Parental mental health and the economic preferences of the next generation*

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Abstract

This paper provides the first evidence that children's economic preferences vary systematically with parental mental health. Using experimentally elicited measures of economic preferences from more than 4,500 children in Bangladesh, we document that children with parents who are affected by mental illness are less prosocial but more patient than their peers with mentally healthy parents. Attitudes toward risk remain unchanged. We discuss potential pathways through which parental mental health may influence the formation of children's preferences, documenting that children with mentally ill parents assume greater responsibilities within the family, experience less parental involvement, and are exposed to a more adverse home environment.

Keywords: mental health, social preferences, risk preferences, patience, origins of preferences, experiments with children, Bangladesh

JEL Classification: C91, D01, D10, I10

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1 Introduction

Approximately one in four people worldwide experience a mental illness during their lifetime (WHO, 2001). Notably, around 68 percent of women and 57 percent of men with mental health disorders are parents (Ayano et al., 2022). In recent years, a growing literature has examined the individual and societal costs of mental health disorders, documenting how severely mental illness affects individual decision making, behavior, and life outcomes (e.g., De Quidt and Haushofer, 2019; Baranov et al., 2020; Biasi, Dahl, and Moser, 2021; Bhat et al., 2022; Jolivet and Postel-Vinay, 2024) as well as the economy as a whole (e.g., Arias, Saxena, and Verguet, 2022; Abramson, Boerma, and Tsyvinski, 2024).

Despite these advances, there is still much to be learned about the intergenerational implications of mental health. In particular, it is an open question whether and how parental mental illness influences children's economic preferences. Economic preferences shape decisions and life outcomes of individuals.[1] In childhood and adolescence, impatience is related to a higher body mass index, a lower propensity to save, poorer educational outcomes, and an increased likelihood of receiving disciplinary referrals at school, smoking and drinking alcohol (Castillo et al., 2011; Sutter et al., 2013; Castillo, Jordan, and Petrie, 2019; Castillo et al., 2024). More risk-taking children and adolescents are more likely to be overweight (Sutter et al., 2013), display poorer behavior at school, and are less likely to complete high school (Castillo et al., 2011). Children with more pronounced social preferences exhibit fewer emotional and behavioral problems and demonstrate greater prosocial behavior in daily life (Breitkopf et al., 2024). Importantly, these associations tend to persist and measures of economic preferences in childhood or adolescence also predict adult outcomes (Borghans, Weel, and Weinberg, 2008; Golsteyn, Grönqvist, and Lindahl, 2014). Economic preferences emerge in childhood and undergo significant development before stabilizing in adulthood (Heckman, 2007; Schildberg-Hörisch, 2018). On average, children become more patient, more prosocial, and less risk-seeking as they grow (Sutter, Zoller, and Glätzle-

1. For adults, social preferences predict cooperative behavior at work, donation decisions, repayment of loans or management of common pool resources (Karlan, 2005; Dohmen et al., 2009; Rustagi, Engel, and Kosfeld, 2010; Carpenter and Seki, 2011; Becker et al., 2012; Burks et al., 2016; Deming, 2017). More patient individuals have higher educational attainment, occupational success, income and wealth (Ventura, 2003; DellaVigna and Paserman, 2005; Eckel, Johnson, and Montmarquette, 2005; Golsteyn, Grönqvist, and Lindahl, 2014; Cadena and Keys, 2015; Sunde et al., 2022), better health outcomes (Fuchs, 1982; Bickel, Odum, and Madden, 1999; Kirby, Petry, and Bickel, 1999; Kirby and Petry, 2004; Chabris et al., 2008; Golsteyn, Grönqvist, and Lindahl, 2014; Cadena and Keys, 2015) and are less likely to be involved in crime (Åkerlund et al., 2016). Risk preferences are associated with labor market and health outcomes, investment and migration decisions (Barsky et al., 1997; Hong, Kubik, and Stein, 2004; Bonin et al., 2007; Anderson and Mellor, 2008; Kimball, Sahm, and Shapiro, 2008; Jaeger et al., 2010; Dohmen and Falk, 2011; Dohmen et al., 2011; Gaudecker, Soest, and Wengström, 2011; Becker et al., 2012; Dawson and Henley, 2015; Hsieh, Parker, and Praag, 2017).

Rützler, 2019).[2] As such, childhood and adolescence represent a critical window for preference development, underlining that parental mental health can potentially have lasting and important effects on the economic choices and life outcomes of the next generation.

The role of parental mental illness for preference formation and child development is theoretically ambiguous, calling for empirical evidence. On the one hand, mental illness can compromise the ability of parents to effectively support and nurture their children (Leinonen, Solantaus, and Punamäki, 2003). Given the importance of parental investment for child development (Francesconi and Heckman, 2016), these limitations could hinder children's skill development, resulting in less prosocial, less patient and perhaps more risk-seeking behavior (Falk et al., 2021). On the other hand, having a mentally ill parent can lead children to assume new roles and responsibilities within the family. These children often take on a greater share of family duties, may engage in caregiving activities for their siblings or parents (Gladstone et al., 2011) or start to work to contribute to family income. By adopting these adult-like responsibilities, they may develop new competencies and mature more rapidly (Aldridge and Becker, 2003), making them behave in a more prosocial and patient manner than their peers with mentally healthy parents.

This paper advances our understanding of the consequences of mental health by documenting that children's economic preferences vary systematically with parental mental health. Establishing such a link poses a challenge, as it requires detailed data on parental mental health and measures of offspring preferences that remain unaffected by parental circumstances. We use data on more than 3,300 households in rural Bangladesh. Three waves of panel data include comprehensive measures of children's preferences and parental mental health, as well as detailed information about the household environment, parental characteristics, and child outcomes. Children and adolescents in our sample were between the ages of 6 and 16 during the first wave of data collection and subsequently grew older as they participated in the follow-up waves. Importantly, we use incentivized experiments to measure the core dimensions of children's economic preferences—time, risk, and social preferences. Our preference measures thus rely on children's revealed behavior instead of parental assessments, ruling out any possible influence of parental mental health on the assessment of children's preferences. The experiments were carried out in one-on-one settings within the families' homes, and interviewers ensured that household members could not influence each other's decisions. To assess parental mental health, both mothers and fathers answered the well-established 12-item General Health Questionnaire (GHQ-12) by Goldberg (1978).

2. The decrease in risk-taking mainly occurs before adolescence, while risk preferences seem to exhibit less of an age trend during adolescence (Sutter, Zoller, and Glätzle-Rützler, 2019).

Our results provide novel evidence on a strong link between parental mental health and children's economic preferences. Children whose parents struggle with mental illness are significantly less prosocial but more patient. By contrast, risk taking is not related to parental mental illness. The gaps in children's preferences by parental mental health are robust to multiple hypothesis testing and sizable. For example, the patience and prosociality gaps by parental mental health exceed the SES gap in those preference dimensions in our sample. Moreover, we observe broadly consistent patterns for maternal and paternal mental health. The relationship between parental mental health and children's patience is slightly stronger for fathers, while the one with child prosociality is somewhat larger and more robust for mothers. Examining heterogeneity along children's age, gender, and family socio-economic status, we find little evidence for pronounced differences. The only exception is that mentally ill mothers leave a stronger imprint on girls' than boys' preferences. This may be attributed to the fact that daughters typically assume greater household responsibilities than sons in contexts like ours (Punch, 2001), a tendency that is likely to intensify in the presence of a mentally ill mother.

Although these results are correlational, we leverage unique features of the data to address possible interpretational concerns. First, parental mental health may respond to child preferences, creating the possibility of reverse causality. To mitigate this concern, we control for lagged values of children's economic preferences. Second, parental mental illness may vary with the family's economic circumstances. To isolate the distinct relationship between parental mental health and children's preferences, we control for a comprehensive measure of socio-economic status that is based on families' assets throughout the analysis as well as for lagged family income and household-level shocks in robustness checks. Third, we include lagged parental economic preferences as control variables to address the intergenerational transmission of economic preferences (e.g., Dohmen et al., 2012; Chowdhury, Sutter, and Zimmermann, 2022). Finally, to acknowledge the possibility that parents with a greater predisposition to mental health problems may have children with systematically different characteristics, we estimate an alternative specification using a child fixed effects model. This approach analyzes how changes in parental mental health influence changes in child preferences, effectively controlling for time-invariant confounders. Reassuringly, the results from this approach closely align with our main findings.

After presenting the first evidence on the relationship between parental mental health and children's economic preferences, we continue by exploring potential underlying pathways, focusing on the role of children's responsibilities and the family environment. Our analysis reveals that parental mental illness leaves a mark on both dimensions. Children with mentally ill mothers experience reduced parental involvement and face a deteriorated atmosphere at home, while simultaneously taking on more responsibilities, including

income-generating activities. These additional responsibilities often come at the expense of their human capital investments, as evidenced by increased school dropout rates. Similarly, paternal mental illness increases children's likelihood of taking on additional responsibilities, such as working outside the home or helping on the family farm. However, the relationship between paternal mental illness and parental involvement as well as the overall atmosphere at home is notably weaker and statistically insignificant. These patterns suggest two distinct channels through which parental mental illness may shape children's preferences: diminished positive interactions within the household appear to reduce children's prosocial behavior—a mechanism documented in previous research (Eisenberg, Spinrad, and Morris, 2013; Falk et al., 2021) and particularly pronounced for maternal mental illness given its stronger impact on family environment. Meanwhile, children's forced adaptation to adult-like roles and responsibilities at an early age may foster patience, as these tasks demand a level of maturity and discipline that is typically only expected of adults.

We go beyond previous work in several respects. Recent research on mental health in families has highlighted that early-life economic circumstances can causally shape mental health in adulthood, partly through altered parental behaviors (Persson and Rossin-Slater, 2018; Adhvaryu, Fenske, and Nyshadham, 2019), and has documented an intergenerational transmission of mental health, with reported parent-child correlations ranging from 0.1 to 0.2 (Johnston, Schurer, and Shields, 2013; Akbulut-Yuksel and Kugler, 2016; Bütikofer et al., 2024). Building on this literature, we examine the link between parental mental health and child outcomes beyond mental health. We present novel evidence that parental mental health predicts children's economic preferences that, in turn, leave a lasting imprint on children's life trajectories. Moreover, we expand the evidence on the role of mental health across generations by studying the setting of a less developed country, Bangladesh, whereas most prior work refers to developed countries (see, e.g., Bütikofer et al., 2024).

At the same time, we add parental mental health as a new critical determinant to the literature on the formation of children's economic preferences or skills more broadly (Cunha and Heckman, 2008; Cunha, Heckman, and Schennach, 2010). Among existing research, our paper is most closely related to Falk et al. (2021), who document that family socioeconomic status significantly predicts disparities in economic preferences among seven to nine year old children in Germany.

By studying children from the age of 6 until adulthood, we also contribute evidence to the "missing middle" in child development, a critical period for which there is relatively little research (Almond, Currie, and Duque, 2018). Most prior work, primarily from psychology, examines children's socio-emotional and cognitive development in response to parental mental health, focusing on early childhood. In particular, the rise in maternal depression associated with pregnancy and childbirth (Ahammer et al., 2023) has made pre- and postnatal

depression a predominant area of study (e.g., Baranov et al., 2020). As Currie and Zwiers (2023) point out, these studies often argue that postnatal depression disrupts maternal-infant bonding and thus leads to adverse effects on very early child development (Netsi et al., 2018; Slomian et al., 2019; Honda et al., 2023). Sevim et al. (2024) find that a psychosocial intervention targeting perinatally depressed mothers improved maternal mental health and led to modest but transient gains in children's socio-emotional skills during the first year of life, with positive effects at 6 and 12 months but no significant impact at 36 months. We extend this literature by examining how parental mental health shapes children during middle childhood and adolescence, when they become increasingly aware of their environment and parental conditions. In this developmental stage, children arguably play a more active role in adapting to and compensating for the consequences of parental mental health within the family.

The next section describes the data, Section 3 outlines the empirical strategy, Section 4 presents the empirical results, and Section 5 concludes.

2 Data

This section introduces the data. We start by describing the recruitment and interview process for families as well as how parents' mental health is measured. We then explain the incentivized experiments designed to elicit children's preferences. Finally, we introduce the further measures that assess parents' economic preferences, parenting style and parental involvement, atmosphere at home, socio-economic status, income, and recent household-level shocks.

2.1 Sampling and data collection

In this study, we use data from incentivized experiments and surveys involving more than 4,500 children aged 6 to 19 years and their parents, spanning over 3,300 households in Bangladesh (see Breitkopf et al., 2024). Data were collected in four districts (Netrokona, Sunamganj, Chandpur, and Gopalganj) representing four of the country's eight administrative divisions. Within the four districts, eleven subdistricts were initially selected based on the presence of local non-governmental organizations (NGOs) willing to collaborate by implementing delayed payments to participants. From these subdistricts, 150 villages were randomly selected. Within these villages, most children in our sample were randomly drawn from local elementary school class lists.

In total, four waves of panel data, each consisting of several separate parts, were collected by trained interviewers of a specialized survey firm (ECONS Evaluation & Consulting

Services Limited) in the families' homes. First, economic preferences (time, risk, and social preferences), personality traits, and cognitive skills were elicited via paper-and-pencil interviewing for the sampled children, up to one sibling, and both parents (if available). Children and parents were interviewed individually and separately to ensure independent responses. During these sessions, mothers also answered a paper-and-pencil questionnaire about their children, assessing, among other things, their children's strengths and difficulties as well as their own parenting style and involvement with their children. Second, household surveys using computer-assisted personal interviews collected information on socio-demographics, income, expenditures, employment, land ownership, credits and savings, assets, and household exposure to shocks. Household surveys were answered by either the household head or his/her spouse (whoever was the most knowledgeable person for the respective part). Moreover, both spouses completed the 12-item General Health Questionnaire (GHQ-12) to assess their mental health.

This paper uses three out of the four waves of panel data: wave 1 was collected in March to May 2018 for both parts, wave 2 in 2019/2020 (household survey in March to May 2019, experiments in January to February 2020) and wave 4 in 2022 (household survey in May to August, experiments in May to October). Due to the outbreak of the Covid-19 pandemic after only a small share of household survey interviews had been conducted, wave 3 does not encompass data on parental mental health and cannot be used in this study.[3]

Appendix Table A.1 presents the frequency distribution by age and survey wave. Appendix Table A.2 provides summary statistics for the sample.

2.2 Parental mental health

To assess parental mental health, parents answered the 12-item General Health Questionnaire (GHQ-12). Originally developed as a screening tool for psychiatric disorders (Goldberg, 1978), the GHQ is now widely used to assess individuals' mental health, also by economists (e.g., Clark, 2003; Metcalfe, Powdthavee, and Dolan, 2011; Dustmann and Fasani, 2016; Haushofer, Mudida, and Shapiro, 2020). Moreover, it has been validated in numerous low- and middle-income countries, including Bangladesh (Goldberg et al., 1997; Ovi et al., 2024). The GHQ is effective in detecting both temporary conditions, such as depression and anxiety, as well as more permanent disorders such as schizophrenia (Goldberg and Williams, 1988).

The GHQ-12 consists of 12 items to be answered on a 4-point Likert scale (see Appendix Table A.3). The items can be combined into a single index by applying a cutoff to

3. During the school year 2019, a social and emotional learning program was implemented as a randomized, school-based intervention, that we do not analyze here. The paper at hand only analyzes data from the control group children who live in villages in which no child was exposed to the school-based intervention.

the response to each individual item before adding them (see, e.g., Clark, 2003; Metcalfe, Powdthavee, and Dolan, 2011). Specifically, a score of one is assigned for any item where the respondent selects one of the two top response options, indicating a potential mental health symptom. This binary scoring method (0–0–1–1) results in an index ranging from 0 (no indication of mental illness) to 12 (severe mental illness). Figure A.1 illustrates the resulting distributions, which are very similar for mothers and fathers. In our main specification, we follow Clark (2003) and Ovi et al. (2024) and define an individual as experiencing mental health problems if they exhibit more than two symptoms (i.e., have a score of 3 or higher on the 12-point scale). This threshold has been validated as highly predictive of mental illness in South Asian countries (Minhas, 1996).[4]

2.3 Experiments: Children's time, risk, and social preferences

To assess the three core dimensions of children's economic preferences, all children took part in incentivized experiments. The use of experiments enables us to measure preferences through actual, revealed behavior, enhancing the reliability and comparability of our preference measures between participants. By focusing on children's own behavior, we also mitigate any potential influence of parental mental health on the measurement of children's preferences.[5]

To elicit preferences, we rely on well-established measurement tools, previously used in developing countries to assess time and risk preferences. These measures were carefully pre-tested and adapted for children. Standardized control questions verified children's understanding of the instructions.[6] The sequence of experiments was randomized by rolling a die. Children could earn either money or stars, which were later converted into money using age-specific exchange rates (one star equaled approximately half of the average weekly pocket money). Each child received one star as a participation fee. All experiments were conducted one-on-one in the participants' homes, ensuring that household members could

4. An alternative approach aggregates responses on the original 0-3 scale, resulting in a variable that ranges from 0 to 36 (Likert scoring method), and then applies a single cutoff. Although Piccinelli et al. (1993) indicate that both scoring methods are equally effective in identifying mental health issues, there is less guidance regarding the appropriate cutoff in our context. In a robustness check, we generate an alternative mental health index by classifying parents as having mental health issues if their GHQ score is 16 or higher on the 36-point scale. This cut-off is informed by statistics on diagnosed mental illness in Bangladesh (WHO, 2020) and corresponds closely to that in Haushofer, Mudida, and Shapiro (2020).

5. For instance, studies often assess young children's socio-emotional skills using questionnaires completed by their mothers (e.g., Cunha and Heckman, 2008). This approach introduces a bias if maternal mental health not only influences children's preferences, but also mothers' perceptions of them.

6. Interviewers intermittently asked children to repeat their explanations. Each time, the interviewer recorded whether the child understood the game after the first, second, or third explanation, or if the child still did not understand it. A child is considered to have understood the game if they correctly answered all control questions after no more than three explanations by the interviewer.

not influence each other's decisions. Detailed experimental protocols can be found in Appendix B.

Social preferences. Children's social preferences were assessed through dictator games, following the experimental protocol of Fehr, Bernhard, and Rockenbach (2008), later extended by Bauer, Chytilová, and Pertold-Gebicka (2014). The children made four allocation choices (see Table 1), dividing stars between themselves and another child of the same gender and similar age, who was unknown and unrelated. In each choice, one option was an equal split, the allocation $(1, 1)$, i.e., one star for each child, while the alternative allocation favored one child. For analysis, we aggregate a child's decisions in all four games into a single measure: the share of overall stars allocated to the other child, calculated as

$$\frac{\text{stars given to the other child}}{\text{total stars given and kept}}.$$

This share ranges from 0.29 to 0.58, with higher values indicating more pronounced social preferences. The mean is 0.48, with a standard deviation of 0.07.

Table 1. Social preferences experiment for children

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

Notes. Own representation.

Time preferences. Children's time preferences were measured using a simple choice-list approach, similar to the method employed by Bauer, Chytilová, and Morduch (2012) with adults in rural India. Each child made six choices that reflect a trade-off between a smaller, earlier reward and a larger, later reward (see Table 2). The six choices were organized into three choice sets, each containing two choices with identical time delays. The early payment was scheduled for the next day (choice sets 1 and 2) or one month later (choice set 3), while

the later payment occurred after three weeks (choice set 1), three months (choice set 2), or four months (choice set 3), respectively. The order of the choice sets was randomized. We define the following experimental measure of patience: the total number of patient choices (option 2) across the six decisions. Consequently, this measure ranges from zero to six. Both mean and standard deviation are 1.98.

Table 2. Time preferences experiment for children

	Option 1	**Option 2**
Choice Set 1	2 stars tomorrow 2 stars tomorrow	3 stars in 3 weeks 4 stars in 3 weeks
Choice Set 2	2 stars tomorrow 2 stars tomorrow	3 stars in 3 months 4 stars in 3 months
Choice Set 3	2 stars in 1 month 2 stars in 1 month	3 stars in 4 months 4 stars in 4 months

Notes. Own representation.

Risk preferences. Children's risk preferences were elicited using a setup based on Binswanger (1980), which has been widely applied in developing countries (see, e.g., Bauer, Chytilová, and Morduch, 2012, in India). Each child chose one of six gambles, each offering high or low payoffs with equal probability (Table 3). Choices of higher gamble numbers imply greater risk-taking: from gamble one to five, both expected value and variance increase in each successive gamble, whereas in gamble six only the variance increases relative to gamble five. 48.6 percent of the children exhibit risk-averse preferences, 30.3 percent are risk-neutral, and 21.1 percent demonstrate risk-seeking behavior. In our analysis, we treat this variable as discrete, with higher values indicating a greater propensity for risk-taking behavior. The variable takes values ranging from one to six. The mean is 4.30, with a standard deviation of 1.36.

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

	Low amount (50% chance)	High amount (50% chance)	
Gamble 1	25	25	*risk-averse*
Gamble 2	22	48	
Gamble 3	20	60	
Gamble 4	15	75	
Gamble 5	5	95	*risk-neutral*
Gamble 6	0	100	*risk-seeking*

Notes. Own representation.

For our analyses, we standardize all preference measures to have a mean of zero and a standard deviation of one across all available observations.

2.4 Further measures

Socio-economic status. We use detailed information on household assets to construct a comprehensive measure of families' socio-economic status (SES). The use of assets is common in developing countries where earned income plays a less significant role (see, e.g., Muralidharan, Singh, and Ganimian, 2019). Specifically, we utilize data on household assets from the 2019/20 wave, which has the largest number of observations and ensures a stable measure across waves. We limit our measure to those household assets that are owned by at least 200 households in the sample, see Appendix Table A.15. We apply a principal component analysis (PCA) to the respective 23 items and use the first resulting factor as the SES index. Appendix Table A.16 shows the respective factor loadings. Reassuringly, families of high socio-economic status, as measured by our SES index, differ from low socio-economic households also with regard to more traditional facets of socio-economic status such as income and education that are commonly used in developed countries. For instance, the correlation of our SES index with family income is 0.241. It is 0.285 for father's education level, and 0.266 for mother's education level.

Shocks at the household level and family income. While the comprehensive SES index is well-suited for capturing families' general economic situation, it does not account for temporary economic hardship. To address this, households were asked to report in each wave whether they had experienced any shocks, such as a loss of crops or robbery, and to provide information on all sources of monthly income. We aggregate the various sources of income

into total family income and divide it by the number of household members to obtain a measure of monthly per capita income. The mean in our sample is 3,372 taka, approximately 27 US Dollars at the end of 2024. To capture recent family shock experiences, the household head was asked in the 2018 wave whether the family had experienced any shocks in the previous five years. In subsequent waves, they were asked whether any shocks had occurred in the past two years, corresponding to the period since the prior data collections in the 2019/20 and 2022 waves.[7] We use this information to construct a binary variable that takes the value of one in each wave if a household reported experiencing a shock in that period, and zero otherwise. This additional data enables us to capture temporary episodes of economic distress at a more granular level.

Parents' economic preferences. Parents' economic preferences were assessed through a series of experimentally validated survey questions (Falk et al., 2018; Falk et al., 2023). To measure risk preferences, parents were asked: "Please tell me, in general, how willing you are to take risks," where 1 indicates "completely unwilling to take risks" and 7 indicates "very willing to take risks", for time preferences: "How willing are you to give up something beneficial for you today in order to benefit more from it in the future?", and for social preferences: "How willing are you to give to good causes without expecting anything in return?". For the latter two, a score of 1 means "completely unwilling to do so" and a score of 7 means "very willing to do so".

Mothers' parenting style. Mothers' parenting style was assessed using responses to a survey module adapted from Thönnissen et al. (2023). In each wave, mothers rated items such as "I use words and gestures to show my child that I love her/him" and "I talk to my child about things s/he has done, seen, or experienced outside the home" on a five-point scale from "never" to "very frequently". We construct a measure of positive parenting using the items related to emotional warmth and monitoring of the child's activities (see Appendix Table A.5). To do so, we apply principal component analysis to these items and use the first resulting factor as our measure of positive parenting (characterized by high emotional warmth and monitoring). Appendix Table A.6 presents the respective factor loadings.

Parental involvement. To measure mothers' and fathers' involvement with their children, each parent individually completed a survey module in the 2022 wave. They rated their frequency of engagement in activities such as discussing important challenges in their children's lives or helping with homework, using a five-point scale from "never" to "very frequently." Appendix Tables A.7 and A.8 provide further details on the items and responses. To create an index of mothers' and fathers' involvement, we applied principal component analysis to these items, using the first factor as our measure of parental involvement. Ap-

7. Note that newly interviewed households in the 2019/20 wave were asked whether they had experienced shocks in the previous five years, just as all households in the 2018 wave.

pendix Tables A.9 and A.10 present the respective factor loadings that underline that our measures reflect high quality time that mothers and fathers spend with their children.

Atmosphere at home. In 2022, mothers and fathers responded individually to an 11-item survey module assessing the atmosphere at home, asking them to rate statements such as "In our family, we regularly help one another" or "We shout and yell at each other" (reversed item) on a seven-point scale ranging from "never" to "very often". Appendix Tables A.11 and A.12 provide further details on the complete list of items and the distribution of responses. We constructed mother- and father-rated indices of a positive atmosphere at home by applying principal component analysis to these items, using the first factor from each as our measure. See Appendix Tables A.13 and A.14 for the respective factor loadings.

3 Estimation

To study the relation between parental mental health and children's economic preferences, we estimate the following regression equation:

$$Y_{i,t} = \beta_0 + \beta_1 parental_mental_health_{i,t} + \beta_2 Y_{i,t-1} + P_{i,t-1}\lambda + \delta SES_i + X_{i,t}\gamma + \kappa_j + \mu_t + u_{i,t} \,, \tag{1}$$

where $Y_{i,t}$ denotes experimentally elicited economic preferences (social, time, or risk) of child i at time t. The main explanatory variable, $parental_mental_health_{i,t}$, captures either maternal or paternal mental illness. We control for the child's lagged preference dimension $Y_{i,t-1}$, parents' lagged social, time, and risk preferences $P_{i,t-1}$, the family's socio-economic status SES_i, demographic controls ($X_{i,t}$ for child age and gender), and district fixed effects κ_j. To maximize the sample size, we conduct our analysis on all available waves, always controlling for survey year fixed effects μ_t. We cluster standard errors at the household level.

The coefficient of interest is β_1, which reflects the relation between either maternal or paternal mental health and children's economic preferences. While we do not claim to capture a causal parameter with this specification, we believe that our approach mitigates some of the most urgent concerns regarding its interpretation. First, parental mental health may respond to children's preferences, potentially introducing reverse causality. To address this concern, we control for the child's lagged preference dimension. Second, parental mental health may be correlated with economic conditions. To ensure that we are capturing the distinct effect of parental mental health, we control for a comprehensive measure of SES. In a robustness check, we also account for additional economic variables, such as lagged income and household-level shocks, and document that the results remain unchanged. Third, we account for the intergenerational transmission of economic preferences by including lagged

parental preferences as control variables. In a final step, we address the concern that parents with a greater predisposition to mental illness may have systematically different children, introducing a time-invariant omitted variable bias. We do so by estimating a child fixed effects model as an alternative specification. This approach examines how changes in parental mental health impact changes in children's preferences, thereby removing potentially confounding time-invariant factors.

4 Results

This section documents inequalities in the economic preferences of children who grow up in families with mentally healthy and mentally ill parents. Our aim is to first uncover the importance of parental mental health for the formation of children's economic preferences before discussing possible mechanisms such as differences in parental involvement, parenting style, the atmosphere at home, as well as the likelihood that children leave school earlier or work outside the home.

4.1 Gaps in child preferences by parental mental health

Panel A of Table 4 displays our main findings on the link between parental mental health and children's economic preferences. They are illustrated in Figure 1. The circles represent the coefficient β_1 of maternal mental illness that results from estimating equation (1), the triangles the corresponding coefficients for paternal mental illness. The figure shows that children's prosociality and patience, but not their risk attitudes vary systematically with parental mental health and do so in a very similar way for mothers' and fathers' mental health.[8] In particular, children with mentally ill parents are less prosocial but more patient than their peers with mentally healthy parents (all $p < 0.05$).[9] Children with mentally ill mothers have a 7.2 percent of a standard deviation lower level of prosociality, while the corresponding estimate is 6.6 percent of a standard deviation for fathers. The increase in patience is 6.3 percent of a standard deviation for mothers and 9.7 percent for fathers with

8. Similar to our finding of unchanged risk attitudes in children, Cobb-Clark, Dahmann, and Kettlewell (2022) report no significant association between depression and risk attitudes in German adults measured through a series of incentivized lottery decisions. However, they do document lower levels of self-rated, general risk-taking. Furthermore, Bhat et al. (2022) find no significant effects of psychotherapy that effectively reduced depression on adults' risk attitudes (both incentivized and self-assessed) in India, but report significant positive effects on self-assessed, but not on incentivized measures of patience and altruism.

9. Zooming into different facets of mental illness, the results in Appendix Table A.17 indicate that parental anxiety and depression as well as social dysfunction are the main drivers of the gaps in child preferences, while loss of confidence consistently shows no significant relationship.

mental illness. These gaps in child preferences by parental mental health are sizable. For example, in our sample, both the patience and prosociality gap by parental mental health exceed the SES gaps in the same preference dimensions (see Table A.18). Moreover, the size of the patience gap by parental mental health is roughly comparable to the gender gap in patience that amounts to 7.2 percent of a standard deviation (see Table A.18).

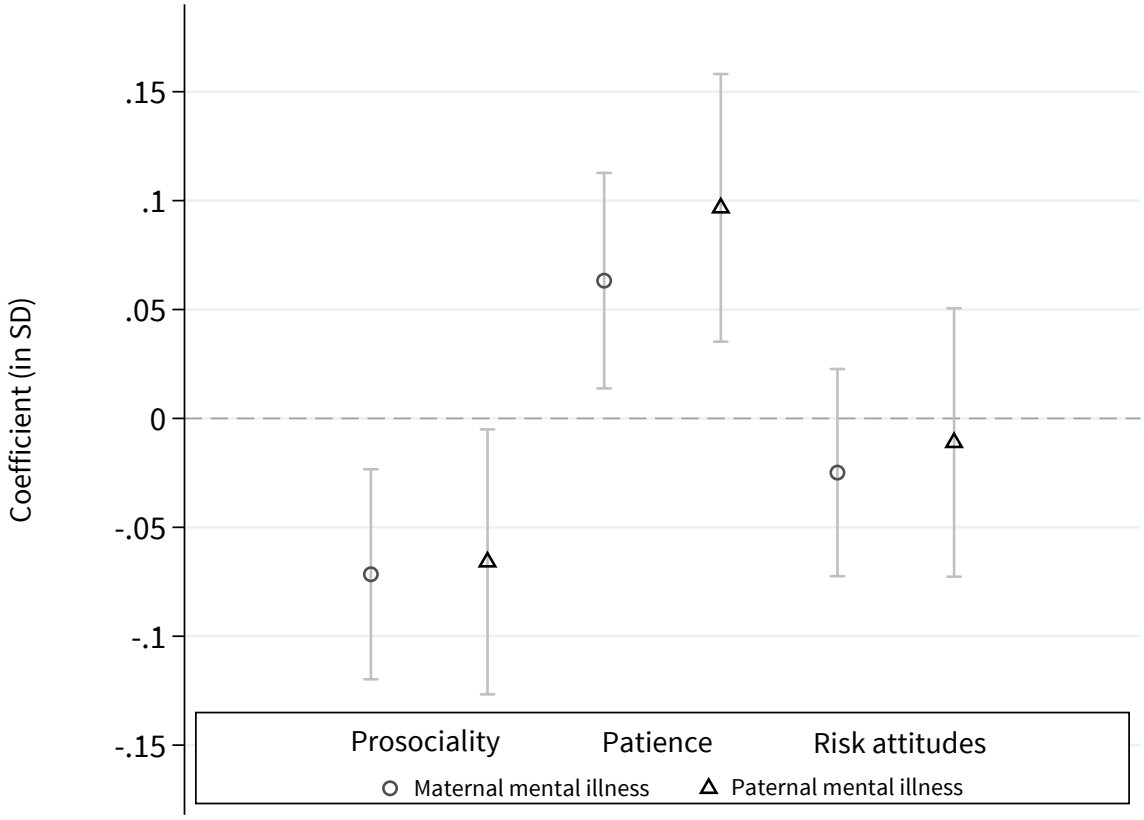


Figure 1. Parental mental health and children's economic preferences

Notes. This figure illustrates the gaps in children's economic preferences by parental mental illness. Maternal and paternal mental illness are represented as binary variables, as described in Section 2.2. The outcome variables—prosociality, patience, and risk attitudes—are standardized to a mean of 0 and a standard deviation of 1 using all available observations. The circles and triangles plot the coefficients of maternal and paternal mental health from six separate regressions (see Panel A of Table 4), in which we regress children's social, time, and risk preferences on maternal or paternal mental health, respectively, controlling for the lagged parental preferences, the child's lagged outcome variable, an SES index, district fixed effects and individual-level controls (age fixed effects and gender), with standard errors clustered at the household level. Child outcomes are from the 2019/20 and 2022 waves. Error bars show 95 percent confidence intervals.

Robustness. The results for prosociality and patience remain statistically significant after accounting for multiple hypothesis testing (see Table A.19).

In addition, Panel B of Table 4 includes lagged family income and an indicator for recent household-level shocks, such as a loss of crops or robbery, as additional control variables. The results remain robust when including these more fine-grained measures of temporary family economic conditions, suggesting that economic conditions only play a minimal role in explaining the link between parental mental health and child preferences.

In Panel C of Table 4, we leverage the panel structure of our data by estimating a child fixed effects model. This approach estimates the impact of changes in parental mental health on changes in children's preferences, removing any time-invariant factors. For example, one concern could be that parents with a genetically higher predisposition to mental illness may have genetically different children which may be reflected in their preferences. Reassuringly, the results remain similar when accounting for such potential time-invariant confounders.

Table 4. Parental mental health and children's economic preferences

	Maternal mental illness			**Paternal mental illness**		
	Prosociality	**Patience**	**Risk attitudes**	**Prosociality**	**Patience**	**Risk attitudes**
Panel A: Main results						
	-0.072***	0.063**	-0.025	-0.066**	0.097***	-0.011
	(0.025)	(0.025)	(0.024)	(0.031)	(0.031)	(0.031)
Observations	6,766	6,766	6,766	4,190	4,190	4,190
Panel B: Adding lagged family income and shocks as control variables						
	-0.068***	0.067***	-0.026	-0.062**	0.102***	-0.010
	(0.025)	(0.025)	(0.024)	(0.031)	(0.031)	(0.031)
Observations	6,764	6,764	6,764	4,188	4,188	4,188
Panel C: Estimating a child fixed-effects model						
	-0.058**	0.056**	0.003	-0.075*	0.078*	0.010
	(0.027)	(0.028)	(0.028)	(0.041)	(0.041)	(0.039)
Observations	9,901	9,901	9,901	4,774	4,774	4,774

Notes. Each entry represents a separate regression, with the column header indicating the outcome variable. Maternal and paternal mental illness are represented as binary variables, as described in Section 2.2. The outcome variables—prosociality, patience, and risk attitudes—are standardized to a mean of 0 and a standard deviation of 1 using all available observations. Controls include fixed effects for age, district, and survey year, as well as variables for SES, gender, lagged parental economic preferences and the child's lagged outcome variable in Panel A. Regressions are based on outcomes from the 2019/20 and 2022 waves. Panel B is adding controls for household-level shocks and lagged family income. Panel C presents estimates from a child fixed-effects regression model with additional controls for age and survey year fixed effects. Estimates are based on the 2018, 2019/20, and 2022 waves. Individuals with observations in only one wave are excluded from this specification, as they do not contribute to the coefficient estimates and would only deflate the standard errors. Standard errors clustered at the household level in parentheses. Significance: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Finally, Appendix Table A.20 assesses the robustness of our estimates to various ways of constructing the measure of mental health. Panel A repeats our main specification. Panel B applies a stricter threshold to classify individuals as mentally ill. In Panel C, we use the mental health measure as a continuous variable, ranging from 0 (no indication of mental illness) to 12 (severe mental illness). Panel D adopts the Likert GHQ scoring method, resulting in a scale from 0-36 before applying a threshold of 16 or higher to obtain a measure of mental illness. Overall, the estimates of the link between parental mental health and children's economic preferences remain similar across the different specifications for all three outcome variables. Only the results on paternal mental illness and children's prosociality turn out to be less robust in the alternative specifications.

Heterogeneity by age, gender, and family socio-economic status. Appendix Table A.21 explores whether the gaps in children's economic preferences by parental mental health differ for girls and boys, older and younger children, or between children from households with above and below median SES. These dimensions may influence children's exposure to parental mental illness and their access to resources or support systems that could mitigate or amplify the preference gaps we have documented. Overall, the estimates do not differ significantly along those dimensions, although limited statistical power restricts the ability to draw definitive conclusions. The only exception is that the decrease in prosociality and the increase in patience are substantially stronger for girls than boys with mentally ill mothers. This could be related to the fact that daughters often assume more household responsibilities than sons in contexts like ours (Punch, 2001), a tendency that may widen in the presence of a mentally ill mother, possibly leaving a larger imprint on girls.

4.2 How do family environment and children's responsibilities differ by parental mental health?

The results above provide evidence that parental mental health has predictive power for the development of a child's prosociality and patience. While the pathways through which parental mental health can affect the formation of preferences are numerous and complex, our rich data allow us to shed some light on two important, possible pathways: differences in family environment and the responsibilities that children take on.

Table 5 examines these pathways in greater detail. Its upper half explores the relationship between parental mental illness and family environment, documenting that children with mentally ill mothers are on average exposed to less advantageous family environments. The results reveal that maternal mental illness predicts a significant decline in maternal involvement (by 11.1 percent of a standard deviation) and a pronounced deterioration of the atmosphere at home (by 25.7 percent of a standard deviation), consistent with evidence that maternal depression increases conflicts in families (Burke, 2003). Falk et al. (2021) show that fewer high-quality interactions of mothers and children reduce children's prosociality, establishing a possible pathway underlying our main results. Similarly, Eisenberg, Spinrad, and Morris (2013) document how emotional neglect and heightened family conflict can foster detachment and mistrust, ultimately diminishing cooperative and altruistic behaviors. Interestingly, maternal positive parenting appears unaffected, suggesting that, while maternal involvement declines in case of mental illness, mothers' broader parenting styles remain unchanged. In contrast to maternal mental illness, paternal involvement and the general atmosphere at home do not vary significantly by paternal mental illness. The stronger link between maternal mental illness and worse family environment may partially explain the

more robust relationship between mental illness and child prosociality for mothers than fathers.

Table 5. Parental mental health, family environment, and children's responsibilities

Outcome variable:	**Maternal involvement**	**Paternal involvement**	**Maternal positive parenting**		**Atmosphere at home**	
Mental illness	**Maternal**	**Paternal**	**Maternal**		**Maternal**	**Paternal**
	-0.111**	-0.058	-0.008		-0.257***	0.062
	(0.048)	(0.048)	(0.025)		(0.042)	(0.048)
Observations	2,461	2,472	10,184		3,627	3,010
Outcome variable:	**Child working for money**		**Child helps on family farm**		**No longer in school**	
Mental illness	**Maternal**	**Paternal**	**Maternal**	**Paternal**	**Maternal**	**Paternal**
	0.024***	0.021**	0.034***	0.039***	0.022***	0.011
	(0.008)	(0.010)	(0.010)	(0.011)	(0.007)	(0.009)
Observations	7,515	5,257	7,026	4,959	7,410	5,182

Notes. Each entry represents a separate regression, with the column header indicating the outcome variable. Maternal and paternal mental illness are represented as binary variables, as described in Section 2.2. Controls include fixed effects for age, district, and survey year, as well as variables for SES and gender. Some outcome variables were not collected in all waves, leading to varying sample sizes. Specifically, the regressions draw on data from waves 2018, 2019/20, and 2022 for maternal positive parenting, from waves 2019/20 and 2022 for working for money, child helping on the family farm, and no longer in school, and from wave 2022 for paternal involvement, maternal involvement, and atmosphere at home. Details on the construction of the indices for paternal and maternal involvement, positive parenting, and atmosphere at home are provided in Section 2.4. We use the mother's assessment of the atmosphere at home for maternal mental illness and the father's assessment for paternal mental illness. In the sample, 13.9 percent of children report working for money, while 65.1 percent help on the family farm, and 10.5 percent are no longer in school. Standard errors clustered at the household level in parentheses. Significance: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

The bottom part of Table 5 highlights that children in households affected by parental mental illness take on increased responsibilities. Maternal mental illness increases the likelihood that children work for money by 2.4 percentage points, a 17 percent increase from the sample mean of 13.9 percent. The probability of children helping on the family farm is 3.4 percentage points higher in case of maternal mental illness. Similar patterns emerge for paternal mental illness. These additional responsibilities require children to manage adult-like tasks at an early age, which may induce them to mature faster, possibly fostering patience by forcing discipline and delayed gratification on them.[10] However, these additional responsibilities come at the expense of educational opportunities, as children in such households are substantially more likely to drop out of school. In particular, maternal mental illness

10. In our context, this pathway seems to dominate the one documented in Falk et al. (2021), who find that fewer high-quality interactions of mothers and children reduce children's patience.

increases the likelihood of being out of school by more than 20 percent, a 2.2 percentage point increase from the sample average of 10.5 percent.

In sum, our results suggest that children of mentally ill parents are often forced into adult-like roles, inducing them to mature faster, which may foster their patience. The worse family environment they are exposed to seems to decrease children's prosociality, likely through a lack of high-quality interactions and increased conflict at home (Eisenberg, Spinrad, and Morris, 2013; Falk et al., 2021).

5 Conclusion

We present novel and comprehensive evidence that parental mental illness predicts disparities in children's economic preferences. Children of parents with poor mental health are less prosocial and more patient, while their propensity to take risks remains unaffected. The gaps in prosociality and patience by parental mental health are sizable, robust across various specifications and remain significant after accounting for multiple hypothesis testing. Our analysis of potential pathways underlying the relationship between parental mental health and children's preferences reveals that parental mental illness substantially alters the family environment and children's roles within it. Maternal mental illness reduces high-quality interactions of mothers and children and deteriorates the atmosphere at home. Moreover, children in these households take on more responsibilities, including income-generating activities, often at the expense of their education. While paternal mental illness increases children's responsibilities in a similar way as maternal mental illness, its impact on the atmosphere at home and paternal involvement is weaker and statistically insignificant. These findings suggest two primary channels for the observed link between parental mental illness and children's preferences: the decline in prosociality may be related to diminished positive interactions within the household, a mechanism previously shown to reduce children's prosocial behavior (Eisenberg, Spinrad, and Morris, 2013; Falk et al., 2021). Notably, the stronger relationship between maternal rather than paternal mental illness and family environment aligns with the stronger link between maternal mental illness and lower prosociality of children. Meanwhile, increased patience may reflect children's imposed adaptation to adult-like roles and responsibilities at an early age, inducing them to mature faster.

Differences in children's preferences are important, as they predict functioning in childhood as well as adult outcomes. On average, less prosocial children exhibit more emotional and behavioral problems (Breitkopf et al., 2024). Prosociality in adults is positively associated with individual life satisfaction, the success of groups, and cooperative behavior in various domains of life (Rustagi, Engel, and Kosfeld, 2010; Carpenter and Seki, 2011;

Becker et al., 2012; Aknin et al., 2013; Burks et al., 2016). In that sense, our results suggest that children with mentally ill parents are likely to be harmed in their long-term life trajectories. Moreover, our results reveal that, in the context of a vulnerable population in a less developed country, parental mental illness increases the likelihood that children leave school early and start working to increase family income. While higher patience generally favors higher levels of education (Shoda, Mischel, and Peake, 1990; Heckman and Vytlacil, 2001; Cadena and Keys, 2015) and life-time earnings (Heckman, Stixrud, and Urzua, 2006; Hanushek and Woessmann, 2008; Golsteyn, Grönqvist, and Lindahl, 2014), our results suggest that patience developed as a coping mechanism for adversity may not yield the same benefits.

Our findings also have implications for economic modeling, as economic preferences are fundamental to the structure of individual utility functions. In particular, our results suggest that the characteristics of utility functions are endogenously shaped by parental mental health. Recent work has begun to incorporate how mental health influences individuals' own economic decision-making (De Quidt and Haushofer, 2019; Bhat et al., 2022; Cobb-Clark, Dahmann, and Kettlewell, 2022). Our results highlight the value of additionally accounting for parental mental health in models of children's skill formation and decision-making.

Finally, our results allow us to derive implications for policies that address mental illness. The documented, strong intergenerational link suggests that traditional cost-benefit analyses of mental health interventions for parents, which typically focus on direct benefits to treated individuals, may substantially underestimate social returns by failing to account for their impact on child development. Furthermore, our results underscore the benefits of family-centered policy approaches that combine mental health interventions with parenting support and child development initiatives. These could be particularly valuable for daughters of mentally ill mothers, who appear to bear a disproportionate burden in case of maternal mental illness.

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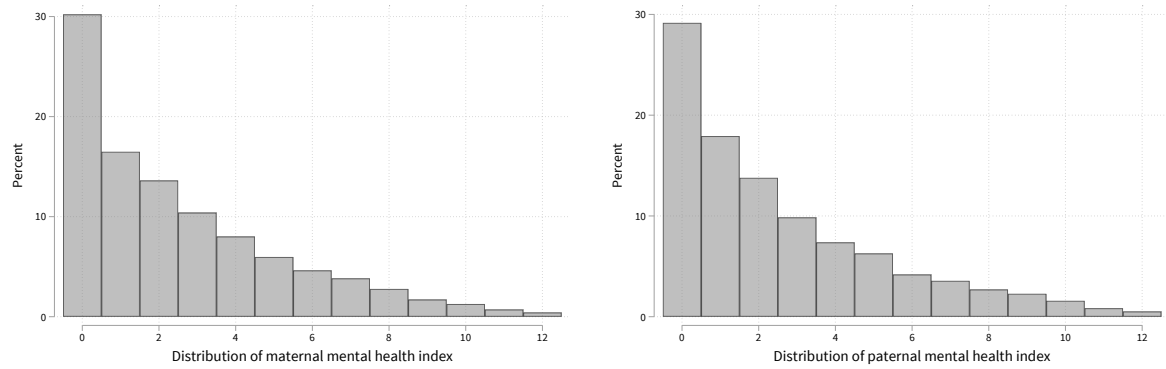
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Appendix A Supplementary data descriptions and analyses

Table A.1. Numbers of observations by age and survey wave

Age of child	Wave 2018	2019/20	2022	Total
6	179	0	0	179
7	294	213	0	507
8	341	392	4	737
9	492	401	13	906
10	577	484	212	1,273
11	530	534	357	1,421
12	457	652	364	1,473
13	425	541	451	1,417
14	311	488	488	1,287
15	185	417	588	1,190
16	25	318	490	833
17	0	0	396	396
18	0	0	329	329
19	0	0	222	222
Total	**3,816**	**4,440**	**3,914**	**12,170**

Notes. This table shows the frequency distributions categorized by age and survey wave.



(a) Mother (b) Father

Figure A.1. Histogram of the mental health index

Notes. This figure shows the distribution of the mental health index for mothers and fathers.

Table A.2. Summary statistics

	Obs.	Mean	Std. dev.	Min.	Max.
Demographic and household characteristics					
Age (in years)	12,170	12.260	2.979	6	19
Gender (female=1)	12,170	0.521	0.500	0	1
Number of siblings	12,168	2.562	1.427	0	12
Muslim (yes=1, no=0)	12,170	0.800	0.400	0	1
Mother works as a housewife (yes=1, no=0)	11,920	0.873	0.332	0	1
Socio-economic status index	12,170	0.010	1.000	-2.468	6.905
Household-level shock (yes=1, no=0)	12,170	0.675	0.468	0	1
Monthly income per capita (in Taka)	8,252	3,372	9,574	-12,968	752,096
Father's literacy (yes=1, no=0)	7,800	0.575	0.494	0	1
Mother's literacy (yes=1, no=0)	8,161	0.677	0.468	0	1
Economic preferences					
Children					
Prosociality	12,170	0	1	-2.641	1.450
Patience	12,170	0	1	-1.000	2.031
Risk attitudes	12,170	0	1	-2.425	1.254
Mother					
Prosociality	11,833	0	1	-2.689	1.043
Patience	11,833	0	1	-1.904	1.006
Risk attitudes	11,833	0	1	-2.469	1.143
Father					
Prosociality	9,219	0	1	-2.713	0.957
Patience	9,219	0	1	-1.892	0.979
Risk attitudes	9,219	0	1	-2.608	1.058
Parental mental health measures					
Maternal mental illness (more than 2 symptoms)	10,426	0.397	0.489	0	1
Paternal mental illness (more than 2 symptoms)	6,457	0.391	0.488	0	1
Maternal mental illness (more than 4 symptoms)	10,426	0.213	0.409	0	1
Paternal mental illness (more than 4 symptoms)	6,457	0.219	0.414	0	1
Continuous maternal mental illness (range: 0–12)	10,426	2.542	2.715	0	12
Continuous paternal mental illness (range: 0–12)	6,457	2.591	2.793	0	12
Maternal GHQ submeasure: Anxiety and depression	10,426	1.247	1.288	0	4
Paternal GHQ submeasure: Anxiety and depression	6,457	1.254	1.286	0	4
Maternal GHQ submeasure: Social dysfunction	10,426	1.167	1.515	0	6
Paternal GHQ submeasure: Social dysfunction	6,457	1.179	1.547	0	6
Maternal GHQ submeasure: Confidence loss	10,426	0.129	0.401	0	2
Paternal GHQ submeasure: Confidence loss	6,457	0.157	0.446	0	2
Maternal mental illness (threshold 16 or more out of 36)	10,430	0.160	0.366	0	1
Paternal mental illness (threshold 16 or more out of 36)	6,487	0.164	0.370	0	1
Family environment and children's responsibilities					
Mother's positive parenting	11,775	0	1	-3.766	2.775
Paternal involvement	3,175	0	1	-4.051	2.846
Maternal involvement	2,604	0	1	-2.982	2.835
Atmosphere at home index (mother's assessment)	3,627	0	1	-4.436	2.193
Atmosphere at home index (father's assessment)	3,010	0	1	-4.145	1.838
Helping on the family farm (yes=1, no=0)	7,592	0.651	0.477	0	1
Working for money (yes=1, no=0)	8,133	0.139	0.346	0	1
No longer in school (yes=1, no=0)	8,016	0.105	0.306	0	1

Notes. The table presents summary statistics for the sample, consisting of children with complete data on economic preferences and baseline controls (SES, age, gender, and district). Monthly income per capita may be negative in cases where agricultural business expenses, such as labor or feed costs, exceed income. Economic preferences and parental indices are standardized to a mean of zero and a standard deviation of one across the sample.

Table A.3. 12-item version of the General Health Questionnaire (GHQ-12)

Have you recently...	(1) Been able to concentrate on whatever you are doing? (2) Lost much sleep over worry? (3) Felt that you were playing a useful part in things? (4) Felt capable of making decisions about things? (5) Felt constantly under strain? (6) Felt that you could not overcome your difficulties? (7) Been able to enjoy your normal day-to-day activities? (8) Been able to face up to your problems? (9) Been feeling unhappy and depressed? (10) Been losing self-confidence in yourself? (11) Been thinking of yourself as a worthless person? (12) Been feeling reasonably happy, all things considered?
Answer:	Less than usual / No more than usual / Rather more than usual / Much more than usual

Notes. This table shows the GHQ-12 questionnaire.

Table A.4. Decomposition of the GHQ-12 into three distinct facets

Facet	**Have you recently...**
Anxiety and depression	(2) Lost much sleep over worry? (5) Felt constantly under strain? (6) Felt that you could not overcome your difficulties? (9) Been feeling unhappy and depressed?
Loss of confidence	(10) Been losing self-confidence in yourself? (11) Been thinking of yourself as a worthless person?
Social dysfunction	(1) Been able to concentrate on whatever you are doing? (3) Felt that you were playing a useful part in things? (4) Felt capable of making decisions about things? (7) Been able to enjoy your normal day-to-day activities? (8) Been able to face up to your problems? (12) Been feeling reasonably happy, all things considered?

Notes. This table shows the categorization of the GHQ-12 items into the facets of anxiety and depression, social dysfunction, and loss of confidence, as identified by Graetz (1991).

Table A.5. Summary statistics of the positive parenting measure

Variable	**Obs.**	**Mean**	**Std. dev.**	**Min.**	**Max.**
I use words and gestures to show my child that I love her/him.	11,776	3.753	0.968	1	5
I comfort my child when s/he feels sad.	11,776	3.153	1.005	1	5
I praise my child.	11,776	3.250	0.953	1	5
I try to actively influence my child's circle of friends.	11,775	2.155	1.034	1	5
I talk to my child about things s/he has done, seen, or experienced when s/he was out.	11,776	3.106	0.966	1	5
When my child is outside the home, I know exactly where s/he is.	11,776	3.574	1.035	1	5

Notes. Mothers assessed their parenting style by rating each item on a five-point Likert scale ranging from "never" to "very frequently." The six items elicit the parenting style dimensions emotional warmth (items one to three) and monitoring (items four to six) from Thönnissen et al. (2023). The items were answered once per household, resulting in identical values for siblings. As a measure of latent positive parenting, we use the first principal component extracted from a PCA conducted on the six items.

Table A.6. Factor loadings for PCA positive parenting measure

Item	Factor loading
I use words and gestures to show my child that I love her/him.	0.484
I talk to my child about things s/he has done, seen, or experienced when s/he was out.	0.479
When my child is outside the home, I know exactly where s/he is.	0.393
I comfort my child when s/he feels sad.	0.415
I praise my child.	0.440
I try to actively influence my child's circle of friends.	0.129

Notes. This information was provided by the mother, who was asked to assess her parenting style for the children. Summary statistics of the items used are provided in Table A.5.

Table A.7. Summary statistics of the maternal involvement measure (wave 2022)

Variable	**Obs.**	**Mean**	**Std. dev.**	**Min.**	**Max.**
Discuss managing anger and strong feelings	2,975	2.954	0.994	1	5
Discuss working cooperatively	2,984	3.152	0.958	1	5
Discuss making good decisions	2,986	3.140	0.952	1	5
Discuss dealing with bullying	2,985	2.638	1.085	1	5
Having joint meals	3,008	4.348	1.127	1	5
Talking about her/his school day	2,629	3.401	1.267	1	5
Doing homework together	2,658	2.405	1.406	1	5
Discussing challenges and decisions	3,008	2.523	1.180	1	5

Notes. This table reports summary statistics from the 2022 wave to the following set of questions. Mothers were asked how often they discussed with their child what they had learned at school about how to manage anger and strong feelings, work cooperatively, make good decisions, and deal with bullying. Possible answers were: 1 = never; 2 = seldom; 3 = sometimes; 4 = frequently; 5 = very frequently. In addition, they were asked how often they engaged in the following activities with their child during the past week: having joint meals, talking about their school day, doing homework together, and discussing important challenges and decisions in the child's life. Possible answers were: 1 = never; 2 = less than once per week; 3 = once or twice per week; 4 = three or four times per week; 5 = more than four times per week.

Table A.8. Summary statistics of the paternal involvement measure (wave 2022)

Variable	**Obs.**	**Mean**	**Std. dev.**	**Min.**	**Max.**
Discuss managing anger and strong feelings	3,603	3.235	0.941	1	5
Discuss working cooperatively	3,607	3.403	0.840	1	5
Discuss making good decisions	3,609	3.424	0.856	1	5
Discuss dealing with bullying	3,607	2.865	1.046	1	5
Having joint meals	3,625	4.570	0.977	1	5
Talking about her/his school day	3,191	3.909	1.183	1	5
Doing homework together	3,217	2.735	1.603	1	5
Discussing challenges and decisions	3,625	2.875	1.197	1	5

Notes. This table reports summary statistics from the 2022 wave to the following set of questions. Fathers were asked how often they discussed with their child what they had learned at school about how to manage anger and strong feelings, work cooperatively, make good decisions, and deal with bullying. Possible answers were: 1 = never; 2 = seldom; 3 = sometimes; 4 = frequently; 5 = very frequently. In addition, they were asked how often they engaged in the following activities with their child during the past week: having joint meals, talking about their school day, doing homework together, and discussing important challenges and decisions in the child's life. Possible answers were: 1 = never; 2 = less than once per week; 3 = once or twice per week; 4 = three or four times per week; 5 = more than four times per week.

Table A.9. Factor loadings for PCA maternal involvement measure

Item	Factor loading
Discuss managing anger and strong feelings	0.426
Discuss working cooperatively	0.446
Discuss making good decisions	0.439
Discuss dealing with bullying	0.387
Having joint meals	0.173
Talking about her/his school day	0.287
Doing homework together	0.251
Discussing challenges and decisions	0.320

Notes. This information was provided by the mother, who was asked to assess her interaction with the children. Summary statistics of the items used are provided in Table A.7.

Table A.10. Factor loadings for PCA paternal involvement measure

Item	Factor loading
Discuss managing anger and strong feelings	0.438
Discuss working cooperatively	0.470
Discuss making good decisions	0.443
Discuss dealing with bullying	0.395
Having joint meals	0.129
Talking about her/his school day	0.290
Doing homework together	0.213
Discussing challenges and decisions	0.299

Notes. This information was provided by the father, who was asked to assess his interaction with the children. Summary statistics of the items used are provided in Table A.8.

Table A.11. Summary statistics of the atmosphere at home items (mother's assessment)

Variable	**Obs.**	**Mean**	**Std. dev.**	**Min.**	**Max.**
We regularly help one another.	3,627	5.986	1.092	1	7
We show respect for each other's feelings about an issue.	3,627	5.604	1.117	1	7
We show care for each other even though we disagree.	3,627	5.311	1.298	1	7
We stomp out of the room during a disagreement. *(reversed)*	3,627	5.787	1.586	1	7
We insult each other or swear at each other. *(reversed)*	3,627	5.634	1.355	1	7
We explain our sides of disagreement to each other.	3,627	3.999	1.502	1	7
We suggest a compromise to a disagreement.	3,627	4.837	1.468	1	7
We shout and yell at each other. *(reversed)*	3,627	5.158	1.462	1	7
We throw something at each other that could hurt. *(reversed)*	3,627	6.425	1.119	1	7
We put our own needs aside to support other family members.	3,627	5.596	1.324	1	7
We collaborate with one another.	3,627	6.096	1.097	1	7

Notes. This table lists the components of the atmosphere at home index, as included in the 2022 survey wave. Mothers rated the listed statements from 1 = "never" to 7 = "very often." Items marked with *(reversed)* are reverse-coded for scoring purposes.

Table A.12. Summary statistics of the atmosphere at home items (father's assessment)

Variable	Obs.	Mean	Std. dev.	Min.	Max.
We regularly help one another.	3,010	5.967	1.141	1	7
We show respect for each other's feelings about an issue.	3,010	5.687	1.169	1	7
We show care for each other even though we disagree.	3,010	5.396	1.342	1	7
We stomp out of the room during a disagreement. *(reversed)*	3,010	5.959	1.415	1	7
We insult each other or swear at each other. *(reversed)*	3,010	5.817	1.313	1	7
We explain our sides of disagreement to each other.	3,010	4.244	1.658	1	7
We suggest a compromise to a disagreement.	3,010	4.966	1.533	1	7
We shout and yell at each other. *(reversed)*	3,010	5.651	1.383	1	7
We throw something at each other that could hurt. *(reversed)*	3,010	6.594	0.876	1	7
We put our own needs aside to support other family members.	3,010	5.825	1.251	1	7
We collaborate with one another.	3,010	6.148	1.104	1	7

Notes. This table lists the components of the atmosphere at home index, as included in the 2022 survey wave. Fathers rated the listed statements from 1 = "never" to 7 = "very often." Items marked with *(reversed)* are reverse-coded for scoring purposes.

Table A.13. Factor loadings for PCA atmosphere at home measure (assessed by the mother)

Item	Factor loading
We regularly help one another.	0.359
We show respect for each other's feelings about an issue.	0.399
We show care for each other even though we disagree.	0.350
We stomp out of the room or house or yard during a disagreement. *(reversed)*	0.206
We insult each other or swear at each other. *(reversed)*	0.303
We explain our sides of disagreement to each other.	0.192
We suggest a compromise to a disagreement.	0.293
We shout and yell at each other. *(reversed)*	0.251
We throw something at each other that could hurt. *(reversed)*	0.242
We put our own needs aside to support other family members.	0.291
We collaborate with one another.	0.356

Notes. This information was provided by the mother, who was asked to assess the atmosphere at home using 11 items. Summary statistics of the items used are provided in Table A.11. Items marked with *(reversed)* are reverse-coded for scoring purposes.

Table A.14. Factor loadings for PCA atmosphere at home measure (assessed by the father)

Item	Factor loading
We regularly help one another.	0.389
We show respect for each other's feelings about an issue.	0.426
We show care for each other even though we disagree.	0.369
We stomp out of the room or house or yard during a disagreement. *(reversed)*	-0.022
We insult each other or swear at each other. *(reversed)*	0.040
We explain our sides of disagreement to each other.	0.322
We suggest a compromise to a disagreement.	0.392
We shout and yell at each other. *(reversed)*	0.018
We throw something at each other that could hurt. *(reversed)*	0.075
We put our own needs aside to support other family members.	0.358
We collaborate with one another.	0.370

Notes. This information was provided by the father, who was asked to assess the atmosphere at home using 11 items. Summary statistics of the items used are provided in Table A.12. Items marked with *(reversed)* are reverse-coded for scoring purposes.

Table A.15. Summary statistics of items for the SES index (wave 2019/20)

Variable	Obs.	Mean	Std. dev.	Min.	Max.
Panel A: Housing and land ownership					
Square feet of main living room	4,537	170.355	116.466	24	2400
Number of rooms	4,537	1.307	0.714	1	11
Area of the house (in decimal)	4,526	9.932	10.444	0.1	110
Construction material (from jute stick to cement)	4,541	3.449	1.067	1	6
Electricity connection (yes/no)	4,562	0.968	0.175	0	1
Tubewell (yes/no)	4,562	0.566	0.496	0	1
Homestead land owned (in decimal)	4,562	9.141	11.465	0	330
Cultivable land owned (in decimal)	4,562	41.906	98.921	0	1510
Panel B: Household assets (quantity)					
Metal cooking pot (aluminium made)	4,562	23.980	13.674	0	95
Sewing machine	4,562	0.115	0.360	0	8
Wall clock/wrist watch	4,562	0.715	1.019	0	10
Bicycle	4,562	0.256	0.499	0	8
Boat (without an engine)	4,562	0.127	0.386	0	8
Other valuables (above 100 Taka)	4,562	9.849	10.677	0	90
TV (color)	4,562	0.347	0.513	0	8
Chair/table	4,562	4.468	2.848	0	61
Bed-frame	4,562	2.594	0.971	0	8
Almirah	4,562	0.866	0.976	0	8
Table fan	4,562	1.970	1.327	0	12
Refrigerator	4,562	0.222	0.480	0	8
Mobile phone	4,562	1.913	0.974	0	9
Ornament (gold)	4,562	3.207	2.540	0	30
Ornament (silver)	4,562	1.375	1.617	0	16

Notes. This table uses information provided by the household head in wave 2019/20. Area measurements in "decimal" refer to a traditional unit used in Bangladesh, where 1 decimal equals 1/100th of an acre or approximately 40.47 square meters. Monetary values are in Bangladeshi Taka, with 100 Taka approximately equivalent to 0.82 US-Dollar in January 2025. Construction material is scored on an ordinal scale, ranging from 1 (jute stick) to 6 (cement).

Table A.16. Factor loadings for PCA used to construct socio-economic status index

Item	Factor loading
Square feet of main living room	0.187
Number of rooms	0.099
Area of the house (in decimal)	0.104
Construction material (from jute stick to cement)	0.214
Electricity connection (yes/no)	0.154
Tubewell (yes/no)	0.195
Homestead land owned (in decimal)	0.151
Cultivable land owned (in decimal)	0.192
Metal cooking pot (aluminium made)	0.148
Sewing machine	0.090
Wall clock/wrist watch	0.238
Bicycle	0.087
Boat (without an engine)	0.014
Other valuables (above 100 Taka)	0.112
TV (color)	0.205
Chair/table	0.324
Bed-frame	0.323
Almirah	0.260
Table fan	0.336
Refrigerator	0.226
Mobile phone	0.294
Ornament (gold)	0.290
Ornament (silver)	0.131

Notes. This table uses information provided by the household head in wave 2019/20. Summary statistics and further descriptions of the items used are provided in Table A.15.

Table A.17. Different facets of parental mental illness and children's economic preferences

	Maternal mental illness			Paternal mental illness		
	Prosociality	**Patience**	**Risk attitudes**	**Prosociality**	**Patience**	**Risk attitudes**
Panel A: Anxiety and depression (standardized)						
	-0.036***	0.030**	-0.004	-0.020	0.056***	0.007
	(0.012)	(0.013)	(0.012)	(0.016)	(0.016)	(0.016)
Observations	6,766	6,766	6,766	4,190	4,190	4,190
Panel B: Loss of confidence (standardized)						
	-0.013	0.008	-0.003	-0.019	0.011	-0.008
	(0.013)	(0.012)	(0.012)	(0.016)	(0.016)	(0.015)
Observations	6,766	6,766	6,766	4,190	4,190	4,190
Panel C: Social dysfunction (standardized)						
	-0.026**	0.031**	-0.001	-0.023	0.047***	0.012
	(0.012)	(0.012)	(0.012)	(0.015)	(0.015)	(0.015)
Observations	6,766	6,766	6,766	4,190	4,190	4,190

Notes. This table employs the binary GHQ scoring method (0–0–1–1) described in Section 2.2 and disaggregates the overall GHQ measure into three distinct factors—anxiety and depression, social dysfunction, and loss of confidence—as identified by Graetz (1991), see Appendix Table A.4. Each of the three facets is standardized to a mean of zero and a standard deviation of one. Before standardization, the scales range from 0 to 4 for anxiety and depression, from 0 to 2 for loss of confidence, and from 0 to 6 for social dysfunction. Each entry stems from a separate regression, with the column header indicating the outcome variable. The outcome variables—prosociality, patience, and risk attitudes—are standardized to a mean of 0 and a standard deviation of 1 using all available observations. The controls include fixed effects for age, district, and survey year, along with variables for SES, gender, parental lagged preferences, and the child's lagged outcome value. Regressions are based on child outcomes from the 2019/20 and 2022 waves, and standard errors are clustered at the household level. Significance: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A.18. SES and gender gaps in children's economic preferences

	Prosociality	**Patience**	**Risk attitudes**
Panel A: Gaps by family SES			
SES index (median split)	-0.035*	0.044**	-0.003
	(0.020)	(0.021)	(0.019)
Observations	12,170	12,170	12,170
Panel B: Gaps by child's gender			
Female	-0.004	0.072***	-0.073***
	(0.019)	(0.020)	(0.019)
Observations	12,170	12,170	12,170

Notes. Each entry corresponds to a separate regression, with the column header indicating the outcome variable. The outcome variables—prosociality, patience, and risk attitudes—are standardized to a mean of 0 and a standard deviation of 1 using all available observations. We perform a median split of the SES index described in Section 2.4, where 1 denotes above-median SES and 0 denotes below-median SES. Survey wave fixed effects are included as controls, and standard errors are clustered at the household level. Significance: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A.19. Parental mental health and children's economic preferences: Correction for multiple hypothesis testing

	Maternal mental illness			Paternal mental illness		
	Prosociality	**Patience**	**Risk attitudes**	**Prosociality**	**Patience**	**Risk attitudes**
Coefficient	-0.072	0.064	-0.025	-0.064	0.096	-0.010
Standard *p*-values	0.004	0.012	0.308	0.036	0.002	0.752
Anderson *p*-values	0.013	0.013	0.115	0.038	0.007	0.335
Romano–Wolf *p*-values	0.010	0.029	0.313	0.080	0.009	0.772
Observations	6,766	6,766	6,766	4,190	4,190	4,190

Notes. The table presents coefficients and *p*-values, adjusted for multiple hypothesis testing, of the relation between parental mental health and children's economic preferences (as indicated in the column headings). The *p*-values include standard *p*-values clustered at the household level, sharpened False Discovery Rate (FDR, also called Anderson) *p*-values, as proposed by Benjamini, Krieger, and Yekutieli (2006) and implemented using the Stata code provided by Anderson (2008), and Romano–Wolf *p*-values as proposed by Romano and Wolf (2005a, 2005b) and implemented using the Stata code from Clarke, Romano, and Wolf (2020). The calculation of Romano-Wolf *p*-values requires the inclusion of the same control variables across all outcomes. We therefore include all three lagged economic preferences of children in each regression. Aside from this, the estimation equation follows the main specification in Table 4 and is described in equation (1). Note that Anderson *p*-values can be lower than unadjusted *p*-values when many hypotheses are rejected.

Table A.20. Parental mental health and children's economic preferences: Robustness to varying measures of mental health

	Maternal mental illness			Paternal mental illness		
	Prosociality	**Patience**	**Risk attitudes**	**Prosociality**	**Patience**	**Risk attitudes**
Panel A: Main specification (more than 2 symptoms)						
	-0.072***	0.063**	-0.025	-0.066**	0.097***	-0.011
	(0.025)	(0.025)	(0.024)	(0.031)	(0.031)	(0.031)
Observations	6,766	6,766	6,766	4,190	4,190	4,190
Panel B: Stricter threshold (more than 4 symptoms)						
	-0.061**	0.064**	0.008	-0.039	0.135***	0.028
	(0.029)	(0.029)	(0.029)	(0.037)	(0.038)	(0.038)
Observations	6,766	6,766	6,766	4,190	4,190	4,190
Panel C: Continuous mental health measure (range: 0–12)						
	-0.013***	0.012***	-0.001	-0.009*	0.020***	0.003
	(0.005)	(0.005)	(0.004)	(0.006)	(0.006)	(0.006)
Observations	6,766	6,766	6,766	4,190	4,190	4,190
Panel D: Likert-scale scoring method (threshold 16 or more out of 36)						
	-0.077**	0.082**	0.022	-0.047	0.074*	0.004
	(0.033)	(0.033)	(0.032)	(0.042)	(0.041)	(0.043)
Observations	6,770	6,770	6,770	4,213	4,213	4,213

Notes. This table repeats the estimation equation of the main results from Table 4, using varying measures of parental mental health. Panel A presents the main specification, defining mental illness as the presence of more than two symptoms (i.e., having a score of 3 or higher on the 12-point scale), observed in 39.1 percent of fathers and 39.7 percent of mothers in our sample. In Panel B, we adopt a stricter threshold, defining mental illness as a score exceeding 4, which applies to 21.9 percent of fathers and 21.3 percent of mothers. In Panel C, we use the same mental health measure as a "continuous" variable, ranging from 0 (no indication of mental illness) to 12 (severe mental illness). In Panel D, we adopt an alternative scoring approach that aggregates individual item responses before applying a single cutoff. This approach is informed by statistics on diagnosed mental illness in Bangladesh (WHO, 2020) and corresponds closely to that in Haushofer, Mudida, and Shapiro (2020). Using this criterion, 16.4 percent of fathers and 16.0 percent of mothers in our sample are classified as mentally ill. Each entry represents a separate regression, with the column header indicating the outcome variable. The outcome variables—prosociality, patience, and risk attitudes—are standardized to a mean of 0 and a standard deviation of 1 using all available observations. Controls include fixed effects for age, district, and survey year, as well as variables for SES, gender, parental lagged preferences, and the child's lagged outcome value. Regressions are based on child outcomes from the 2019/20 and 2022 waves, and standard errors are clustered at the household level. Significance: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A.21. Parental mental health and children's economic preferences: Heterogeneity by age, gender, and SES

	Maternal mental illness			Paternal mental illness		
	Prosociality	**Patience**	**Risk attitudes**	**Prosociality**	**Patience**	**Risk attitudes**
Panel A: By child's age (median split)						
Aged 13 or younger	-0.061*	0.083**	-0.001	-0.036	0.079*	-0.006
	(0.033)	(0.035)	(0.034)	(0.043)	(0.045)	(0.045)
Above age 13	-0.081**	0.028	-0.054	-0.108**	0.096**	-0.017
	(0.035)	(0.033)	(0.033)	(0.045)	(0.041)	(0.042)
p-value (equality)	0.663	0.278	0.263	0.255	0.743	0.878
Panel B: By child's gender						
Male	-0.026	0.024	-0.021	-0.034	0.130***	0.007
	(0.037)	(0.035)	(0.035)	(0.045)	(0.045)	(0.044)
Female	-0.115***	0.095***	-0.028	-0.097**	0.064	-0.027
	(0.033)	(0.034)	(0.033)	(0.044)	(0.043)	(0.044)
p-value (equality)	0.066	0.128	0.875	0.320	0.284	0.585
Panel C: By family SES (median split)						
Below median	-0.087**	0.069**	-0.036	-0.028	0.083*	-0.026
	(0.035)	(0.035)	(0.034)	(0.041)	(0.043)	(0.042)
Above median	-0.058	0.060*	-0.018	-0.106**	0.112**	-0.001
	(0.035)	(0.037)	(0.034)	(0.047)	(0.046)	(0.047)
p-value (equality)	0.550	0.873	0.708	0.211	0.645	0.695

Notes. This table repeats the estimation of the main results from Table 4, conducted separately by age (median split), gender, and family socio-economic status (median split). Observations by specification: Panel A (maternal: 3,671/3,095; paternal: 2,133/2,057), Panel B (maternal: 3,189/3,577; paternal: 2,013/2,177), and Panel C (maternal: 3,399/3,367; paternal: 2,190/2,000). Each entry represents a separate regression, with the column header indicating the outcome variable. Maternal and paternal mental illness are represented as binary variables, as described in Section 2.2. The outcome variables—prosociality, patience, and risk attitudes—are standardized to a mean of 0 and a standard deviation of 1 using all available observations. Controls include fixed effects for age, district, and survey year, as well as variables for SES, gender, parental lagged preferences, and the child's lagged outcome value. Regressions are based on child outcomes from the 2019/20 and 2022 waves, and standard errors are clustered at the household level. The *p*-values of *t*-tests testing for equality of coefficients are presented below the estimates. Significance: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Appendix B Experimental instructions and procedures

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 any of them could be the one that is paid. Please listen carefully now. I will frequently stop during my explanation to allow you to ask questions, so feel free to interrupt me anytime if you have a question.

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

Determining Experiment Sequence

Roll a die to determine the sequence in which experiments will be conducted, and write down the sequence:

- 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 experiment

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. As I mentioned at the beginning, it is important to note that at the end only one of the three games will be paid, and you will draw a number to determine it. 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 dice (blue, green, yellow) and write it down.

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 6 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). Three 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 three 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.

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 four 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 parts. 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. However, now the earlier payment takes place in one month, which means after 30 days and nights have passed. The later payment takes place in four months, which means after 120 days and nights have passed. If you decide to receive 2 stars, you need to wait one month, and if you decide to receive 3 stars, you need to wait four 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 one month, you need to tick the left box. However, if you prefer receiving 4 stars in four 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 immediate reward) *What do you think will happen if you tick THAT box?* (please point at the box with the delayed reward of five 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

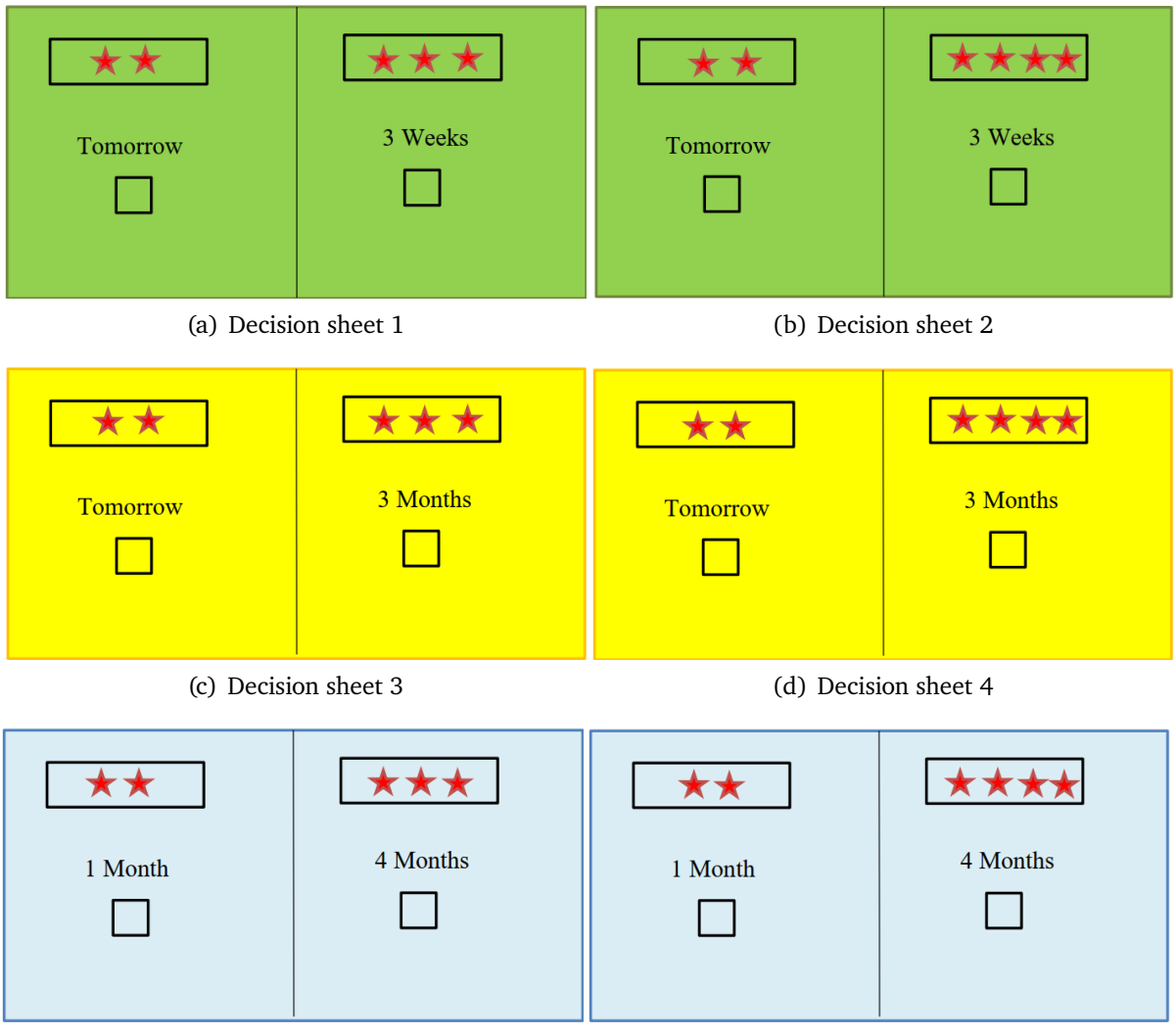
As I mentioned at the beginning, it is important to note that at the end only one of the games will be paid where you will draw a number to determine it. If this game is paid, only one of the six decisions counts. That means you will receive the stars for one of the six parts only. The decisions are numbered from 1 to 6. After your decisions, you will roll a dice (please demonstrate). Assume that it shows number 5. Therefore the 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 two stars in one month. If you have checked the box on the right-hand side, you will receive money for three stars in four 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.



(a) Decision sheet 1 (b) Decision sheet 2

(c) Decision sheet 3 (d) Decision sheet 4

(e) Decision sheet 5 (f) Decision sheet 6

Figure B.1. Decision sheets

6. Decision taken on green sheet 1: _____ 1 = tomorrow, 2 = three weeks
7. Decision taken on green sheet 2: _____ 1 = tomorrow, 2 = three weeks
8. Decision taken on yellow sheet 1: _____ 1 = tomorrow, 2 = three months
9. Decision taken on yellow sheet 2: _____ 1 = tomorrow, 2 = three months
10. Decision taken on blue sheet 1: _____ 1 = 1 month, 2 = four months
11. Decision taken on blue sheet 2: _____ 1 = 1 month, 2 = four months
12. Is this game paid? _____ 1 = yes, 2 = no
13. If yes: Which decision sheet was paid?

    - Green sheet 1
    - Green sheet 2
    - Yellow sheet 1
    - Yellow sheet 2
    - Blue sheet 1
    - Blue sheet 2

Risk preferences experiment

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. As I mentioned at the beginning, it is important to note that at the end only one of the games will be paid. You will draw one number out of three numbers to determine which game will be paid. That's why it is important that you understand the rules of our game, and play each of them carefully. 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 ok 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 six-sided dice twice:

- First, you will roll the dice to decide the gamble.
- Second, you will roll the dice to decide the outcome of the particular gamble.

For example, if you selected gamble #4, then if the first roll of the dice 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 dice is not 4 and you have chosen gamble #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.
- 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 #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.
- If 4, 5, or 6 is rolled, you would receive 48 (please adjust) Taka.

1. Ask the child to repeat the game.

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:

Table B.1. Gamble outcomes and payoffs

	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 the high state. *Which*

gamble would you like to play? Once you make your selection, you will roll the dice to decide the gamble, and again to decide the outcome. First, you will roll the dice to decide the gamble, and the second to decide the outcome of the particular gamble. For example, if you selected gamble #2, then if the first roll of the dice is 2, you would receive one of the payoffs of gamble #2, which will be determined in the second draw.
In the second draw:

- 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 **two candies**.

Let us start this now.

2. Gamble number picked involving candies: _____

3. Outcome in the first draw for candies: _____

4. Outcome in the second draw for candies (if applicable): _____

5. 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 16-17]
Mark the gamble selection with an X in the last box across from your preferred gamble (mark only one of the six gambles):

Table B.2. Age 6-7

	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 B.3. Age 8-9

	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 B.4. Age 10-11

	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 B.5. Age 12-13

	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 B.6. Age 14-15

	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 B.7. Age 16

	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%	

Table B.8. Age 17 and above

	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%	

6. Gamble number picked: _____

7. Outcome in the first draw (if applicable): _____

8. Outcome in the second draw (if applicable): _____

9. Amount won in the lottery in Taka (if applicable): _____

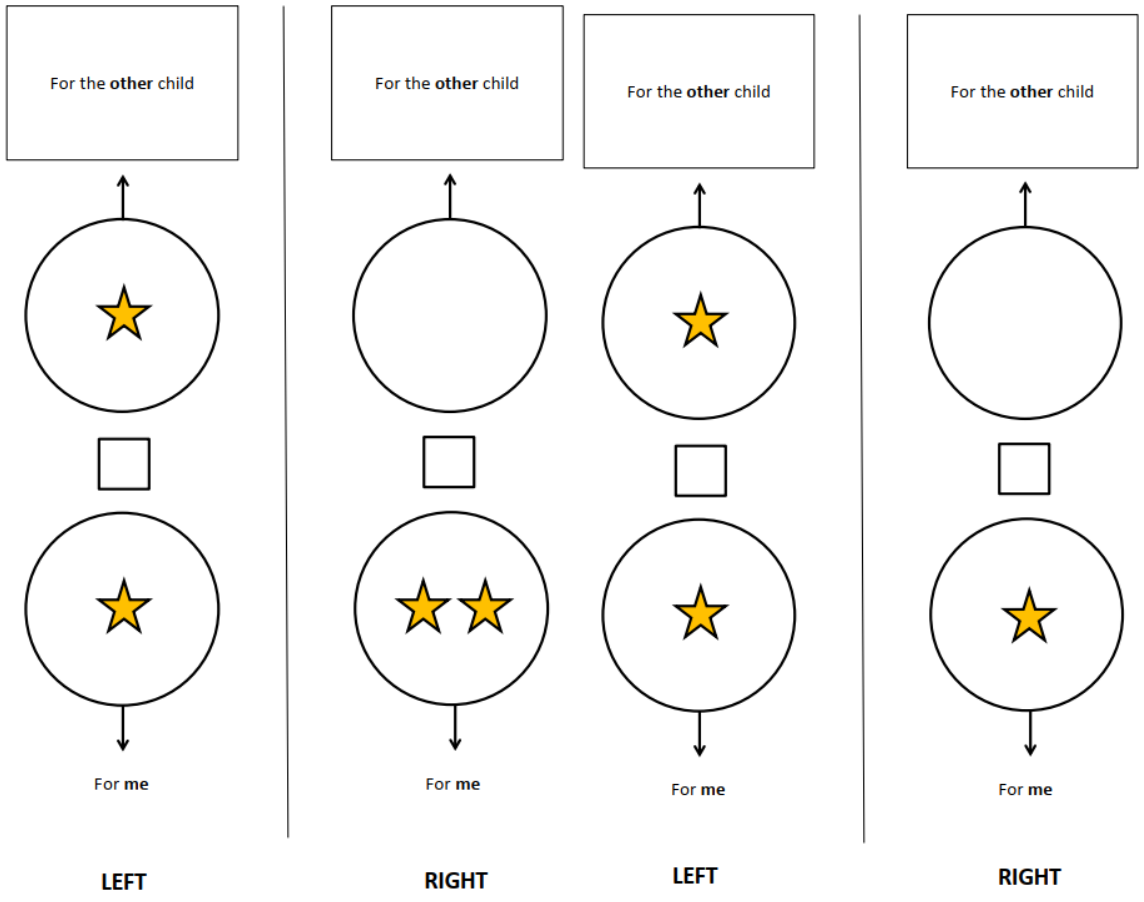
10. Is this game paid for? _____ 1 = yes, 2 = no

Social preferences experiment

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 will get. As I mentioned at the beginning, it is important to note that at the end, only one of the games will be paid. You will draw one number out of three numbers to determine which game will be paid. That's why it is important that you understand the rules of all our games and play each of them carefully because any one of them could be the one that is

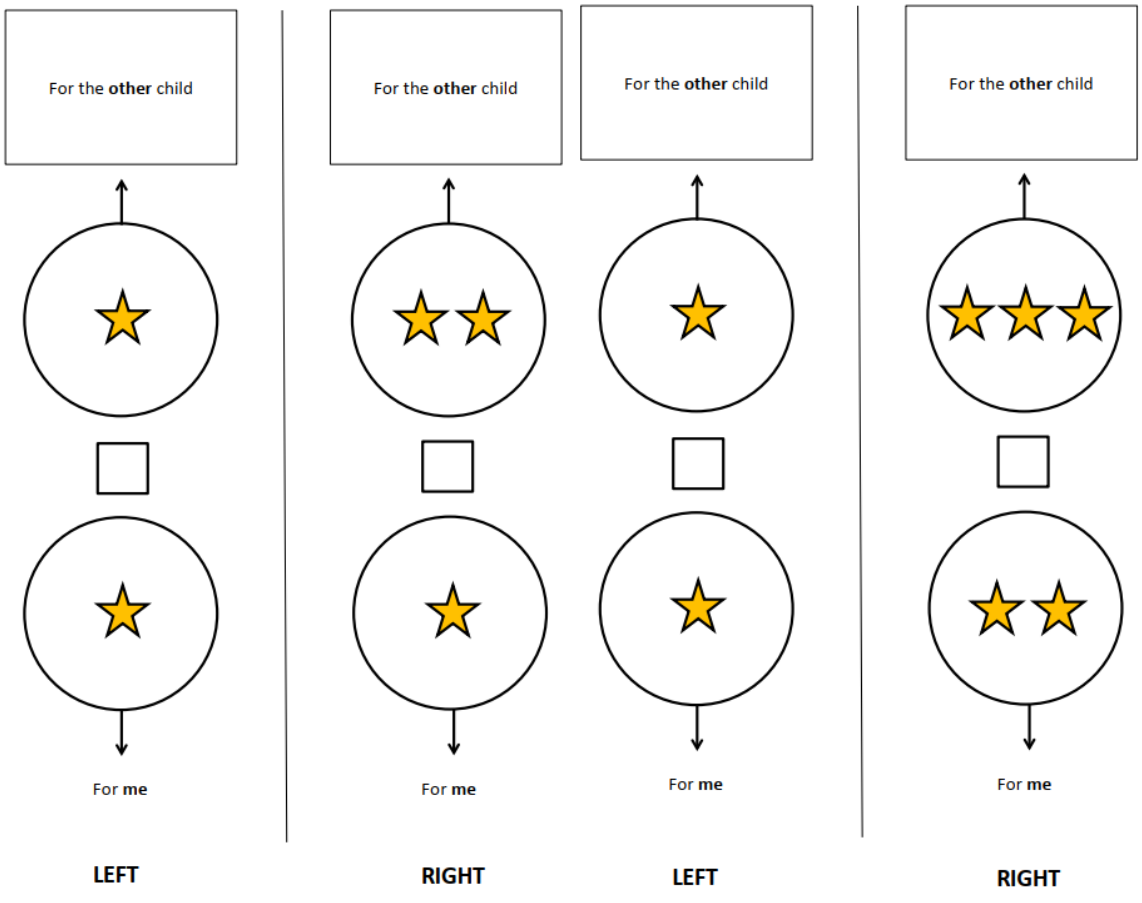
paid. Please listen carefully now. I will frequently stop during my explanation and allow you to ask questions. Therefore, please interrupt me anytime in case you have a question.
Are you okay so far? Leave time for questions and answer them privately.
In this game, you have to decide how to divide stars 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 one star, and the child from another village gets one star. One star equals …Taka (…, depending on the age group). With option **"right"**, you get two 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 amounts 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 blindly draw one 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 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.



(a) Decision sheet 1

(b) Decision sheet 2



(c) Decision sheet 3

(d) Decision sheet 4

Figure B.2. Decision sheets

2. Decision in first sheet: _____

3. Decision in second sheet: _____

4. Decision in third sheet: _____

5. Decision in fourth sheet: _____

Please roll a die to decide which decision sheet would be paid if this game got selected for payoff in the end. If rolling a 5 or a 6, please enter 0 for 7.

6. Which decision sheet would be paid? _____

1 = Decision sheet 1
2 = Decision sheet 2
3 = Decision sheet 3
4 = Decision sheet 4
5 = 6 = None

7. How many stars would that be? _____ (0 stars, 1 star, 2 stars, or 3 stars)