.668	0.471	3,662	4,222	-0.000	0.011
father: never patient	0.401	0.490	3,662	4,222	0.003	0.011
father: risk-averse	0.398	0.490	3,648	4,173	0.007	0.011
mother: share of stars given	0.474	0.070	4,750	5,489	0.001	0.001
mother: patience	5.404	5.827	4,639	5,270	0.019	0.117
mother: time-consistent	0.630	0.483	4,639	5,270	-0.005	0.010
mother: never patient	0.389	0.488	4,639	5,270	-0.008	0.010
mother: risk-averse	0.430	0.495	4,663	5,277	0.007	0.010
father: IQ	17.340	4.392	3,790	4,488	0.031	0.097
mother: IQ	16.010	4.202	4,896	5,764	0.023	0.082
style emotional warmth	3.246	0.760	5,011	5,912	0.024*	0.014
style incons. parenting	2.937	1.092	5,011	5,912	-0.018	0.021
style monitoring	2.864	0.665	5,011	5,912	0.008	0.013
style neg. communication	2.476	0.633	5,011	5,912	0.015	0.012
style psych. control	2.161	0.681	5,011	5,912	-0.019	0.013
style strict control	2.508	0.692	5,011	5,912	0.010	0.013

Notes: [§]Difference = mean(“whole sample”: all children participating in experiments) – mean(“u’stood sample”: children who completely understood all experiments), i.e., negative values indicate a higher mean for the sample of children who completely understood all experiments. IQ and outcomes are standardized to a mean of zero and standard deviation of one across all available observations in our children sample. For a detailed description see sections 2.3 and 2.4. Female as well as father literacy, mother literacy, senior in household, electricity, and Muslim are dummy variables. Age is measured in years. Parents’ preferences and IQ measures are analogous to children’s preferences and IQ measures (see appendix section C). For details on parenting style measures see appendix section D. A comprehensive list and descriptions of variables as well as summary statistics can be found in sections F and G in the appendix. Significance at * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

H.2 Reducing the sample in the baseline regressions to children for whom all household environment variables are available

Tables H.5 and H.6 display regression results when reducing the sample in the baseline regressions to children for whom all household environment variables are available. To ease comparison, tables display baseline regressions with the full sample (cf. Tables 4 and 5 in section 5) and with the reduced sample for each outcome variable next to each other. Note that samples also vary by outcome due to missing entries or age restrictions. Overall, regression results remain similar with the exception of how time preferences relate to behavioral problems: their predictive power vanishes in the smaller sample of children for whom we have complete information on household environment. However, changes in coefficients are small and both samples are not significantly different in basic characteristics, including economic preferences and field behavior.

Running t-tests comparing the sample of children for whom household environment variables are available to the baseline regression sample (Table H.7) shows that samples do not significantly differ in characteristics such as gender, age, preferences, IQ, and all outcome measures.

Table H.5: Sample comparison for baseline regressions—PROSOCIALITY, ACHIEVEMENT TEST RESULTS, and RISKY BEHAVIORS

	PROSOCIALITY ^{†,‡}		ACHIEVEMENT TESTS ^{†,‡}		RISKY BEHAVIORS ^{†,‡}	
	(1) Full sample	(2) HH env sample	(3) Full sample	(4) HH env sample	(5) Full sample	(6) HH env sample
Preferences[†]						
share of stars given	0.632*** (0.198)	0.665*** (0.220)	1.271** (0.533)	1.084* (0.581)	-0.662** (0.272)	-0.648** (0.298)
patience	0.019 (0.012)	0.033** (0.013)	-0.029 (0.029)	-0.035 (0.032)	0.032** (0.014)	0.042*** (0.015)
time-consistent	0.016 (0.042)	0.005 (0.047)	-0.083 (0.104)	-0.079 (0.108)	-0.021 (0.043)	-0.037 (0.047)
never patient	0.013 (0.066)	0.052 (0.075)	0.151 (0.157)	0.120 (0.172)	-0.038 (0.074)	-0.003 (0.081)
risk-averse	0.119*** (0.033)	0.107*** (0.035)	-0.042 (0.079)	-0.009 (0.091)	-0.068* (0.034)	-0.094** (0.038)
Cognitive skills^{†,‡}						
IQ	0.141*** (0.022)	0.125*** (0.023)	0.238*** (0.058)	0.232*** (0.060)	-0.144*** (0.024)	-0.159*** (0.025)
Control variables: gender and age (FE)^{††}						
female	0.094*** (0.026)	0.115*** (0.028)	0.303*** (0.084)	0.307*** (0.092)	-0.828*** (0.034)	-0.831*** (0.036)
age 6	<i>base</i>	<i>base</i>	<i>base</i>	<i>base</i>		
age 7	0.229*** (0.080)	0.187** (0.085)	0.191 (0.140)	0.153 (0.157)		
age 8	0.309*** (0.073)	0.243*** (0.075)	0.149 (0.148)	0.215 (0.155)		
age 9	0.270*** (0.074)	0.218*** (0.080)	0.170 (0.144)	0.230 (0.151)		
age 10	0.372*** (0.076)	0.344*** (0.080)	0.173 (0.207)	0.262 (0.226)	<i>base</i>	<i>base</i>
age 11	0.425*** (0.080)	0.406*** (0.082)	0.191 (0.188)	0.245 (0.216)	-0.088 (0.053)	-0.037 (0.059)
age 12	0.497*** (0.082)	0.421*** (0.084)	0.001 (0.504)	-0.020 (0.651)	-0.144*** (0.050)	-0.168*** (0.054)
age 13	0.575*** (0.089)	0.519*** (0.094)			-0.190*** (0.050)	-0.130** (0.055)
age 14	0.659*** (0.086)	0.643*** (0.090)			-0.365*** (0.058)	-0.343*** (0.060)
age 15	0.653*** (0.089)	0.618*** (0.094)			-0.437*** (0.064)	-0.401*** (0.071)
age 16	0.598*** (0.129)	0.588*** (0.136)			-0.553*** (0.079)	-0.517*** (0.088)
Constant						
constant	-0.841*** (0.137)	-0.852*** (0.148)	-0.894*** (0.294)	-0.826** (0.336)	0.866*** (0.145)	0.804*** (0.156)
Observations	4,837	4,072	607	511	2,979	2,425
R^2	0.037	0.037	0.101	0.089	0.221	0.231
adj. R^2	0.034	0.033	0.081	0.065	0.218	0.226
F	8.906	8.324	4.786	3.401	65.963	60.985

Notes: Standard errors (in parentheses) are clustered at village level for all specifications. [†]Outcomes, preferences, and cognitive skills measures are defined as described in sections 2.2-2.4. [‡]Prosociality, achievement test results, risky behaviors, and IQ are standardized to a mean of zero and standard deviation of one across all available observations in our children sample. ^{††}Female is an indicator for being a girl, age is measured in years and included as fixed effects (FE), i.e., in the form of dummy variables for each age except the base category. All columns display OLS regressions. Columns (1), (3), and (5) display baseline regressions with the full sample, columns (2), (4), and (6) display baseline regressions with reduced HH env samples, i.e., only including children for whom household environment variables as described in section G in the appendix are available. Coefficients of main explanatory variables of interest for each outcome (cf. section 3 on hypotheses) are printed in bold. Significance at * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table H.6: Sample comparison for baseline regressions—SDQ INTERNALIZING (emotional problems) and EXTERNALIZING (behavioral problems) SUBSCALES

	SDQ INTERNALIZING SCALE ^{†,‡}		SDQ EXTERNALIZING SCALE ^{†,‡}	
	(1) Full sample	(2) HH env sample	(3) Full sample	(4) HH env sample
Preferences[†]				
share of stars given	-0.638** (0.246)	-0.558* (0.292)	-0.866*** (0.235)	-0.878*** (0.251)
patience	-0.004 (0.013)	-0.005 (0.014)	0.026** (0.013)	0.023 (0.014)
time-consistent	-0.079 (0.048)	-0.061 (0.052)	-0.075* (0.042)	-0.058 (0.044)
never patient	-0.075 (0.066)	-0.097 (0.075)	0.049 (0.068)	0.010 (0.073)
risk-averse	0.056* (0.032)	0.065* (0.033)	-0.004 (0.028)	-0.012 (0.030)
Cognitive skills^{†,‡}				
IQ	-0.155*** (0.024)	-0.149*** (0.026)	-0.129*** (0.022)	-0.115*** (0.023)
Control variables: gender and age (FE)^{††}				
female	0.018 (0.029)	0.018 (0.034)	-0.227*** (0.028)	-0.233*** (0.033)
age 6	<i>base</i>	<i>base</i>		
age 7	-0.103 (0.090)	-0.037 (0.089)	-0.299*** (0.092)	-0.254*** (0.093)
age 8	-0.028 (0.072)	-0.019 (0.072)	-0.225*** (0.083)	-0.200** (0.084)
age 9	-0.085 (0.076)	-0.047 (0.077)	-0.247*** (0.089)	-0.203** (0.090)
age 10	-0.108 (0.092)	-0.049 (0.090)	-0.332*** (0.090)	-0.290*** (0.090)
age 11	-0.224** (0.089)	-0.179* (0.092)	-0.421*** (0.100)	-0.382*** (0.103)
age 12	-0.287*** (0.089)	-0.242*** (0.092)	-0.503*** (0.098)	-0.466*** (0.098)
age 13	-0.306*** (0.099)	-0.227** (0.098)	-0.520*** (0.102)	-0.468*** (0.103)
age 14	-0.447*** (0.087)	-0.412*** (0.091)	-0.756*** (0.090)	-0.732*** (0.093)
age 15	-0.409*** (0.104)	-0.342*** (0.106)	-0.709*** (0.104)	-0.690*** (0.110)
age 16	-0.436*** (0.128)	-0.350*** (0.134)	-0.779*** (0.130)	-0.789*** (0.135)
Constant				
constant	0.546*** (0.169)	0.443** (0.191)	0.895*** (0.155)	0.873*** (0.169)
Observations	4,837	4,072	4,837	4,072
R^2	0.035	0.032	0.055	0.054
adj. R^2	0.031	0.028	0.051	0.050
F	8.410	6.519	17.628	13.880

Notes: Standard errors (in parentheses) are clustered at village level for all specifications. [†]Outcomes, preferences, and cognitive skills measures are defined as described in sections 2.2-2.4. [‡]SDQ subscales and IQ are standardized to a mean of zero and standard deviation of one across all available observations in our children sample. ^{††}Female is an indicator for being a girl, age is measured in years and included as fixed effects (FE), i.e., in the form of dummy variables for each age except the base category. All columns display OLS regressions. Columns (1) and (3) display baseline regressions with the full sample, columns (2) and (4) display baseline regressions with reduced HH env samples, i.e., only including children for whom household environment variables as described in section G in the appendix are available. Coefficients of main explanatory variables of interest for each outcome (cf. section 3 on hypotheses) are printed in bold. Significance at * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table H.7: Comparison of children in household environment (HH env) sample with children in full baseline (BL) sample by t-tests

	Mean HH env sample	Std. dev.	Obs. HH env sample	Obs. BL sample	Diff. [§]	Std. error
Preferences[†]						
share of stars given	0.473	0.072	4,194	5,076	-0.001	0.002
patience	2.149	2.076	4,194	5,076	0.022	0.043
time-consistent	0.642	0.479	4,194	5,076	0.003	0.010
never patient	0.343	0.475	4,194	5,076	-0.004	0.010
risk-averse	0.407	0.491	4,194	5,076	0.003	0.010
Cognitive skills[†]						
IQ	21.040	6.954	4,194	5,076	-0.091	0.145
Gender and age[‡]						
female	0.521	0.500	4,194	5,076	-0.001	0.010
age	10.337	2.624	4,194	5,076	0.064	0.055
Outcomes: field behavior[†]						
prosociality	6.485	2.230	4,072	4,845	-0.007	0.047
test result (CG): Bangla part	34.822	11.131	505	601	-0.165	0.670
test result (CG): math part	19.422	7.059	510	605	-0.180	0.426
risky behaviors	0.187	0.164	2,425	2,990	0.002	0.004
SDQ internalizing subscale	5.562	2.873	4,072	4,845	0.036	0.061
SDQ externalizing subscale	5.958	3.294	4,072	4,845	0.021	0.070

Notes: [§]Difference = mean(BL: baseline sample children)–mean(HH env: household environment sample children), i.e., negative values indicate a higher mean for children for whom HH environment variables are available. [†]For a detailed description of the measures for preferences, IQ, and outcomes see sections 2.2-2.4. [‡]Female is a dummy variable, age is measured in years. Significance at * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

H.3 Using a different measure to capture risk preferences

Tables H.8 and H.9 display regression results when using a more nuanced measure to capture risk preferences. The risk preferences game is introduced in section 2.2. Here, the indicator for being *risk-averse* (choosing one of the first four gambles) is replaced by two indicator variables for being *risk-neutral* (choosing gamble 5) or *risk-seeking* (choosing gamble 6). Being risk-averse becomes the omitted base category. Results are comparable: risk preferences coefficients have the expected sign and are similar in size. Other preferences' coefficients are hardly affected.

H.4 Using the full SDQ score

Table H.10 shows regression results using the full SDQ score as an outcome variable instead of splitting it into its internalizing and externalizing subscales. As subscales address dimensions linked to different groups of preferences, using the full SDQ score obscures heterogeneous relations between child preferences and emotional and behavioral difficulties.

Table H.8: Using a more nuanced measure of risk preferences in regressions of child field behavior on economic preferences—PROSOCIALITY, ACHIEVEMENT TEST RESULTS, and RISKY BEHAVIORS

	PROSOCIALITY ^{†,‡}		ACHIEVEMENT TESTS ^{†,‡}		RISKY BEHAVIORS ^{†,‡}	
	(1) Baseline	(2) HH env	(3) Baseline	(4) HH env	(5) Baseline	(6) HH env
Preferences[†]						
share of stars given	0.638*** (0.198)	0.499** (0.198)	1.255** (0.530)	1.068* (0.579)	-0.660** (0.273)	-0.205 (0.287)
patience	0.019 (0.012)	0.028** (0.012)	-0.030 (0.029)	-0.035 (0.035)	0.032** (0.014)	0.026* (0.015)
time-consistent	0.017 (0.041)	0.003 (0.041)	-0.083 (0.103)	-0.074 (0.114)	-0.020 (0.043)	-0.008 (0.041)
never patient	0.015 (0.066)	0.007 (0.069)	0.149 (0.157)	0.088 (0.185)	-0.038 (0.074)	-0.011 (0.078)
risk-neutral	-0.092*** (0.033)	-0.029 (0.032)	0.012 (0.098)	0.007 (0.119)	0.077** (0.039)	0.042 (0.042)
risk-seeking	-0.145*** (0.044)	-0.111*** (0.039)	0.064 (0.093)	-0.004 (0.111)	0.058 (0.043)	0.063 (0.043)
Cognitive skills^{†,‡}						
IQ	0.141*** (0.022)	0.032 (0.020)	0.237*** (0.058)	0.240*** (0.064)	-0.144*** (0.024)	-0.099*** (0.024)
Control variables: gender and age (FE)^{††}						
female	0.094***	0.112***	0.303***	0.307***	-0.829***	-0.835***
age 6	<i>base</i>	<i>base</i>	<i>base</i>	<i>base</i>		
age 7	0.229***	0.079	0.193	0.140		
age 8	0.307***	0.186**	0.152	0.245		
age 9	0.268***	0.127*	0.172	0.235		
age 10	0.370***	0.251***	0.174	0.351	<i>base</i>	<i>base</i>
age 11	0.423***	0.290***	0.196	0.305	-0.088	-0.019
age 12	0.492***	0.296***	0.011	-0.107	-0.145***	-0.144***
age 13	0.570***	0.382***			-0.191***	-0.087*
age 14	0.653***	0.471***			-0.366***	-0.299***
age 15	0.649***	0.503***			-0.438***	-0.385***
age 16	0.597***	0.444***			-0.553***	-0.435***
Household environment^{††}						
socio-demographics	X	✓	X	✓	X	✓
parents' preferences	X	✓	X	✓	X	✓
parents' IQ	X	✓	X	✓	X	✓
parenting style	X	✓	X	✓	X	✓
Constant						
constant	-0.724*** (0.136)	-0.179 (0.296)	-0.928*** (0.274)	-1.489* (0.781)	0.797*** (0.143)	-0.021 (0.343)
Observations	4,837	4,072	607	511	2,979	2,425
R ²	0.038	0.195	0.101	0.127	0.221	0.305
adj. R ²	0.034	0.185	0.080	0.044	0.217	0.292
F	8.560	14.455	4.589	3.309	61.405	30.666

Notes: Standard errors (in parentheses) are clustered at village level for all specifications. [†]Outcomes, preferences, and cognitive skills measures are defined as described in sections 2.2-2.4. Instead of an indicator variable for being risk-averse, two indicator variables for being risk-neutral (choosing risk gamble no. 5) or risk-seeking (choosing risk gamble no. 6) are included. [‡]Prosociality, achievement test results, risky behaviors, and IQ are standardized to a mean of zero and standard deviation of one across all available observations in our children sample. ^{††}Female is an indicator for being a girl, age is measured in years and included as fixed effects (FE), i.e., in the form of dummy variables for each age except the base category. ^{†††}Household (HH) socio-demographics comprise HH income, parents' age and literacy, the number of siblings in the HH, whether a senior is living in the HH, whether the HH has an electricity connection, and religion; parents' preferences and IQ comprise variables analogous to children's measures (see sections 2.2 and 2.3 as well as section C in the appendix); parenting style comprises the six dimensions emotional warmth, inconsistent parenting, monitoring (intensity), negative communication, psychological control, and strict control as described in appendix section D. All columns display OLS regressions, specifications in columns (2), (4), and (6) include HH environment variables as described in section G in the appendix. Coefficients of main explanatory variables of interest for each outcome (cf. section 3 on hypotheses) are printed in bold. Significance at * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table H.9: Using a more nuanced measure of risk preferences in regressions of child field behavior on economic preferences—SDQ INTERNALIZING (emotional problems) and EXTERNALIZING (behavioral problems) SUBSCALES

	SDQ INTERNALIZING SCALE ^{†,‡}		SDQ EXTERNALIZING SCALE ^{†,‡}	
	(1) Baseline	(2) HH env	(3) Baseline	(4) HH env
Preferences[†]				
share of stars given	-0.636** (0.245)	-0.269 (0.198)	-0.871*** (0.236)	-0.517*** (0.189)
patience	-0.004 (0.013)	-0.012 (0.012)	0.025* (0.013)	0.008 (0.012)
time-consistent	-0.079 (0.048)	-0.042 (0.049)	-0.076* (0.042)	-0.050 (0.041)
never patient	-0.074 (0.066)	-0.095 (0.072)	0.047 (0.068)	0.010 (0.068)
risk-neutral	-0.046 (0.036)	-0.048 (0.034)	-0.022 (0.032)	-0.033 (0.035)
risk-seeking	-0.066 (0.041)	-0.052 (0.037)	0.029 (0.038)	0.031 (0.035)
Cognitive skills^{†,‡}				
IQ	-0.155*** (0.024)	-0.075*** (0.023)	-0.129*** (0.023)	-0.042** (0.020)
Control variables: gender and age (FE)^{††}				
female	0.018	0.019	-0.227***	-0.231***
age 6	<i>base</i>	<i>base</i>	<i>base</i>	<i>base</i>
age 7	-0.103	0.066	-0.300***	-0.135*
age 8	-0.028	0.027	-0.223***	-0.140*
age 9	-0.085	0.033	-0.245***	-0.116
age 10	-0.109	0.013	-0.330***	-0.215***
age 11	-0.225**	-0.059	-0.419***	-0.255***
age 12	-0.289***	-0.109	-0.499***	-0.329***
age 13	-0.308***	-0.103	-0.516***	-0.325***
age 14	-0.449***	-0.237***	-0.749***	-0.561***
age 15	-0.411***	-0.210**	-0.705***	-0.566***
age 16	-0.437***	-0.132	-0.778***	-0.599***
Household environment^{‡‡}				
socio-demographics	X	✓	X	✓
parents' preferences	X	✓	X	✓
parents' IQ	X	✓	X	✓
parenting style	X	✓	X	✓
Constant				
constant	0.601*** (0.166)	-0.021 (0.378)	0.893*** (0.153)	0.349 (0.425)
Observations	4,837	4,072	4,837	4,072
R^2	0.035	0.243	0.055	0.232
adj. R^2	0.031	0.234	0.051	0.223
F	8.170	13.156	16.818	18.183

Notes: Standard errors (in parentheses) are clustered at village level for all specifications. [†]Outcomes, preferences, and cognitive skills measures are defined as described in sections 2.2-2.4. Instead of an indicator variable for being risk-averse, two indicator variables for being risk-neutral (choosing risk gamble no. 5) or risk-seeking (choosing risk gamble no. 6) are included. [‡]SDQ subscales and IQ are standardized to a mean of zero and standard deviation of one across all available observations in our children sample. ^{††}Female is an indicator for being a girl, age is measured in years and included as fixed effects (FE), i.e., in the form of dummy variables for each age except the base category. ^{‡‡}Household (HH) socio-demographics comprise HH income, parents' age and literacy, the number of siblings in the HH, whether a senior is living in the HH, whether the HH has an electricity connection, and religion; parents' preferences and IQ comprise variables analogous to children's measures (see sections 2.2 and 2.3 as well as section C in the appendix); parenting style comprises the six dimensions emotional warmth, inconsistent parenting, monitoring (intensity), negative communication, psychological control, and strict control as described in appendix section D. All columns display OLS regressions, specifications in columns (2) and (4) include HH environment variables as described in section G in the appendix. Coefficients of main explanatory variables of interest for each outcome (cf. section 3 on hypotheses) are printed in bold. Significance at * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table H.10: Regressions of child field behavior on economic preferences and controls—SDQ FULL SCORE vs. SDQ INTERNALIZING (emotional problems) and EXTERNALIZING (behavioral problems) SUBSCALES

	SDQ FULL SCORE ^{†,‡}		SDQ INTERNALIZING SCALE ^{†,‡}		SDQ EXTERNALIZING SCALE ^{†,‡}	
	(1) Baseline	(2) HH env	(3) Baseline	(4) HH env	(5) Baseline	(6) HH env
Preferences[†]						
share of stars given	-0.880*** (0.250)	-0.461** (0.185)	-0.638** (0.246)	-0.269 (0.199)	-0.866*** (0.235)	-0.511*** (0.188)
patience	0.014 (0.013)	-0.001 (0.012)	-0.004 (0.013)	-0.013 (0.012)	0.026** (0.013)	0.009 (0.012)
time-consistent	-0.089** (0.044)	-0.053 (0.044)	-0.079 (0.048)	-0.042 (0.049)	-0.075* (0.042)	-0.049 (0.041)
never patient	-0.010 (0.067)	-0.043 (0.069)	-0.075 (0.066)	-0.095 (0.072)	0.049 (0.068)	0.012 (0.068)
risk-averse	0.027 (0.030)	0.027 (0.029)	0.056* (0.032)	0.050 (0.030)	-0.004 (0.028)	0.000 (0.029)
Cognitive skills^{†,‡}						
IQ	-0.163*** (0.025)	-0.066*** (0.021)	-0.155*** (0.024)	-0.075*** (0.023)	-0.129*** (0.022)	-0.042** (0.020)
Control variables: gender and age (FE)^{††}						
female	-0.131***	-0.134***	0.018	0.019	-0.227***	-0.231***
age 6	<i>base</i>	<i>base</i>	<i>base</i>	<i>base</i>	<i>base</i>	<i>base</i>
age 7	-0.242***	-0.049	-0.103	0.066	-0.299***	-0.136*
age 8	-0.155*	-0.074	-0.028	0.027	-0.225***	-0.142*
age 9	-0.199**	-0.056	-0.085	0.033	-0.247***	-0.118
age 10	-0.264***	-0.128*	-0.108	0.013	-0.332***	-0.217***
age 11	-0.381***	-0.192**	-0.224**	-0.059	-0.421***	-0.257***
age 12	-0.466***	-0.267***	-0.287***	-0.108	-0.503***	-0.335***
age 13	-0.487***	-0.261***	-0.306***	-0.103	-0.520***	-0.332***
age 14	-0.709***	-0.480***	-0.447***	-0.236***	-0.756***	-0.568***
age 15	-0.660***	-0.466***	-0.409***	-0.209**	-0.709***	-0.569***
age 16	-0.718***	-0.443***	-0.436***	-0.132	-0.779***	-0.599***
Household environment^{††}						
socio-demographics	X	✓	X	✓	X	✓
parents' preferences	X	✓	X	✓	X	✓
parents' IQ	X	✓	X	✓	X	✓
parenting style	X	✓	X	✓	X	✓
Constant						
constant	0.848***	0.178	0.546***	-0.070	0.895***	0.347
Observations	4,837	4,072	4,837	4,072	4,837	4,072
R^2	0.052	0.294	0.035	0.243	0.055	0.231
adj. R^2	0.049	0.286	0.031	0.234	0.051	0.222
F	14.375	17.021	8.410	13.404	17.628	16.596

Notes: Standard errors (in parentheses) are clustered at village level for all specifications. [†]Outcomes, preferences, and cognitive skills measures are defined as described in sections 2.2-2.4. [‡]SDQ full score, SDQ subscales, and IQ are standardized to a mean of zero and standard deviation of one across all available observations in our children sample. ^{††}Female is an indicator for being a girl, age is measured in years and included as fixed effects (FE), i.e., in the form of dummy variables for each age except the base category. ^{†††}Household (HH) socio-demographics comprise HH income, parents' age and literacy, the number of siblings in the HH, whether a senior is living in the HH, whether the HH has an electricity connection, and religion; parents' preferences and IQ comprise variables analogous to children's measures (see sections 2.2 and 2.3 as well as section C in the appendix); parenting style comprises the six dimensions emotional warmth, inconsistent parenting, monitoring (intensity), negative communication, psychological control, and strict control as described in appendix section D. All columns display OLS regressions, specifications in columns (2), (4), and (6) include HH environment variables as described in section G in the appendix. Significance at * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

I Experimental protocols

I.1 Experimental questionnaire for children

General setting

- ◇ **Age:** Children aged 6 to 16 will participate in a sequence of three experiments:
 - a. Time preferences
 - b. Risk preferences
 - c. Social preferences
- ◇ **Order:** The order of the experiments will be randomly determined by the administrators, which is explained at the beginning of the experiments.
- ◇ **Incentive:** Each child will receive a token (a star) as a show-up fee, which s/he will be able to convert into money at the end of the experiments. In addition, children can earn money during the experiment as all experiments are incentivized. However, for each child, only one of the experiments will be paid out. Which experiment will be paid will be determined through a lottery that will be explained soon.
- ◇ **Exchange rate for incentives:** The exchange rate between stars and money will be age-specific and will be communicated at the beginning of the experiment. The conversion table is included here.
- ◇ **Venue:** The experiments will take place in children's home; a male administrator will deal with boys and a female administrator will deal with girls.
- ◇ **Instructions:** All enumerators/instructors must memorize the instructions and explain the game to the child. While they will not read the text word by word, they will stick closely to the wording of the experimental instructions. In addition, the explanation will involve control questions to check for understanding.
- ◇ **Timing:** Members who belong to the same household will sit simultaneously in separate parallel sessions. It is an important task of the interviewer to ensure that the decisions of a household member truly reflect his/her own decision only and that other household members do not try to influence the decisions, e.g. place them back to back or in separate rooms.
- ◇ **Control questions that check children's understanding:** Children's understanding of the rules of the various experiments will be documented.

General instructions

My name is ... Today I have prepared three games for you. In these games, you can earn money. Before we start, I will explain the rules of our games. How much money you will earn depends mainly on your decisions. At the end, only one of the games will be paid. Which game will be paid will be determined randomly after playing all three games. You will roll a die to determine which of the games gets paid. The rolled number will determine whether the first, second, or third game will be paid for. Each game is equally likely to be paid.

It is important that you understand the rules of all our games and play each of them carefully because each of them could be the one that is paid. Please listen carefully now. I will frequently stop during my explanation and allow you to ask questions. Therefore, please interrupt me anytime in case you have a question.

Are you okay so far? *Leave time for questions and answer them privately.*

1. Determine the sequence by rolling a die, and write down the sequence in which experiments are conducted:



- 1 = risk, time, social
- 2 = risk, social, time
- 3 = time, risk, social
- 4 = time, social, risk
- 5 = social, time, risk
- 6 = social, risk, time

Time preferences

Let us start with this game. Before we start, let me explain the rules of our game. In this game you can earn stars, which you can convert into money. Each star is equal to Taka ... (*use the age appropriate exchange rate*). The more stars you earn, the more money you get. That's why it is important that you understand the rules of our game. Please interrupt me anytime in case you have a question.

Are you okay so far? *Leave time for questions and answer them privately.*

1. Determine the order of explanation by rolling a die (blue, green, yellow):



- 1 = blue, green, yellow
- 2 = blue, yellow, green
- 3 = green, blue, yellow
- 4 = green, yellow, blue
- 5 = yellow, blue, green
- 6 = yellow, green, blue

Within each part (color) the order is fixed, i.e. always use blue sheet 1 before blue sheet 2, green sheet 1 before green sheet 2, yellow sheet 1 before yellow sheet 2.

The game works as follows. The game consists of six parts: two blue parts, two yellow parts, and two green parts (*when mentioning the parts, please point at the respective decision sheets*). In each part, you will need to make one decision. For example, in this green part you have to decide whether you prefer receiving 2 stars (*please point at the stars on the decision sheet*) tomorrow, in this case please tick THIS box (*point at the respective box*), or whether you prefer receiving 3 stars in 3 weeks, in that case please tick THAT box (*point at the respective box*). 3 weeks means 21 days and 21 nights. If you go for 2 stars tomorrow, you will get the money tomorrow. One of us will come to your home and deliver the money in an envelope with your name marked on it. If you wait, you will get money for 3 stars after 3 weeks. Again, one of us will come to your home and deliver the money in an envelope with your name on it.

In the second green part you have to decide whether you prefer receiving 2 stars (*please point at the stars on the decision sheet*) tomorrow, in this case please tick THIS box (*point at the respective box*), or whether you prefer receiving 4 stars in 3 weeks, in that case please tick THAT box (*point at the respective box*). If you go for 2 stars, you will get the money tomorrow. One of us will come to your home and deliver the money in an envelope with your name marked on it. If you wait, you will get money for 4 stars after 3 weeks. Again, one of us will come to your home and deliver the money in an envelope with your name marked on it.

Could you please repeat the rules of the game? *If the child is unable to repeat, please explain the game again; the child has to be able to repeat the correct meaning of the game autonomously.*

2. Child understood the game after:

1 = first explanation, 2 = second explanation, 3 = third explanation, 4 = did not understand

The yellow parts are very similar to the green part. Here you see one of the decision sheets for the blue part. Again, 2 stars on the left-hand side, and 3 stars on the right-hand side. If you prefer receiving 2 stars tomorrow, you need to tick the left box. However, now if you prefer receiving 3 stars in 3 months, you need to tick the right box. 3 months means that about 90 days and nights will pass before you will get the money. On the second yellow sheet, again 2 stars on the left-hand side, and 4 stars on the right-hand side. If you prefer receiving 2 stars tomorrow, you need to tick the left box. However, now if you prefer receiving 4 stars in 3 months, you need to tick the right box. What do you think will happen if you tick THIS box? (*Please point at the box with the immediate (tomorrow) reward.*) What do you think will happen if you tick THAT box? (*Please point at the box with the delayed reward of 3 stars; the child has to answer the questions correctly, otherwise the experimenter has to repeat the explanation.*)

3. Child understood the game after:

1 = first explanation, 2 = second explanation, 3 = third explanation, 4 = did not understand

The blue parts are very similar to the green and yellow parts. Here you see the first decision sheet for the blue part. Again, 2 stars on the left-hand side, and 3 stars on the right-hand side. However, now the earlier payment takes place in 1 month, which means after 30 days and nights have passed. The later payment takes place in 4 months, which means after 120 days and nights have passed. If you decide to receive 2 stars, you need to wait 1 month, and if you decide to receive 3 stars, you need to wait 4 months. On the second blue sheet, again 2 stars on the left-hand side, and 4 stars on the right-hand side. If

you prefer receiving 2 stars in 1 month, you need to tick the left box. However, if you prefer receiving 4 stars in 4 months, you need to tick the box on the right. What do you think will happen if you tick THIS box? (*Please point at the box with the reward in 1 month.*) What do you think will happen if you tick THAT box? (*Please point at the box with the delayed reward of 4 stars; the child has to answer the questions correctly, otherwise the experimenter has to repeat the explanation.*)

4. Child understood the game after:

1 = first explanation, 2 = second explanation, 3 = third explanation, 4 = did not understand

If this game is paid, only one of the six decisions counts. That means you will receive the stars for one of the six parts only. The decisions are numbered from 1 to 6. After your decisions, you will roll a die (*please demonstrate*). Assume that it shows number 5. Now decision sheet 5 (the first blue sheet) is played for real. If you have checked the box on the left-hand side, you will receive the money for 2 stars in 1 month. If you have checked the box on the right-hand side, you will receive money for 3 stars in 4 months. The other five sheets do not count in this case. However, you need to make a decision for each of the six sheets because you do not know yet which part will be drawn at the end of the game. Could you please repeat the last part? Will you receive the stars for all six sheets? Do you need to make a decision for each of the six sheets? If the child answers incorrectly the experimenter has to repeat the explanation of this part.

5. Child understood the game after:

1 = first explanation, 2 = second explanation, 3 = third explanation, 4 = did not understand

Please take your decision for each of the six sheets now (*place the decision sheets side by side on the table; the child should fill out the decision sheets from left to right*). Start with this part (*point at the first decision sheet (depending on the order of explanation)*) and continue with this part (*point at the second decision sheet*) and finally make your decision in this part (*point at the final decision sheet*). Take as much time as you need. In the meantime, I will turn around so that I do not disturb you. Just call me when you are done or have any questions.

- 6. Decision taken on Green sheet 1: 1 = tomorrow, 2 = 3 weeks
- 7. Decision taken on Green sheet 2: 1 = tomorrow, 2 = 3 weeks
- 8. Decision taken on Yellow sheet 1: 1 = tomorrow, 2 = 3 months
- 9. Decision taken on Yellow sheet 2: 1 = tomorrow, 2 = 3 months
- 10. Decision taken on Blue sheet 1: 1 = 1 month, 2 = 4 months
- 11. Decision taken on Blue sheet 2: 1 = 1 month, 2 = 4 months

Roll a die to determine which decision sheet would be paid if this game got selected for payoff in the end.

Decision sheet 1
(Green sheet 1)

 Tomorrow <input type="checkbox"/>	 3 Weeks <input type="checkbox"/>
---	--

Decision sheet 2
(Green sheet 2)

 Tomorrow <input type="checkbox"/>	 3 Weeks <input type="checkbox"/>
--	--

Decision sheet 3
(Yellow sheet 1)

 Tomorrow <input type="checkbox"/>	 3 Months <input type="checkbox"/>
---	---

Decision sheet 4
(Yellow sheet 2)

 Tomorrow <input type="checkbox"/>	 3 Months <input type="checkbox"/>
--	---

Decision sheet 5
(Blue sheet 1)

 1 Month <input type="checkbox"/>	 4 Months <input type="checkbox"/>
--	---

Decision sheet 6
(Blue sheet 2)

 1 Month <input type="checkbox"/>	 4 Months <input type="checkbox"/>
---	---

Risk preferences

Let us start with this game. Before we start, I will explain the rules of our game. Similar to other games, you can earn money in this game as well. How much money you will earn depends mainly on your decisions. That's why it is important that you understand the rules of our game. Please listen carefully now. I will frequently stop during my explanation and allow you to ask questions. Please interrupt me anytime in case you have a question.

Are you okay so far? *Leave time for questions and answer them privately.*

In this game, you need to select the gamble you would like to play from among six different gambles, which are listed below. You must select one and only one of these gambles.

If this game is selected for payment, you will have a 1-in-6 chance of receiving the money. The selection will be made by rolling a 6-sided die twice—first, you will roll the die to decide the gamble, and the second to decide the outcome of the particular gamble. For example, if you selected gamble number 4, then if the first roll of the die is 4, you would receive one of the payoffs of gamble number 4, which will be determined in the second roll. If the first roll of the die is not 4 and you have chosen gamble number 4, you would not receive any payments. Depending on the outcome of the first roll, the second roll would determine the outcome of the selected gamble. Each gamble has two possible outcomes—low and high. If 1, 2 or 3 is rolled, the outcome of the selected gamble is the low one, and if 4, 5 or 6 is rolled, the outcome of the gamble is the high one, and you would receive money accordingly.

Notice that the low outcome is decreasing and the high outcome is increasing for each successive gamble. For example, in the first gamble, both outcomes are identical. If you select it and then this number is rolled in the first roll, your payoff would be 25 (*please adjust for the appropriate age*) Taka. If on the other hand, you had selected gamble number 2, and if it is rolled on the first roll, your payoff could be 22 (*please adjust*) Taka or 48 (*please adjust*) Taka. In the second roll, if 1, 2 or 3 is rolled, you would receive 22 (*please adjust*) Taka, whereas if 4, 5 or 6 is rolled, you would receive 48 (*please adjust*) Taka.

Ask the child to repeat the game.

1. Child understood the game after:

1 = first explanation, 2 = second explanation, 3 = third explanation, 4 = did not understand

Before you select the actual gamble involving money, we will have a practice session with candies. There are two gambles from which you need to select one:

	Outcome	Payoff	Chances	Your Selection
Gamble 1	LOW	1	50%	
	HIGH	1	50%	
Gamble 2	LOW	0	50%	
	HIGH	2	50%	

Both gambles have two outcomes. The first gamble pays 1 candy in both states, while the second gamble pays no (0) candy in the low state and 2 candies in high state. Which gamble would you like to play? Once you make your selection, you will first roll the die to decide the gamble, and then again roll the die to decide the outcome of the particular gamble. For

example, if you selected gamble number 2, then if the first roll of the die is 2, you would receive one of the payoffs of gamble number 2, which will be determined in the second die roll. In the second die roll, if 1, 2 or 3 is rolled, the outcome of the selected gamble is the low one, which is 0 in gamble number 2. That means, you will not receive any candy. However, if 4, 5 or 6 is rolled, the outcome of the gamble is the high one, and you will receive 2 candies. Let us start this now.

Are you okay so far? *Leave time for questions and answer them privately.*

2. Gamble number picked involving candies:

Roll a die to determine whether gamble number 1 or gamble number 2 is payoff-relevant. If you have rolled a 1 or a 2, please roll the die a second time to determine whether the low or the high payoff is realized.

3. Select the table with the appropriate age:

- 1 = age 6-7
- 2 = age 8-9
- 3 = age 10-11
- 4 = age 12-13
- 5 = age 14-15
- 6 = age 16

4. Gamble number picked:

Roll a die to determine whether gamble number 1 or gamble number 2 is payoff-relevant. If the outcome of the first die roll equals the gamble number picked (if 6. = 7.), please roll the die a second time to determine whether the low or the high payoff is realized.

Table 1: Age 6-7

Mark the gamble you like best with an X in the last column "Your Selection"
 (mark only one of the six gambles):

	Outcome	Payoff	Chances	Your Selection
Gamble 1	LOW	13	50%	
	HIGH	13	50%	
Gamble 2	LOW	11	50%	
	HIGH	24	50%	
Gamble 3	LOW	10	50%	
	HIGH	30	50%	
Gamble 4	LOW	8	50%	
	HIGH	38	50%	
Gamble 5	LOW	3	50%	
	HIGH	48	50%	
Gamble 6	LOW	0	50%	
	HIGH	50	50%	

Table 2: Age 8-9

Mark the gamble you like best with an X in the last column "Your selection"
 (mark only one of the six gambles):

	Outcome	Payoff	Chances	Your Selection
Gamble 1	LOW	19	50%	
	HIGH	19	50%	
Gamble 2	LOW	17	50%	
	HIGH	36	50%	
Gamble 3	LOW	15	50%	
	HIGH	45	50%	
Gamble 4	LOW	11	50%	
	HIGH	56	50%	
Gamble 5	LOW	4	50%	
	HIGH	71	50%	
Gamble 6	LOW	0	50%	
	HIGH	75	50%	

Table 3: Age 10-11

Mark the gamble you like best with an X in the last column "Your selection"
 (mark only one of the six gambles):

	Outcome	Payoff	Chances	Your Selection
Gamble 1	LOW	25	50%	
	HIGH	25	50%	
Gamble 2	LOW	22	50%	
	HIGH	48	50%	
Gamble 3	LOW	20	50%	
	HIGH	60	50%	
Gamble 4	LOW	15	50%	
	HIGH	75	50%	
Gamble 5	LOW	5	50%	
	HIGH	95	50%	
Gamble 6	LOW	0	50%	
	HIGH	100	50%	

Table 4: Age 12-13

Mark the gamble you like best with an X in the last column "Your selection"
 (mark only one of the six gambles):

	Outcome	Payoff	Chances	Your Selection
Gamble 1	LOW	38	50%	
	HIGH	38	50%	
Gamble 2	LOW	33	50%	
	HIGH	72	50%	
Gamble 3	LOW	30	50%	
	HIGH	90	50%	
Gamble 4	LOW	23	50%	
	HIGH	113	50%	
Gamble 5	LOW	8	50%	
	HIGH	143	50%	
Gamble 6	LOW	0	50%	
	HIGH	150	50%	

Table 5: Age 14-15

Mark the gamble you like best with an X in the last column "Your selection"
 (mark only one of the six gambles):

	Outcome	Payoff	Chances	Your Selection
Gamble 1	LOW	44	50%	
	HIGH	44	50%	
Gamble 2	LOW	39	50%	
	HIGH	84	50%	
Gamble 3	LOW	35	50%	
	HIGH	105	50%	
Gamble 4	LOW	26	50%	
	HIGH	131	50%	
Gamble 5	LOW	9	50%	
	HIGH	166	50%	
Gamble 6	LOW	0	50%	
	HIGH	175	50%	

Table 6: Age 16

Mark the gamble you like best with an X in the last column "Your selection"
 (mark only one of the six gambles):

	Outcome	Payoff	Chances	Your Selection
Gamble 1	LOW	63	50%	
	HIGH	63	50%	
Gamble 2	LOW	55	50%	
	HIGH	120	50%	
Gamble 3	LOW	50	50%	
	HIGH	150	50%	
Gamble 4	LOW	38	50%	
	HIGH	188	50%	
Gamble 5	LOW	13	50%	
	HIGH	238	50%	
Gamble 6	LOW	0	50%	
	HIGH	250	50%	

Social preferences

In this game you can earn stars, which you can convert into money. Each star is equal to Taka ... (*use the age appropriate exchange rate*). The more stars you will earn, the more money you will get. That's why it is important that you understand the rules of our game. Please listen carefully now. I will frequently stop during my explanation and allow you to ask questions. Therefore, please interrupt me anytime in case you have a question.

Are you okay so far? *Leave time for questions and answer them privately.*

In this game you have to decide how to divide stars between yourself and another child similar to you but from a different village. You will never know who exactly the other child is and the other child will not get to know you. However, I will ensure that the other child does indeed receive the money that corresponds to the stars that you will give to him/her. You will get four different decision sheets. You will need to decide how to divide stars between yourself and another child similar to you.

Are you okay so far? *Leave time for questions and answer them privately.*

There are two possible ways to allocate the stars: the option on the left-hand side and the option on the right-hand side. Please look at the decision sheet. With option "left" you get 1 star and the child from another village gets 1 star. 1 star equals ... Taka (*depending on the age group*). With option "right" you get 2 stars and the child from another village gets 0 stars.

Are you okay so far? *Leave time for questions and answer them privately.*

Depending on which option you want to choose, you should check the box at the left- or the right-hand side. You can choose either option "left" or option "right". If you would like to divide the stars according to option "right", which box would you have to check? Right, the box at the "right" side. How much would you earn and how much would the child from the other village with whom you are randomly matched earn in this case? Right, you would get ... Taka (*depending on the age group*) and the other child similar to you would get nothing.

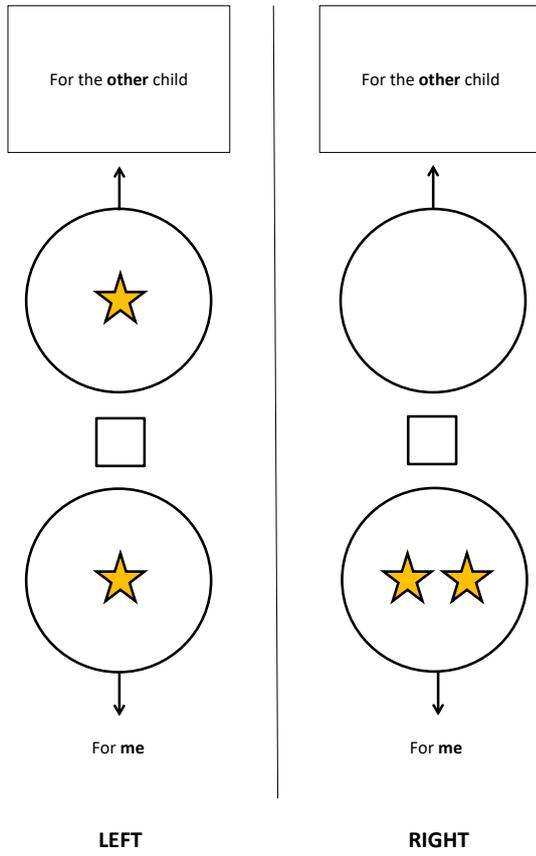
1. Child understood the game after:

1 = first explanation, 2 = second explanation, 3 = third explanation, 4 = did not understand

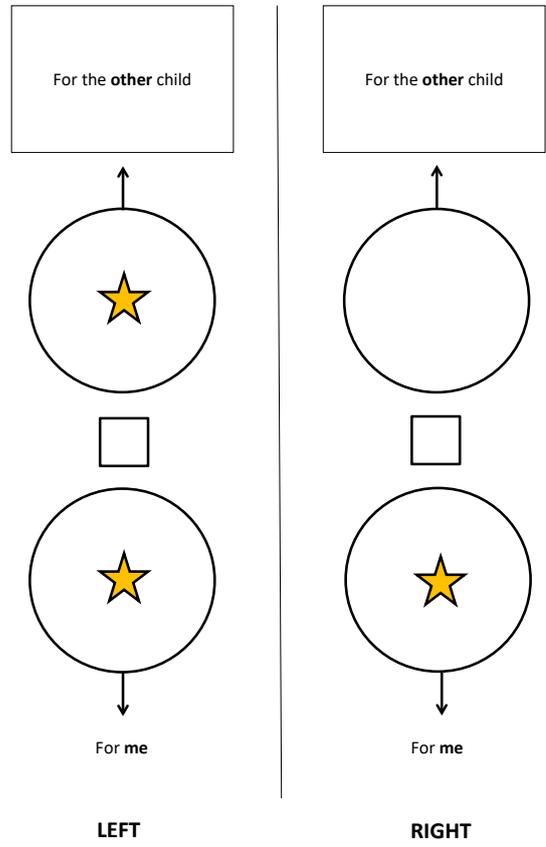
Are you okay so far? *Leave time for questions and answer them privately.*

As I mentioned earlier, you will get four decision sheets. The decision sheets differ from each other in the amount of stars that can be divided between you and the other child. Please choose one of the two options for each decision sheet. At the end of the game, you will roll a die (*show the process*). Here the number you roll corresponds to the sheet you will get paid for, meaning if you roll 1, you get paid for decision sheet 1 etc. If this game is selected for payment, you and the other child will be paid according to the selected decision sheet. If you roll a 5 or 6, no decision sheet will be paid.

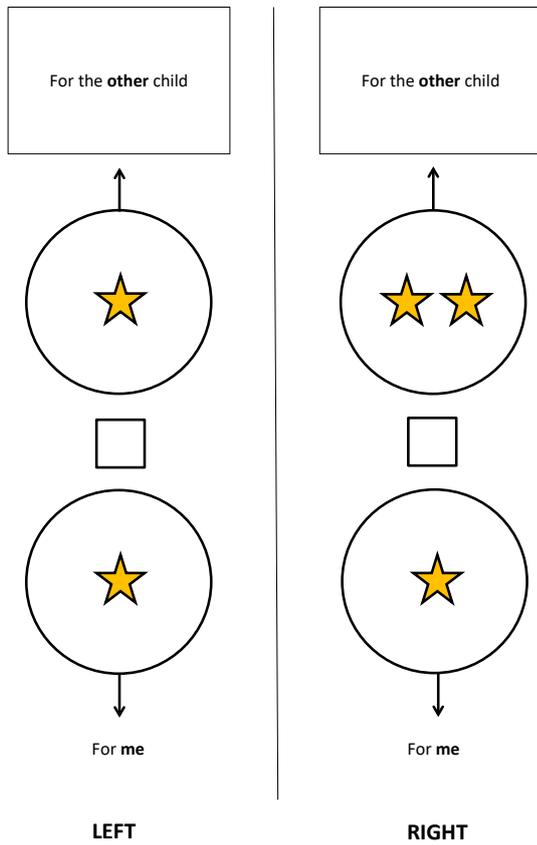
Decision sheet 1



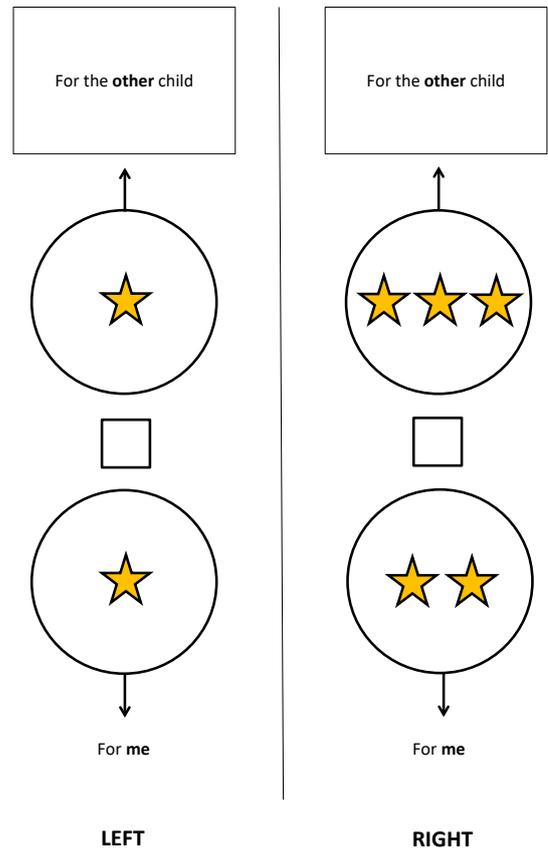
Decision sheet 2



Decision sheet 3



Decision sheet 4



2. Decision on first sheet: 1 = left, 2 = right
3. Decision on second sheet: 1 = left, 2 = right
4. Decision on third sheet: 1 = left, 2 = right
5. Decision on fourth sheet: 1 = left, 2 = rights

Roll a die to determine which decision sheet would be paid if this game got selected for payoff in the end.

Risky behaviors (*children aged 10 to 16*)

Scale: 1 = yes, 2 = no

1. Do you smoke?
2. Do you eat pan/jorda/supari?
3. Do you gamble/bet/play lottery?
4. Do you play on road with car tires?
5. Do you jump from tree/bridge/saqo/trolley to river or canal?
6. Do you run behind the motorbike/car/trolley?
7. Do you play danguli?
8. Do you get up in the tree or your house roof?
9. Do you play dive in pond/river?
10. Do you bring flowers or fruits without permission from someone else's garden?
11. Do you play somersault?
12. Do you blow fire-works?
13. Do you play ha-du-du?
14. Do you use marijuana/ganja/hashish?
15. Do you drive a car/motorbike?
16. Do you often get into physical fights?

On top of the measures displayed, we elicited questionnaire measures for time, risk, and trust preferences as well as locus of control, self-control, Big 5, self-esteem, and happiness.

I.2 Mothers about children questionnaire

Strengths and Difficulties Questionnaire (*mothers about all children aged 6 to 16*)

Scale:

- 1 = not true
- 2 = somewhat true
- 3 = certainly true

My child...

1. ...is considerate of other people's feelings.
2. ...is restless, overactive, cannot stay still for long.
3. ...often complains of headaches, stomach-aches or sickness.
4. ...shares readily with other children (treats, toys, pencils, etc.).
5. ...often has temper tantrums or hot tempers.
6. ...is rather solitary, tends to play alone.
7. ...is generally obedient, usually does what adults request.
8. ...has many worries, often seems worried.
9. ...is helpful if someone is hurt, upset or feeling ill.
10. ...is constantly fidgeting or squirming.
11. ...has at least one good friends.
12. ...often fights with other children or bullies them.
13. ...is often unhappy, down-hearted or tearful.
14. ...is generally liked by other children.
15. ...is easily distracted, concentration wanders.
16. ...is nervous or clingy in new situations, easily loses confidence.
17. ...is kind to younger children.
18. ...often lies or cheats.
19. ...is picked on or bullied by other children.
20. ...often volunteers to help others (parents, teachers, other children).
21. ...thinks things out before acting.
22. ...steals from home, school or elsewhere.
23. ...gets on better with adults than with other children.
24. ...has many fears, is easily scared.
25. ...sees tasks through to the end, has good attention span.

Parenting style

(answered once for all children in the household)

Scale:

- 1 = never
- 2 = seldom
- 3 = sometimes
- 4 = frequently
- 5 = very frequently

How often do the following things occur?

1. I use words and gestures to show my child that I love him/her.
2. I criticize my child.
3. I talk to my child about things he/she has done, seen, or experienced when he/she was out.
4. I punish my child when he/she was disobedient.
5. I threaten my child with punishment, but don't actually follow through with it.
6. When my child is outside the home, I know exactly where he/she is.
7. I tend to be strict with my child.
8. I comfort my child when he/she feels sad.
9. I shout at my child, when he/she did something wrong.
10. I feel that my child is ungrateful because he/she disobeys.
11. I stop talking to my child for a while when he/she did something wrong.
12. I make it clear to my child that he/she should not oppose orders and decisions.
13. I praise my child.
14. I scold my child when I am angry at him/her.
15. I try to actively influence my child's circle of friends.
16. I reduce punishments or lift them ahead of time.
17. I am disappointed and sad when my child misbehaves.
18. It is hard for me to be consistent in my childrearing.

On top of the measures displayed, mothers answered short questionnaires regarding self-control and Big 5 for younger children aged 6 to 13 and 6 to 11, respectively.

I.3 Experimental questionnaire for adults: Preferences sections

Time preferences

Let us start with this game. Before we start, let me explain the rules of our game. In this game you can earn money. That's why it is important that you understand the rules of our game. Please interrupt me anytime in case you have a question.

Are you okay so far? *Leave time for questions and answer them privately.*

1. Determine the order of explanation by rolling a die (blue, green, yellow) and write it down:



- 1 = choice set 1, choice set 2, choice set 3
- 2 = choice set 1, choice set 3, choice set 1
- 3 = choice set 2, choice set 3, choice set 1
- 4 = choice set 2, choice set 1, choice set 3
- 5 = choice set 3, choice set 1, choice set 2
- 6 = choice set 3, choice set 2, choice set 2

The game works as follows: The game consists of three choice sets. There are six choices in each choice set. You need to make a choice between two payment options: Option A or Option B. In each choice set, there are six such decisions that you need to make. Each decision is a paired choice between Option A and Option B. You will be asked to make a choice between these two payment options in each decision row. For example, (*assuming the first choice set is being randomly picked first*) in the first row, you need to make a choice between payment Option A and payment Option B where payment Option A pays you 100 Taka tomorrow and Option B pays you 105 Taka after 3 months from today. In the second choice, Option A pays you 100 Taka tomorrow, and Option B pays you 110 Taka in 3 months. In the third choice, Option A pays you 100 Taka tomorrow, and Option B pays you 120 Taka in 3 months. Notice that Option A remains unchanged while Option B is increasing.

If you go for 100 Taka tomorrow, you will need to tick Option A. If selected, one of us will come to your home and to deliver the money in an envelope with your name marked on it. If you wait, you will get 105 Taka after 3 months. Again, one of us will come to your home and to deliver the money in an envelope with your name marked on it.

Could you please repeat the rules of the game? *If the respondent is unable to repeat, please explain the game again; the respondent has to be able to repeat the correct meaning of the game autonomously.*

2. Respondent understood the game after:

1 = first explanation, 2 = second explanation, 3 = third explanation, 4 = did not understand

The second choice set is very similar to the first choice set. However, Option A now pays in 1 month, and Option B pays in 4 months. If you go for 100 Taka in 1 month, you will need to tick Option A. If selected, one of us will come to your home and deliver the money in an envelope with your name marked on it. If you wait 4 months, you will get 105 Taka after 4 months. Again, one of us will come to your home and deliver the money in an envelope with your name marked on it.

Could you please repeat the rules of the game? *If the respondent is unable to repeat, please explain the game again; the respondent has to be able to repeat the correct meaning of the game autonomously.*

3. Respondent understood the game after:

1 = first explanation, 2 = second explanation, 3 = third explanation, 4 = did not understand

The third choice set is very similar to the second and first choice set. However, Option A now pays in 1 year, and Option B pays in 1 year and 3 months. If you go for 100 Taka in 1 year, you will need to tick Option A. If selected, one of us will come to your home and to deliver the money in an envelope with your name marked on it. If you wait 1 year and 3 months, you will get 105 Taka after 1 year and 3 months. Again, one of us will come to your home and to deliver the money in an envelope with your name marked on it.

If this game is paid, only one of the three choice sets counts. The selection will be made by rolling a 6-sided die twice—first to decide the set, and second to decide the choice. You will roll the die after your decisions (*please demonstrate*). In the first die roll, if 1, 2 or 3 is rolled, you will receive the money from the particular choice set, if 4, 5 or 6 is rolled, you will not receive any money. Depending on the outcome of the first die roll, the second die roll would determine the particular choice that you would be paid for. For example, if 3 is rolled in the second roll, you will receive the money from your decision concerning the third payoff alternative (*third row*) of the relevant choice set.

Could you please repeat the rules of the game? *If the respondent is unable to repeat, please explain the game again; the respondent has to be able to repeat the correct meaning of the game autonomously.*

4. Respondent understood the game after:

1 = first explanation, 2 = second explanation, 3 = third explanation, 4 = did not understand

Please take your decision for each of the choice sets now (*place the decision sheets side by side on the table*). Start with this part (*point at the first decision sheet (depending on the order of explanation)*) and continue with this part (*point at the second decision sheet*) and finally make your decision in this part (*point at the final decision sheet*). Take as much time as you need. In the meantime, I will turn around so that I do not disturb you. Just call me when you are done or have any questions.

Roll a die to determine which decision sheet would be paid if this game got selected for payoff in the end.

Choice set 1

Payoff alternative	Payment Option A (pays amount below tomorrow)	Payment Option B (pays amount below after 3 months)	Annual interest rate in %	Preferred Payment Option (A or B)
1	100	105	20%	
2	100	110	40%	
3	100	120	80%	
4	100	125	100%	
5	100	150	200%	
6	100	200	400%	

Choice set 2

Payoff alternative	Payment Option A (pays amount below after 1 month)	Payment Option B (pays amount below after 4 months)	Annual interest rate in %	Preferred Payment Option (A or B)
1	100	105	20%	
2	100	110	40%	
3	100	120	80%	
4	100	125	100%	
5	100	150	200%	
6	100	200	400%	

Choice set 3

Payoff alternative	Payment Option A (pays amount below after 1 year)	Payment Option B (pays amount below after 1 year 3 months)	Annual interest rate in %	Preferred Payment Option (A or B)
1	100	105	20%	
2	100	110	40%	
3	100	120	80%	
4	100	125	100%	
5	100	150	200%	
6	100	200	400%	

Risk preferences

Let us start with this game. Before we start, I will explain the rules of our game. Similar to the other games, you can earn money in this game as well. How much money you will earn depends mainly on your decisions. That's why it is important that you understand the rules of our game. Please listen carefully now. I will frequently stop during my explanation and allow you to ask questions. Therefore, please interrupt me anytime in case you have a question.

Are you okay so far? *Leave time for questions and answer them privately.*

In this game, you need to select the gamble you would like to play from among six different gambles, which are listed below. You must select one and only one of these gambles.

If this game is selected for payment, you will have a 1-in-6 chance of receiving the money. The selection will be made by rolling a 6-sided die twice—first, you will roll the die to decide the gamble, and the second to decide the outcome of the particular gamble. For example, if you selected gamble number 4, then if the first roll of the die is 4, you would receive one of the payoffs of gamble 4, which will be determined in the second roll. If the first roll of the die is not 4 and you have chosen gamble number 4, you would not receive any payments. Depending on the outcome of the first roll, the second roll would determine the outcome of the selected gamble. Each gamble has two possible outcomes—low and high. If 1, 2 or 3 is rolled, the outcome of the selected gamble is the low one, and if 4, 5 or 6 is rolled, the outcome of the gamble is the high one, and you would receive money accordingly.

Notice that the low outcome is decreasing and the high outcome is increasing for each successive gamble. For example, in the first gamble, both outcomes are identical. If you select it and then this number is rolled in the first roll, your payoff would be 125 Taka. If on the other hand, you had selected gamble number 2, and if it is rolled on the first roll, your payoff could be 110 Taka or 240 Taka. In the second roll, if 1, 2 or 3 is rolled, you would receive 110 Taka, whereas if 4, 5 or 6 is rolled, you would receive 240 Taka.

Ask the respondent to repeat the game.

1. Respondent understood the game after:

1 = first explanation, 2 = second explanation, 3 = third explanation, 4 = did not understand

Before you select the actual gamble involving money, we will have a practice session with candies. There are two gambles from which you need to select one:

	Outcome	Payoff	Chances	Your Selection
Gamble 1	LOW	1	50%	
	HIGH	1	50%	
Gamble 2	LOW	0	50%	
	HIGH	2	50%	

Both gambles have two outcomes. The first gamble pays 1 candy in both states, while the second gamble pays no (0) candy in the low state and 2 candies in high state. Which gamble would you like to play? Once you make your selection, you will first roll the die to decide the gamble, and then again roll the die to decide the outcome. For example, if you selected gamble number 2, then if the first roll of the die is 2, you would receive one of the payoffs

of gamble number 2, which will be determined in the second die roll. In the second roll, if 1, 2 or 3 is rolled, the outcome of the selected gamble is the low one, which is 0 here. That means, you will not receive any candy. However, if 4, 5 or 6 is rolled, the outcome of the gamble is the high one, and you will receive 2 candies. Let us start this now.

Are you okay so far? Leave time for questions and answer them privately.

2. Gamble number picked involving candies:

Roll a die to determine whether gamble number 1 or gamble number 2 is payoff-relevant. If you have rolled a 1 or a 2, please roll the die a second time to determine whether the low or the high payoff is realized.

Mark the gamble you like best with an X in the last column "Your Selection" (mark only one of the six gambles):

	Outcome	Payoff	Chances	Your Selection
Gamble 1	LOW	125	50%	
	HIGH	125	50%	
Gamble 2	LOW	110	50%	
	HIGH	240	50%	
Gamble 3	LOW	100	50%	
	HIGH	300	50%	
Gamble 4	LOW	75	50%	
	HIGH	375	50%	
Gamble 5	LOW	25	50%	
	HIGH	475	50%	
Gamble 6	LOW	0	50%	
	HIGH	500	50%	

3. Gamble number picked:

Roll a die to determine whether gamble number 1 or gamble number 2 is payoff-relevant. If the outcome of the first die roll equals the gamble number picked (if 6. = 7.), please roll the die a second time to determine whether the low or the high payoff is realized.

Social preferences

In this game you can earn stars, which you can convert into money. Each star is equal to Taka 100. The more stars you will earn, the more money you will get. That's why it is important that you understand the rules of our game. Please listen carefully now. I will frequently stop during my explanation and allow you to ask questions. Therefore, please interrupt me anytime in case you have a question.

Are you okay so far? Leave time for questions and answer them privately.

In this game you have to decide how to divide stars between yourself and another person similar to you but from a different village. You will never know who exactly the other person is and the other person will not get to know you. However, I will ensure that the other person does indeed receive the money that corresponds to the stars that you will give to him/her. You will get four different decision sheets. You will need to decide how to divide stars between yourself and this person similar to you.

Are you okay so far? *Leave time for questions and answer them privately.*

There are two possible ways to allocate the stars: the option on the left-hand side and the option on the right-hand side. Please look at the decision sheet. With option "left" you get one star and the person from another village with whom you are randomly matched gets 1 star. One star equals 100 Taka. With option "right" you get 2 stars and the person from another village gets 0 stars.

Are you okay so far? *Leave time for questions and answer them privately.*

Depending on which option you want to choose, you should check the box at the left- or the right-hand side. You can choose either option "left" or option "right". If you would like to divide the stars according to option "right", which box would you have to check? Right, the box at the "right" side. How much would you earn and how much would the person from the other village with you are randomly matched earn in this case? Right, you would get 100 Taka and the other person similar to you would get nothing.

1. Respondent understood the game after:

1 = first explanation, 2 = second explanation, 3 = third explanation, 4 = did not understand

Are you okay so far? *Leave time for questions and answer them privately.*

As I mentioned earlier, you will get four decision sheets. The decision sheets differ from each other in the amounts of stars that can be divided between you and the other person. Please choose one of the two options for each decision sheet. At the end of the game, you will roll a die to determine the decision sheet out of four (*show the process*). Here the number you roll corresponds to the sheet you will get paid for, meaning if you roll 1, you get paid for decision sheet 1. If this game is selected for payment, you and the other person will be paid according to the selected decision sheet. If you roll a 5 or 6, no decision sheet will be paid.

[Decision sheets for adults are identical to those for children.]

- 2. Decision on first sheet: 1 = left, 2 = right
- 3. Decision on second sheet: 1 = left, 2 = right
- 4. Decision on third sheet: 1 = left, 2 = right
- 5. Decision on fourth sheet: 1 = left, 2 = rights

Roll a die to determine which decision sheet would be paid if this game got selected for payoff in the end.