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Parental paternalism and patience☆

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HIGHLIGHTS

- We provide a novel measure to study parental paternalism.
- We apply it in an experiment with 2010 members from 610 Bangladeshi families.
- 55% of all parents are willing to pay money to interfere paternalistically.
- The extent of parental paternalism is strongly related to parenting styles.
- We discuss the interaction with the intergenerational transmission of patience.

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ABSTRACT

Quantitative evidence on the extent of paternalism within families is scant. We provide a novel measure to study whether and how parents interfere paternalistically in their children's intertemporal decision-making. In an experiment with over 2000 members from 610 families in Bangladesh, we find that more than half of all parents are willing to pay money to override their children's choices in order to mitigate the (correctly anticipated) level of children's present bias. The extent of parental paternalism is strongly related to parenting styles and we discuss how it interacts with the intergenerational transmission of patience.

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1. Introduction

Parents frequently make decisions for their children. They choose where their children grow up, which schools they attend and how long they get educated, which friends they meet, or when their children do their homework. Not surprisingly, parents' choices for their children have consequences. For instance, growing up in a better neighborhood, attending schools of higher quality or for a longer time, or having contact with high-performing peers improves children's chances for better school performance, higher educational attainment, and higher earnings (e.g., Card and Krueger, 1992; Dobbie and Jr. Fryer, 2011; Chetty and Hendren, 2018). While parents may have best intentions, parents' and children's preferences may at times be at odds, thus creating conflicts. Prime examples include settings with delayed gratification where parents may focus on the long-term perspective, while children may focus on short-term outcomes, such as when deciding over studying and leisure activities or over school tracks with different lengths. While this tension is well-acknowledged in theoretical models of parent–child interactions (e.g., Doepke and Zilibotti, 2017), empirical evidence on the extent of parents' paternalistic interferences in children's choices remains scarce.

In this paper, we study whether, to what extent, and for which reasons parents interfere with their children's intertemporal decision-making. We present evidence from a lab-in-the-field experiment because using observational data has limitations: many decisions are either rarely taken (as, e.g., in the context of school choice) or difficult to observe (e.g., daily choices between studying and leisure activities). Moreover, it is often not clear whose preferences are actually implemented in the field. Our experimental design provides a controlled setup that avoids these limitations. In particular, it allows us to measure the degree and the motives of parents' paternalistic behavior and how the latter relates to parents' characteristics, in particular their parenting styles.

We report results from an experiment with 2010 members of 610 families in Bangladesh, including 1120 parents and 990 children. We focus on intertemporal decision-making, because patience has been shown to be important for lifetime outcomes, most importantly with respect to human capital accumulation, savings, and health behavior (e.g., Mischel et al., 1989; Chabris et al., 2008; Meier and Sprenger, 2010, 2012; Castillo et al., 2011; Sutter et al., 2013; Golsteyn et al., 2014; Cadena and Keys, 2015; Castillo et al., 2019; Armantier et al., 2023). While there is a growing literature on the formation and intergenerational transmission of time preferences (e.g., Kosse and Pfeiffer, 2012; Alan and Ertac, 2018; Andreoni et al., 2019; Samek et al., 2021; Falk et al., 2021; Chowdhury et al., 2022; Brenøe and Epper, 2022), little is known about whether, how, and why parents are willing to interfere in their children's intertemporal choices, although these choices may shape children's preferences and thus their long-term outcomes.

In our experiment, we first elicit both parents' and their children's time preferences in a series of intertemporal allocation tasks (using convex time budget sets introduced by Andreoni and Sprenger, 2012). The choices in these experimental tasks allow us to infer their quasi-hyperbolic discounting parameters (Laibson, 1997) for present bias (β) and long-run discounting (δ). Using the same setup, we then elicit parents' incentivized beliefs about their children's choices as well as the decisions parents would want to implement for their children. Yet, these paternalistic choices are not automatically implemented. Rather, we introduce a novel method that allows us to quantify parents' willingness to overrule their children's decisions: Parents can make costly investments to increase the probability with which their paternalistic choices are implemented instead of letting children act upon their own choices.

The unique combination of eliciting (i) both parents' and children's time preferences, (ii) parents' beliefs about children's choices, (iii) parents' preferred choices for their children (what we call their *paternalistic decisions* in the following), and (iv) parents' willingness to pay for implementing their paternalistic decisions (referred to as *willingness to interfere* in the following) yields the following main results. We find a large degree of impatience among both children and their parents. On average, both allocate 68% of their endowment to a sooner rather than a later payment date. Moreover, both children and parents exhibit a sizable present bias (with a parameter estimate of $\beta = 0.81$). When asked about their beliefs regarding children's choices, parents anticipate their children's present bias on average correctly, and aim to reduce it in their paternalistic decisions by about 50%. Parents judge their children to be more patient than they actually are with respect to longer-run discounting. Moreover, they implement more impatient choices (implying a lower δ) for their children compared to what they believe their children choose. This pattern matches previous evidence that parents in Bangladeshi villages are more impatient than their children; a finding that is surprising to many scholars, but discussed in detail in Chowdhury et al. (2022).

More than half of all parents (55%) have a strictly positive willingness to pay for overruling their children's choices and implementing their paternalistic decisions. This is despite the fact that interference never pays off in monetary terms, indicating a non-instrumental value of parental interference. Parents who want to overrule their children's choices (a) attach a higher perceived importance to patience for success in life and (b) believe that they possess superior knowledge about what is good for their children. They also have parenting styles with higher degrees of warmth as well as control which are measured by parental behaviors such as trying to actively influence a child's friends or punishing disobedient children. The latter results underline the external validity of our novel measure of parental willingness to pay to overrule children's choices by establishing its direct links to parental interference in children's everyday life. It also provides empirical evidence for a link between parenting styles and paternalism with respect to economic decision-making. As such, our paper complements theoretical models on how paternalism is related to the intergenerational transmission of economic preferences. The prominent model of Doepke and Zilibotti (2017) posits that parenting styles evolve in equilibrium in reaction to environmental conditions (such as whether human capital investments pay off strongly or whether a society is characterized by low social and occupational mobility) and that parenting styles are driven by altruistic and paternalistic motives. Doepke and Zilibotti (2017) show that parents can mold their children's preferences or restrict their choices. While their motivating empirical evidence fits nicely with their model, they did not present any measure of single parents' willingness to interfere in their children's choices and how this relates to their parenting styles. Our paper can provide such an (experimental) measure and link it to parenting styles. It is not a direct test of the model of Doepke and Zilibotti (2017), but it is based on their reasoning that parents try to mold or restrict their children's preferences in a way that fits their altruistic and paternalistic motives.

Our setup also allows us to investigate the link between parental paternalism and the transmission of intertemporal preferences within families, as implied by the theoretical model of Doepke and Zilibotti (2017). In the aggregate, we find strong support for intergenerational transmission, but taking into account parents' willingness to interfere reveals a new aspect: The intergenerational transmission estimates are mainly driven by less paternalistic parents who do not spend any money to interfere with their children's decision-making, while the transmission of parental preferences to children's preferences is much weaker in families that have paternalistic parents (with a positive willingness to pay for overriding children's decisions). These results point to a hitherto overlooked, possible determinant of the intergenerational transmission of patience; namely, parental paternalism. While this relation between parental paternalism and the intergenerational transmission of time preferences is a novel finding of our paper, it is important to mention that reverse causality could be at work here. Specifically, it could be the case that parents whose children have similar preferences feel no need to interfere, while those who are not successful in transmitting their preferences to their children are more motivated to interfere. Our paper is unable to establish the direction of causality.

Taken together, our paper yields three main contributions: First, we develop a new method to elicit and measure parents' paternalism, and show that more than 50% of all parents are willing to forgo money to overrule their children's choices. While it might seem unsurprising to find a considerable degree of parental paternalism, it is nevertheless the case that quantitative evidence has been missing so far. Second, we show that parents anticipate their children's present bias and aim to mitigate it through interfering in a paternalistic way. So, we are not only investigating whether parents' beliefs about children are more or less accurate (and for which parents this is the case), but also how parents actually interfere with their children's decisions. Third, we highlight that our measure of parental paternalism relates to parenting styles, is associated with lower degrees of present-bias in children, and a lower intergenerational transmission of time preferences.

With these results, our study relates to several strands of literature. First, our paper is based on a long history of normative discussions on paternalism (Locke and Hollis, 1764; Mill, 1869; Dworkin, 1972), which has gained increasing attention more recently in the form of debates on soft paternalism and nudging (Thaler and Sunstein, 2003; Camerer et al., 2003; Glaeser, 2006). We focus on a particular form of paternalism—parental paternalism—that is especially prevalent in the everyday lives of families around the world. Dworkin (1972, p. 77) argues that such parental interference is often justified by children's lack of capacity to make fully rational decisions, particularly in situations requiring delay of gratification. According to him, it is thus a duty of parents to restrict their children's choice autonomy. We provide one of the first positive descriptions of parental paternalism by eliciting what decisions parents want their children to take and show that these paternalistic preferences are related to, but nevertheless significantly distinct from, parents' own preferences. In doing so, we therefore inform theoretical models that embed notions of paternalistic preferences in parents' utility functions (Pollak, 1988; Bisin and Verdier, 2001; Doepke and Zilibotti, 2017).

Second, there is a small empirical literature examining parents' paternalistic behavior towards their children. For instance, there is evidence that imposing limits on children's leisure activities (Cosconati, 2012) and restricting children's choices of friends (Agostinelli et al., forthcoming) impact human capital formation. Closely related to our study, Tungodden and Willén (2023) investigate parents' paternalistic preferences in the context of their children's competitiveness. They find that parents reduce the gender gap in competitiveness by exposing daughters more often to competition than they would themselves. While our study addresses, for the first time, parental paternalism in the domain of intertemporal decision-making, it also goes beyond the approach of Tungodden and Willén (2023) because we have a measure for parents' actual willingness to pay for overruling their children's decisions and because we investigate how parental paternalism interacts with the intergenerational transmission of preferences.

Third, from a methodological point of view, our study also relates to a recent laboratory experiment by Ambuehl et al. (2021), who examine paternalism in the context of time preferences.[1] Using a subject pool of university students, they analyze the extent to which subjects restrict the choice sets of others (i.e., strangers). These other subjects can still make their own choices, but from a potentially smaller set of options. Most importantly, our paper is different because we focus on parents and children from the same families, not strangers interacting with each other. Given that the formation of economic preferences is largely shaped by parents and the family environment (Chowdhury et al., 2022; Falk et al., 2021), it is important to understand parental paternalism and its determinants and consequences. Moreover, we add to the findings of Ambuehl et al. (2021) in several ways: First, we show that parents are even willing to forgo money to act paternalistically. Second, and of particular importance in our family context, we can also link parents' paternalistic decisions to children's unconstrained choices, which allows us to characterize paternalistic preferences in more detail by relating them both to children's choices and parental beliefs about those choices. Third, by focusing on children and teenagers (in the age range from 6 to 17 years), we can study how paternalistic choices of parents relate to children's preferences during a formative period in their lives. Given that many economic preferences develop in this period (see the review of Sutter et al., 2019) until they largely stabilize for adults (Schildberg-Hörisch, 2018), it is particularly important to study parental interference during childhood and adolescence and how it is associated with the intergenerational transmission of preferences.

Finally, our paper is related to studies on the formation and transmission of economic preferences from parents to their children, in particular with respect to time preferences (see, e.g., Kosse and Pfeiffer, 2012; Andreoni et al., 2019; Samek et al., 2021; Chowdhury et al., 2022; Brenøe and Epper, 2022, as well as further studies summarized in Appendix Table G.1).[2] We contribute to this literature in terms of measurement, sample, and substance. First, we use the same established and incentivized instrument of time preferences for both parents and children, allowing us to distinguish the transmission of present bias (β) and longer-run discounting (δ). Second, existing research—with the exception of Chowdhury et al. (2022)—stems mainly from Western, developed countries, while we study over 2000 individuals from more than 600 families representative of the rural population in Bangladesh, the eighth-most populous country in the world, which in 2014 reached the lower-middle-income-country status.[3] Given that half of the world population lives in low- or lower-middle-income-countries,[4] there is a need for more scientific evidence about the intergenerational transmission of preferences in such poorer countries. Finally, we document that parents who are willing to interfere with their children's decisions have children who behave less present-biased, but transmit their own preferences less in comparison to their non-interfering counterparts. Our finding of a relationship between parental paternalism and the intergenerational transmission of time preferences echoes a paper by Brenøe and Epper (2022).[5] Employing survey measures of parenting styles and patience, they show that the transmission of patience is stronger for parents who adopt authoritarian or permissive (i.e., less intensive parenting styles) rather than more involved authoritative parenting styles.

The rest of the paper is organized as follows: Section 2 presents our experimental design and describes our sample in more detail. Section 3 introduces a first set of results on parents' and their children's time preferences when making choices for themselves. Section 4 addresses parents' beliefs about their children's choices, and the paternalistic

[1] A few laboratory experiments investigate how subjects make intertemporal decisions for others with mixed evidence regarding whether decisions taken for others are less or more patient (e.g., Pronin et al., 2008; Shapiro, 2010; Albrecht et al., 2011; Oliveira and Jacobson, 2021; Koelle and Wenner, 2023), while subjects seem to be able to anticipate others' present bias (Fedyk, 2025).

[2] Apart from studying the intergenerational transmission of time preferences, there is rich evidence on the transmission of economic preferences in other domains such as risk attitudes, social preferences, or trust (see, e.g., Kimball et al., 2009; Dohmen et al., 2012; Cipriani et al., 2013; Sule et al., 2017; Chowdhury et al., 2022; Sutter and Untertrifaller, 2020). Furthermore, several papers link parental characteristics (e.g., education or socioeconomic status) to children's economic preferences (e.g., Bauer et al., 2014; Almås et al., 2016; Falk et al., 2021).

[3] See, e.g., the CIA's World Factbook (https://www.cia.gov/the-world-factbook/countries/bangladesh/, accessed on October 14, 2024).

[4] See, e.g., data by the World Bank (https://data.worldbank.org/?locations=XN-XM-1W, accessed on October 14, 2024).

[5] Two other studies investigate the relationship between parental involvement and the transmission of preferences, but focus on other preference domains. Sule et al. (2017) find that risk attitudes are only transmitted from mothers to their daughters if mothers' involvement in school and other activities is high. Similarly, Zumbuehl et al. (2021) show that parents' and their children's risk attitudes and trust become more similar with increasing parental involvement.

decisions they would like to implement. Section 5 analyzes parents' actual willingness to pay for overriding their children's decisions and which factors – in particular with respect to parenting styles – determine this willingness. Section 6 examines the interaction between parental paternalism and the intergenerational transmission of time preferences within families. Finally, Section 7 concludes the paper.

2. Experimental design and empirical strategy

We conducted our experiment with 2010 members of 610 families in rural Bangladesh. In the following, we begin by introducing the convex time budget sets used to elicit children's and their parents' time preferences. We then present how parents could interfere in their children's decision-making and how decisions were implemented. Finally, we briefly describe our sample and outline our main specification for the analysis of time preferences.

2.1. Convex time budget sets

In the first part of the experiment, both children and their parents were asked (independently of each other) to allocate stars, S (our experimental currency), between two payment dates in a series of 12 convex time budget sets (CTBs). More specifically, given their utility function $U(S_t, S_{t+k}|\Theta)$, characterized by a vector of preference parameters Θ, subjects divided an endowment m between two payment dates t and $t+k$, with $k > 0$, according to the following future-budget constraint:

$$(1+r)S_t + S_{t+k} = m \tag{1}$$

Allocating stars to the earlier date t is costly in the sense that there is a gross interest rate of $1+r \geq 1$ that translates stars from the sooner date (t) to the later one ($t+k$, with $k > 0$).

Across convex time budgets, we vary the parameters governing the intertemporal decision problem as follows: The earlier payment date t is either today or in one month ($t \in \{\text{today, in one month}\}$), while the delay k varies between one and two months ($k \in \{\text{one month, two months}\}$). For each pair of payment dates $(t, t+k) \in \{(\text{today, in one month}), (\text{in one month, in two months}), (\text{today, in two months})\}$, we vary the relative prices or the gross interest rate between the two dates ($1+r \in \{1, 1.33, 1.5, 2\}$) and choose the endowments $m \in \{8, 12\}$ such that we can construct five potential allocations with integer allocations. Table 1 summarizes the resulting 12 decision sheets.

By varying the features of the choice problem, we aim to recover the parameters describing the form of the utility function $U(\cdot)$. In Section 2.5, we show under which assumptions this allows us to recover preference parameters Θ.

In designing the decision sheets, we paid particular attention to the setting and subjects we were working with: rural families in Bangladesh and their children. Hence, we developed a pen-and-paper version of the convex time budgets and restricted all resulting allocations to integers up to 12. Moreover, to minimize the potential for confusion among subjects, the order of both the different combinations of payment dates and the gross interest rates was fixed as shown in Table 1. In addition, we used different colors to illustrate different payment dates (as shown in Appendix Fig. J.1) and included several examples as well as comprehension checks throughout the instructions (see Appendix J).

2.2. Parental beliefs, paternalistic decisions, and willingness to interfere

In a second part, parents had the opportunity to interfere with their children's decision-making. More specifically, parents were again presented with the 12 decision sheets, but had to indicate (i) their incentivized belief about each of their children's choices in the convex time budgets, and (ii) how they would choose for each of their children in each of the decision sheets. To incentivize parental beliefs, parents were paid one star if their belief regarding their children's decision in a randomly drawn choice was correct. Parents' paternalistic choices were implemented a priori with a $1/6$ chance determined by the roll of a die. Children were told in the instructions that their parents also made decisions for them, but that a roll of a die would determine whether their own or their parents' decision would be implemented, and that parents would not learn about their decisions in any case. This also means that the parents' decisions for the child were non-contingent and made without knowledge of the child's decision.

While these measures allow us to learn about parents' beliefs and preferences for their children, they do not suffice to conclude whether parents are willing to interfere actively with their children's decision-making. Hence, we implemented a novel behavioral measure that elicits parents' willingness to pay to increase the probability of overruling their children's choices, i.e., their willingness to interfere. More specifically, parents received an endowment of 100 Taka and could spend 10 Taka for each additional side of the dice they wanted to "buy", increasing the probability of overruling their children's choices by $1/6$ for each 10 Taka spent. This means that by spending 50 Taka, parents could be sure to override their children's decisions. The monetary costs of interfering thus approximate potential effort costs or the costs of possible conflicts with their children.

Note that we separately elicited each parent's beliefs, their paternalistic decisions, and their willingness to interfere for each of up to two of their children taking part in the experiment. We matched each parent with one of their children only at the end of the experiment, and neither parents nor children learned about each others' choices during the experiment.

2.3. Procedures and implementation details

In order to minimize communication among members of the family, they were interviewed simultaneously in separate rooms of the family's home. The interviewers explained several examples and frequently stopped to ask comprehension questions. If subjects failed to answer these control questions correctly, the instructions were repeated (see Appendix J) and everybody could only make choices after having successfully answered all control questions. This was the case after at most three explanations.

Ultimately, each subject was paid for only one randomly chosen decision in the experiment. More specifically, parents were either paid for one of their own decisions, or they were matched to one of their children. In the latter case, they were paid an endowment of 100 Taka less the amount they invested to interfere with their child's decision-making, plus one star if their belief about a randomly chosen decision of their child was correct. Children were paid either for one of their own decisions or—if parents overruled their choices—were paid according to one of their parents' paternalistic decisions. Appendix Table J.2 summarizes in detail how we matched parents and their children depending on the family structure and the roll of a die, and which decision was paid out.

In addition to the experimental payments, each subject received a participation fee of one star. At the end of the experiment, all stars were converted to money based on age-specific exchange rates, calibrated to age-specific pocket money of children, ranging from 4 to 15 Taka per star, as shown in Appendix Table J.1 (at the time of the experiment, 1 Taka corresponded to 0.012 USD; 97% of children in our sample received pocket money).[6] The stakes in our experiment were sizable. Each star for adults (worth 20 Taka) corresponded to approximately 4% of daily household income in our sample.

We conducted the experiment in February and early March 2020, before the first COVID-19 cases in Bangladesh were diagnosed. Originally, subjects were informed that any future payments would be delivered in person and in a sealed envelope to their house on the pre-specified date. Hence, all decisions were made in anticipation of this procedure. However, due to governmental travel restrictions in response to

[6] Different stake sizes by child age are a standard approach when working with children to make the perceived importance of their decisions comparable across different ages (see, e.g., Sutter et al., 2019; List et al., 2023).

Table 1
Overview of decision sheets.

Decision sheet	t	$t+k$	Endowment(m)	Gross int. rate $(1+r)$	Allocations (S_t, S_{t+k})				
					(1)	(2)	(3)	(4)	(5)
1	today	1 month	8	1.00	(8, 0)	(6, 2)	(4, 4)	(2, 6)	(0, 8)
2	today	1 month	12	1.33	(9, 0)	(6, 4)	(3, 8)	(2*, 9)	(0, 12)
3	today	1 month	12	1.50	(8, 0)	(6, 3)	(4, 6)	(2, 9)	(0, 12)
4	today	1 month	8	2.00	(4, 0)	(3, 2)	(2, 4)	(1, 6)	(0, 8)
5	1 month	2 months	8	1.00	(8, 0)	(6, 2)	(4, 4)	(2, 6)	(0, 8)
6	1 month	2 months	12	1.33	(9, 0)	(6, 4)	(3, 8)	(2*, 9)	(0, 12)
7	1 month	2 months	12	1.50	(8, 0)	(6, 3)	(4, 6)	(2, 9)	(0, 12)
8	1 month	2 months	8	2.00	(4, 0)	(3, 2)	(2, 4)	(1, 6)	(0, 8)
9	today	2 months	8	1.00	(8, 0)	(6, 2)	(4, 4)	(2, 6)	(0, 8)
10	today	2 months	12	1.33	(9, 0)	(6, 4)	(3, 8)	(2*, 9)	(0, 12)
11	today	2 months	12	1.50	(8, 0)	(6, 3)	(4, 6)	(2, 9)	(0, 12)
12	today	2 months	8	2.00	(4, 0)	(3, 2)	(2, 4)	(1, 6)	(0, 8)

Notes: This table presents the five possible choices (from the set of allocations) for each decision sheet. Each decision sheet is characterized by an earlier (t) and later ($t+k$) payment date with $(t, t+k) \in \{$(today, in one month), (in one month, in two months), (today, in two months)$\}$, an endowment (m), which equals the maximum number of stars in the later period, and one of four different gross interest rates $(1+r \in \{1, 1.33, 1.5, 2\})$. Possible allocations are chosen such that they result in integer allocations. The fourth option on the second, sixth, and tenth decision sheet (see * in the table) was displayed as two stars. In all our analyses, we will use the value of 2.25, as this corresponds to the linear budget line. Note that if a respondent preferred this option to the four other options, she will also prefer to get slightly more stars earlier, holding the later stars constant to the remaining options.

COVID-19, we had to transfer the money on the pre-specified dates using bKash, the largest mobile financial services provider in Bangladesh. Independent of the payment methods, trust was high that future payments indeed were made, as all households were part of previous projects (some including delayed payments). On average, each parent (child) earned 144 Taka (98 Taka) pooled over all three payment dates.

2.4. Sample description

We cooperated with ECONS, a local survey firm specialized in conducting household surveys and field experiments, and interviewed members of 610 families living in 34 rural villages across three districts of Bangladesh (Chandpur, Gopalganj, and Netrokona). We only included households with two parents (so no single-parent household was involved in our study). We planned to interview both parents and up to two of their children, aged between 6 and 17, to get a broad age coverage. We interviewed both parents in 83.6% of households and 100%, 77.4% and 88.4% of children in 1-child, 2-child and 3-child households, respectively. This results in a sample of 990 children and their 1120 parents (512 fathers and 608 mothers).[7] As shown in Table 2, in 9% of households at least one of the parents has completed secondary school and the literacy rate is 66%. Average household income amounts to 180,284 Taka per year, corresponding to approximately 5700 USD PPP. Almost half of all households have agricultural work as their main source of income.

We compare these families to the nationally representative rural sample from the Bangladesh Bureau of Statistics' (BBS) periodic Household Income and Expenditure Survey (HIES) 2016 (Bangladesh Bureau of Statistics, 2017). The interviewed families are similar to other rural Bangladeshi households in terms of household size, income, parental education, and occupations, as shown in the last five columns of Table 2. The literacy rate in rural Bangladesh is 57%, 13% of adults have a secondary school leaving certificate, and 85% of children aged 6–17 are enrolled in school. This figure pools primary-age children, for whom enrollment is very high (national primary enrollment rose from 84.8% in 2010 to 93.5% in 2016), with older teenagers, among whom enrollment is substantially lower. Our sample can therefore be considered fairly representative of the rural population in Bangladesh.

12.6% of our 610 households come from the sample with which Chowdhury et al. (2022) also worked. They studied how risk, time and social preferences of mothers, fathers, and children are related to each other, but did not study paternalistic interventions by parents. Moreover, their design was completely different. Our design here has been developed specifically for this study and has never been used before. In addition, part of our sample was exposed to one or two previous randomized controlled trials (RCTs): one in 2014-2016, which provided parents with information on the possible consequences of drinking water with arsenic contamination and offered options to reduce such contamination, and one in 2019, which targeted children's socio-emotional skills at school. We describe those RCTs in detail in Appendix I, where we also document that our results remain largely unchanged when taking exposure to those studies into account.

2.5. Main specification to estimate discounting parameters

In the following, we briefly describe our main specification as pre-registered with the AEA RCT registry as AEARCTR-0005313. In particular, we follow Andreoni and Sprenger (2012) and posit a time-separable, constant relative risk aversion (CRRA) utility function with quasi-hyperbolic β-δ-discounting (Laibson, 1997), and, as Andreoni and Sprenger (2012), estimate this model using our experimental data from the convex time budget decisions. Our main outcome of interest is the amount of stars, S_t, allocated to the sooner payment date t rather than a later date $t+k$. More specifically, we begin with a utility function

$$U(S_t, S_{t+k}) = \frac{1}{\alpha}(S_t)^{\alpha} + \beta\delta^k \frac{1}{\alpha}(S_{t+k})^{\alpha} \tag{2}$$

with $\beta \geq 0$ being the present bias parameter, $\delta \geq 0$ the monthly longer-run discounting parameter, and $\alpha < 1$ characterizing the curvature of the

[7] We had 41 households with only one child, and all 41 of those children participated. We had 268 households with two children. While we planned to run the experiment with both children in two-children households, 119 out of 536 children were not present at the time of the experiment, leaving us with 417 children from two-children households. Additionally, we had 301 households with three or more children, of which a maximum of two participated in the experiment by design. We observe a total of 532 children, out of a possible 602 (two times 301). This means that 70 additional children from these households could have participated if they had been present.

Table 2
Summary statistics.

	Data from the experiment					HIES data				
	Mean	Std. Dev.	Min	Max	N	Mean	Std. Dev.	Min	Max	N
A. Household characteristics										
Household size	5.32	1.53	2	13	609	4.66	1.48	1	20	20,527
Number of children	2.58	0.91	1	7	609	2.16	1.01	1	12	20,527
Number of interviewed children	1.62	0.49	1	2	610					
Yearly household income (in Taka)	180,284	177,381	−5959	1,138,659	609	165,846	284,803	0	40,084,808	20,319
No electricity at home	0.06	0.24	0	1	610	0.31	0.46	0	1	20,527
Muslim	0.68	0.47	0	1	610	0.89	0.31	0	1	20,527
B. Parental characteristics										
Age of father	44.03	7.89	29	77	512	39.87	13.81	18	80	23,992
Age of mother	36.47	6.43	23	59	608	35.11	10.06	18	60	23,402
Father works in agriculture	0.45	0.50	0	1	512	0.43	0.49	0	1	23,190
Mother is a housewife	0.95	0.21	0	1	607	0.82	0.39	0	1	23,402
Secondary school certificate	0.09	0.29	0	1	1113	0.13	0.34	0	1	47,394
Literacy rate	0.66	0.47	0	1	1113	0.57	0.49	0	1	47,394
C. Child characteristics										
Child is female	0.50	0.50	0	1	990	0.48	0.50	0	1	34,637
Age of child	11.74	2.56	6	17	990	11.31	3.33	6	17	34,637
Enrolled in school	0.97	0.17	0	1	990	0.85	0.35	0	1	34,589

Notes: Note that for seven parents we are missing background information on their age, schooling, or occupation, reducing our sample slightly once we condition on these variables in subsequent regressions. In Panel C reporting child characteristics, we display the summary statistics for children aged 6–17 only to increase the comparability to our experimental data.

utility function.[8] The future-value budget constraint is given by Eq. (1).[9] Note that we follow the previous literature and assume that subjects engage in narrow bracketing, i.e., do not take other income streams into account when making their decisions. Based on the budget constraint, we define the share of stars allocated to the sooner date t expressed in stars at the later date as $s_{t,t+k} = (1+r)S_t/m$. Maximizing the utility function (2) subject to the budget constraint (1) yields an intertemporal demand for S_t given by:

$$S_t = \begin{cases} \frac{\left(\beta\delta^k(1+r)\right)^{\frac{1}{\alpha-1}}}{1+(1+r)\left(\beta\delta^k(1+r)\right)^{\frac{1}{\alpha-1}}} m & \text{if } t=0 \\ \frac{\left(\delta^k(1+r)\right)^{\frac{1}{\alpha-1}}}{1+(1+r)\left(\delta^k(1+r)\right)^{\frac{1}{\alpha-1}}} m & \text{if } t>0 \end{cases} \tag{3}$$

which we will estimate using non-linear least squares (NLS) using

$$S_t = \frac{m\left(\beta\delta^k(1+r)\right)^{\frac{1}{\alpha-1}}}{1+(1+r)\left(\beta\delta^k(1+r)\right)^{\frac{1}{\alpha-1}}} \times \mathbb{1}\{t=0\} + \frac{m\left(\delta^k(1+r)\right)^{\frac{1}{\alpha-1}}}{1+(1+r)\left(\delta^k(1+r)\right)^{\frac{1}{\alpha-1}}} \times \mathbb{1}\{t>0\} + \epsilon_t. \tag{4}$$

Here, ϵ_t is an error term clustered at the household level to account for correlations in the error terms among family members. Since we also adopt this specification when estimating preference parameters on an individual level, we pre-specified to use an NLS specification as our main specification. Nonetheless, we present in Appendix C.1 several robustness checks using different approaches, e.g., NLS allowing for background consumption, and a series of Tobit specifications taking into account censoring in the data. Our conclusions remain unaffected if we adopt these other specifications.

[8] Our Eq. (2) characterizing the utility function therefore corresponds to Eq. (3) in Andreoni and Sprenger (2012) except for the fact that we set the parameter ω, a Stone-Geary preference parameter that can be interpreted as the level of background consumption, to zero in our main specification. We allow for background consumption in a robustness check in the appendix.

[9] Our theoretical framework does not aim at estimating a life-cycle model of decision-making, but closely reflects our experimental paradigm which allows for the structural estimation of a state-of-the-art time preference specification.

3. Intertemporal choices of children and their parents

3.1. Descriptive evidence

We begin by looking at the raw decisions for each of the experimental decision sheets. Fig. 1 and Table 3 summarize the data for children and parents separately by presenting average allocations for each of the 12 decisions.

We document three patterns: First, both children and their parents allocate the majority of their endowment to the sooner payment date. In fact, average allocations to the sooner date range from 51% to 81% (mean: 68%), indicating a relatively high degree of impatience. Second, allocations to the sooner date decrease in the gross interest rate indicated by the negative slope in Fig. 1, which is consistent with the law of demand. Third, allocations to the sooner date are lower if we introduce a front-end delay, i.e., if the sooner date is in one month rather than today. This difference, illustrated by the two curves in the left panels of Fig. 1(a) and (b), indicates a sizable present bias in the aggregate. Column (4) of Table 3 shows that, on average, the gap induced by the front-end delay amounts to 7 percentage points for children and 10 percentage points for their parents and is highly significant for both groups (p-values of t-test < 0.01).[10]

3.2. Structural estimates for own decisions

Table 4 presents the parameter estimates for present bias (β), time-consistent monthly discounting (δ), and CRRA-utility curvature (α) separately for children and parents, but also for the pooled sample. We estimate average present bias parameters of $\beta_{\text{parents}} = 0.79$ for parents and $\beta_{\text{children}} = 0.83$ for children that are of similar magnitude (t-test of the difference: $p = 0.09$).[11] A similar pattern holds for longer-run discounting

[10] In Appendix B, we classify individual choices according to their time and delay consistency as well as the adherence to the law of demand. The distribution of choices closely mirrors the distributions reported for German adolescents in Lührmann et al. (2018); Sutter et al. (2020): 55% of choices appear to be time-consistent. Present-biased choices are more likely than future-biased choices. Moreover, similar to other studies on time preferences (Giné et al., 2018; Balakrishnan et al., 2020), we find that more than 80% of choices are in line with the law of demand. Regarding the frequency of corner solutions, our data look similar to those by Andreoni and Sprenger (2012).

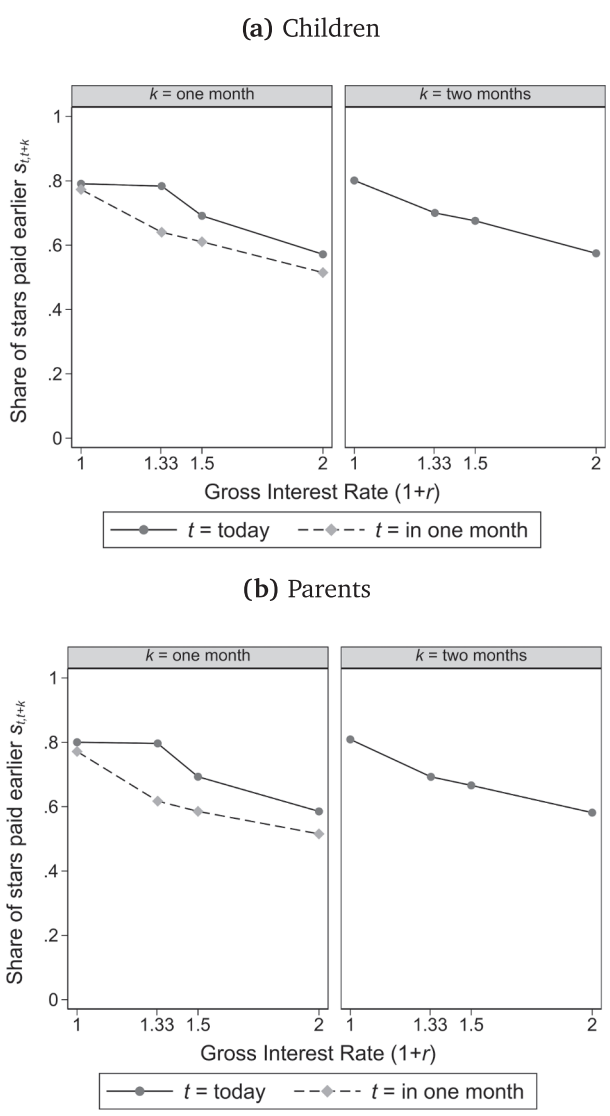

Fig. 1. Allocations of stars in CTBs.

Notes: These figures present the average allocations to the earlier payment date for each decision sheet defined by an initial payment date t, a delay k, an endowment m, and a gross interest rate $1 + r$. Figs. 1(a) and (b) present the allocation decisions separately for children and parents. The left panels illustrate allocations for decisions in which the delay between the earlier and the later payment date is one month (today vs. in one month; in one month vs. in two months), whereas the right panels illustrate allocation decisions over two months (today vs. in two months).

(with $\delta_{\text{children}} = 0.71$ and $\delta_{\text{parents}} = 0.74$, t-test of difference: $p = 0.13$).[12] Please note that even if average estimated time preference parameters were the same for parents and children, this would not imply a perfect correlation within families. As we discuss in detail in Section 6, within-family correlations between parents' and children's β and δ are rather low, see column (1) of Table 11. Moreover, the estimated β and δ parameters in combination with the associated, very tight standard errors

Table 3
Aggregate choices for CTBs.

	Share of starspaid earlier $s_{t,t+k}$			Wilcoxon signed-rank test for present bias
Grossinterestrate	(1) $t = 0$ $k = 1$	(2) $t = 1$ $k = 1$	(3) $t = 0$ $k = 2$	(4) Difference (1)-(2) (p-value)
A. Children's Choices (990 children; 11,880 choices)				
1.00	0.79	0.77	0.80	0.02
	(0.32)	(0.33)	(0.31)	(0.07)
1.33	0.78	0.64	0.70	0.14
	(0.35)	(0.42)	(0.39)	(0.00)
1.50	0.69	0.61	0.68	0.08
	(0.38)	(0.42)	(0.39)	(0.00)
2.00	0.57	0.51	0.57	0.06
	(0.42)	(0.43)	(0.42)	(0.00)
Overall	0.71	0.63	0.69	0.07
	(0.38)	(0.41)	(0.39)	(0.00)
B. Parents' Choices (1120 parents; 13,440 choices)				
1.00	0.80	0.77	0.81	0.03
	(0.32)	(0.35)	(0.31)	(0.01)
1.33	0.80	0.62	0.69	0.18
	(0.35)	(0.44)	(0.40)	(0.00)
1.50	0.69	0.59	0.67	0.11
	(0.39)	(0.43)	(0.40)	(0.00)
2.00	0.59	0.52	0.58	0.07
	(0.43)	(0.44)	(0.43)	(0.00)
Overall	0.72	0.62	0.69	0.10
	(0.39)	(0.43)	(0.40)	(0.00)

Notes: Columns (1) through (3) present aggregate shares of stars allocated to the sooner payment, $s_{t,t+k}$, with standard deviations in parentheses. Column (4) presents tests for present bias using the differences between shares of sooner payments for choices in which the sooner payment is immediate with choices in which the sooner payment is in one month, holding the delay k constant, i.e., whether $s_{t=0,t+k=1} - s_{t=1,t+k=2} = 0$ with p-values from Wilcoxon signed rank tests. Positive values indicate present bias. Overall tests stem from a regression of shares of stars allocated to the sooner payment ($s_{t,t+k}$) on the date t with standard errors clustered at the household level. The test-statistic is a t-statistic of the null hypothesis of no effect of allocation timing.

reveal that both children and parents display significant present-bias and impatience on average, i.e., that β and δ are significantly smaller than one. Finally, the CRRA-utility curvature is estimated to equal 0.45 and 0.47 for children and parents, respectively (t-test of difference: $p = 0.55$).[13] Since we will use the utility curvature from the pooled sample for our individual-level analysis, column (4) presents results from the pooled sample, yielding similar estimates ($\beta_{\text{pooled}} = 0.81$, $\delta_{\text{pooled}} = 0.72$, and $\alpha_{\text{pooled}} = 0.46$).[14]

3.3. Addressing the potential impact of liquidity constraints and arbitrage motives

In our experiment, we deliberately ask subjects to allocate money—in the form of stars—over two payment dates. Yet, there exists a debate about to what extent we can measure time preferences accurately using

[11] Our estimates are in line with a recent meta-analysis by Cheung et al. (2021) that reports an average present bias parameter of 0.82 (0.82-0.87 after accounting for selective reporting and publication bias).

[12] In Tables C.2 and C.3 in the appendix we split our Table 4 into two subgroups, the first one in which only one parent participated in the experiment, and the second one where both parents took part. While coefficients differ slightly, we see the same overall pattern of results across both types of households.

[13] While this utility curvature might seem strong, Appendix Table C.1 documents that once we account for background consumption, the estimated CRRA parameter α increases to 0.86-0.87, but does not change our main conclusions regarding time preference parameters. See also Balakrishnan et al. (2020) for a similar pattern. In the following, we focus on the specification without background consumption as specified in our pre-analysis plan.

[14] We study the heterogeneity of our estimates regarding parental and children's gender in Appendix C.2. We do not find any difference between the parameters of boys and girls or younger (6-11-year-old) and older (12-17-year-old) children. Mothers' longer-run discounting parameter is significantly larger than that of fathers (δ: 0.78 vs. 0.68, t-test: $p < 0.01$), but present bias does not differ (β: 0.77 vs. 0.81; t-test: $p = 0.21$).

Table 4
Aggregate structural parameters.

	(1) Children	(2) Parents	(3) *p*-valueof diff.	(4) Pooled
Present bias β	0.83***	0.79***	0.09	0.81***
	(0.02)	(0.02)		(0.01)
Monthly δ	0.71***	0.74***	0.13	0.72***
	(0.02)	(0.01)		(0.01)
CRRA curvature α	0.45***	0.47***	0.55	0.46***
	(0.03)	(0.02)		(0.02)
Observations	11,880	13,440		25,320
Individuals	990	1120		2110
Households	610	610		610
R^2	0.77	0.76		0.77

Notes: This table presents non-linear least squares (NLS) estimates of the structural parameters of interest for children, parents, and the pooled sample. See Appendix C.1 for additional robustness checks. Standard errors in parentheses are clustered at the household level. *, **, and *** denote significance at the 0.10, 0.05, and 0.01 level.

monetary payoffs (e.g., Augenblick et al., 2015; Coller and Williams, 1999; Cubitt and Read, 2007; Dean and Sautmann, 2021). A recent paper by Strack and Taubinsky (forthcoming) shows that this is still possible and that it would be premature to discard measuring time preferences with monetary payments at different points in time. Two main concerns in this literature are about the role of (i) uncertainty regarding whether future payments are indeed made, and (ii) intertemporal allocations capturing liquidity constraints rather than time preferences. Regarding the first concern, we minimize uncertainty about whether future payments will indeed be made by working with households that have already participated in other projects (some also involving later payments), for which reason they could trust in actual future payments. With regard to the second concern, we report several robustness checks in Appendix D to demonstrate that liquidity constraints (or arbitrage) are unlikely to explain the intertemporal decisions in our experiment. About one third of our households have sizable savings, and we show in Appendix D that choice patterns are very similar for households with no, moderate, or sizable savings.[15] Specifically, we document that the heterogeneity in allocations by several proxies of potential liquidity constraints (household income and savings) is rather small, and that a large share of the variation in allocation decisions stems from heterogeneity within the household (i.e., between spouses). Even households with savings that are on average more than 2.5 times their monthly household income display about the same decisions as families without any savings. Thus, we are confident that our experimental measures indeed reflect time preferences rather than liquidity constraints.

4. Parental beliefs about children's choices and paternalistic decisions

4.1. Descriptive evidence

Fig. 2 and Table 5 summarize aggregate results for parents' incentivized beliefs as well as their paternalistic decisions for their children. Parental beliefs follow the same qualitative pattern as children's actual choices. Specifically, parents believe that their children are present-biased (as they actually are) and intend to reduce the present bias: the gap between the solid and dashed lines is considerably smaller for paternalistic decisions (in Fig. 2(b)) than it is for parental beliefs (in Fig. 2(a)).

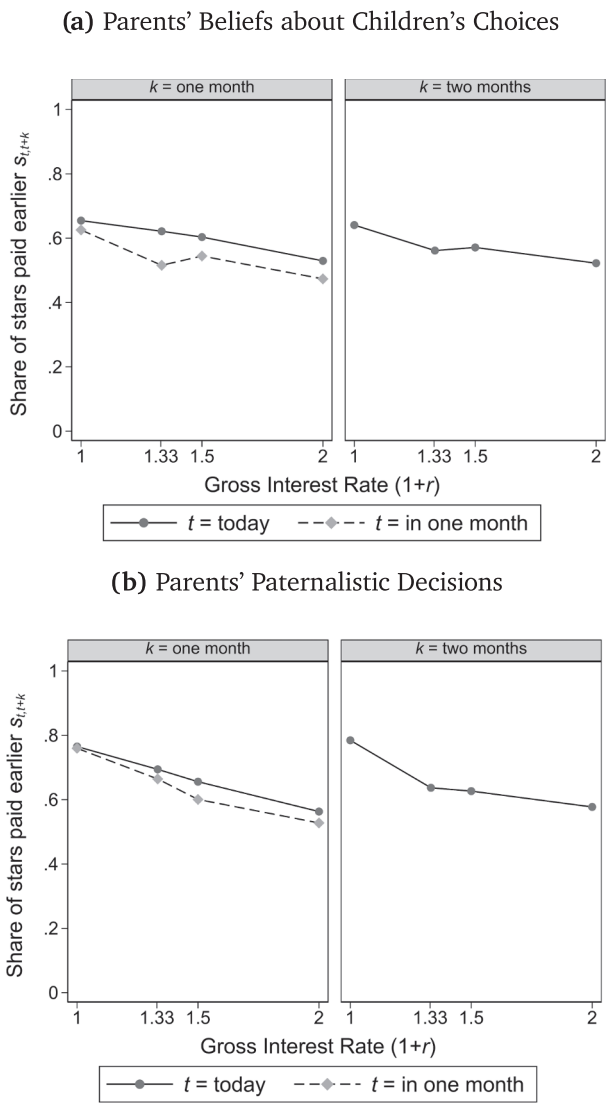

Fig. 2. Allocations of stars in CTBs: parents' beliefs and paternalistic decisions.
Notes: These figures present parents' beliefs about their children's allocation of stars (Fig. 2(a)) and their subsequent paternalistic decisions for their children (Fig. 2(b)) for each decision sheet defined by an initial payment date t, a delay k, endowment m, and a gross interest rate $1 + r$.

In fact, as shown in Table 5, parents believe their children allocate 6 percentage points more to the sooner payment date if it is today rather than in an identical decision with a front-end delay of one month. Yet, they implement decisions that reduce this gap to 3 percentage points, i.e., by 50%. Parents actually implement more impatient choices for their children compared to what they believe their children choose (across all decisions, parents allocate 66% of stars to the sooner date in their paternalistic decisions, and they expect their children to allocate 57% of stars to the sooner date). Two points are worth noting here. First, parents are overly optimistic about the patience of their children. In fact, children allocate 68% of stars to the sooner date (as shown in Table 3), rather than 57%, which is what parents expect. So, the fraction that parents allocate to the sooner date is very close to what children actually do. Second, there seems to be a common (mis)conception, mainly based on data from rich Western countries, that parents should be more patient than their children. Recall, however, that our data originates from a lower middle-income country (Bangladesh) and that there is very little evidence about the patterns of economic preferences in such countries. Actually, the Global Preference Survey by Falk

[15] This insensitivity of experimental choices with regard to the household's financial situation is consistent with the consume-on-receipt model. This model assumes that monetary payments from an experiment produce immediate one-for-one marginal consumption. Cohen et al. (2020) show that this assumption is widespread in the literature on measuring time preferences (see their Section 4.2.), and our data fit into this picture.

Table 5
Aggregate beliefs and paternalistic choices for CTBs.

	Share of starspaid earlier $s_{t,t+k}$			Wilcoxonsigned-ranktest for
	(1)	(2)	(3)	(4)
Grossinterestrate	$t=0$ $k=1$	$t=1$ $k=1$	$t=0$ $k=2$	Difference (1) – (2) (p-value)
A. Parental Beliefs about Children's Choices				
1.00	0.65	0.63	0.64	0.03
	(0.38)	(0.38)	(0.38)	(0.00)
1.33	0.62	0.52	0.56	0.11
	(0.40)	(0.40)	(0.40)	(0.00)
1.50	0.60	0.54	0.57	0.06
	(0.39)	(0.40)	(0.39)	(0.00)
2.00	0.53	0.47	0.52	0.06
	(0.40)	(0.41)	(0.40)	(0.00)
Overall	0.60	0.54	0.57	0.06
	(0.40)	(0.40)	(0.39)	(0.00)
B. Parents' Paternalistic Decisions				
1.00	0.76	0.76	0.78	0.01
	(0.34)	(0.35)	(0.32)	(0.87)
1.33	0.69	0.66	0.64	0.03
	(0.40)	(0.41)	(0.41)	(0.00)
1.50	0.66	0.60	0.63	0.06
	(0.39)	(0.42)	(0.40)	(0.00)
2.00	0.56	0.53	0.58	0.04
	(0.42)	(0.43)	(0.42)	(0.00)
Overall	0.67	0.64	0.66	0.03
	(0.40)	(0.41)	(0.40)	(0.00)

Notes: The table presents beliefs and paternalistic decisions of 1120 parents for up to 2 of their children, resulting in 1820 sets of 12 choices (21,821 and 21,831 choices in total, as 19 and 9 choices are missing, respectively). Columns (1) through (3) present aggregate shares of stars allocated to the sooner payment, $s_{t,t+k}$, with standard deviations in parentheses. Column (4) presents tests for present bias using the differences between shares of sooner payments for choices in which the sooner payment is immediate with choices in which the sooner payment is in one month holding the delay k constant, i.e., whether $s_{t=0,t+k=1} - s_{t=1,t+k=2} = 0$ with p-values from Wilcoxon signed rank tests. Positive values indicate present bias. Overall tests stem from a regression of shares of stars allocated to the sooner payment ($s_{t,t+k}$) on the date t with standard errors clustered at the household level. The test statistic is a t-statistic of the null hypothesis of no effect of allocation timing.

et al. (2018) reveals several cases where data patterns from developing countries differ from those found in rich, developed countries.[16] It is for this reason that one should collect more data from relatively poorer countries to know whether data patterns from the Western world are as general as they are often assumed to be.

4.2. Structural estimates

The descriptive patterns are confirmed by the structural estimates presented in Table 6, in which we present the results of non-linear least squares specifications to estimate time preference parameters and the utility curvature. In column (1), the average belief of parents about their children's present bias, $\beta_{\text{belief}} = 0.83$, coincides with the children's actual present bias ($\beta_{\text{children}} = 0.83$; see Table 4). However, in contrast to the children's actual time-consistent discounting, parents expect their children to be more patient than they actually are ($\delta_{\text{belief}} = 0.89$ vs. $\delta_{\text{children}} = 0.71$ for their actual choices).[17] In addition, they expect their children to have a more pronounced utility curvature ($\alpha_{\text{belief}} = 0.29$ vs. $\alpha_{\text{children}} = 0.45$).

Table 6
Parental beliefs and paternalistic decisions: structural parameters.

	Beliefs		Paternalisticdecisions	
	(1)	(2)	(3)	(4)
Present bias β	0.83***	0.86***	0.93***	0.94***
	(0.02)	(0.01)	(0.02)	(0.01)
Monthly δ	0.89***	0.87***	0.71***	0.72***
	(0.02)	(0.01)	(0.01)	(0.01)
CRRA curvature α	0.29***	0.46	0.42***	0.46
	(0.03)	(–)	(0.03)	(–)
Observations	21,821	21,821	21,831	21,831
Parent-child pairs	1819	1819	1820	1820
Households	610	610	610	610
R^2	0.69	0.69	0.74	0.74

Notes: This table presents non-linear least squares (NLS) estimates of the structural parameters of interest for parental beliefs in columns (1) and (2), as well as their paternalistic decisions in columns (3) and (4). Even-numbered columns impose the CRRA-utility curvature parameter α, using the estimate from the pooled sample to facilitate comparison of the time preference parameters. Standard errors in parentheses are clustered at the household level. *, **, and *** denote significance at the 0.10, 0.05, and 0.01 level.

When it comes to parents' paternalistic decisions for their children, they implement less present-biased decisions ($\beta_{\text{paternalistic}} = 0.93$), but more impatient choices ($\delta_{\text{paternalistic}} = 0.71$) than they expect their children to make, as shown in column (3) of Table 6. Thus, parents anticipate the present bias of their children correctly, indicating sophistication on the part of parents regarding their children's self-control problems, and they try to mitigate this present bias. Parents' longer-run discounting for their children matches the children's actual discounting parameter ($\delta_{\text{paternalistic}} = \delta_{\text{children}} = 0.71$).[18]

4.3. Relationship of parental beliefs and paternalistic decisions to parents' own choices

We have shown that parents believe their children exhibit sizable present biases and implement rather time-consistent choices. This leads to two questions: First, how accurate are the parents' beliefs about their children's choices, and second, how do beliefs and parents' own decisions relate to the paternalistic decisions they make for their children? While we relegate the detailed analysis to Appendix Table E.4, we report here the main findings: First, parental beliefs correlate significantly with their children's actual choices. This general result remains robust even when conditioning on a rich set of background variables and indicates that parents can predict their children's intertemporal decisions reasonably well. Yet, we do observe that accuracy of beliefs is higher in richer households and those in which mothers are housewives (see Appendix Table E.5).

Second, we show that parents' paternalistic decisions are significantly related to both their own decisions and their beliefs about their children's decisions, with the former having a regression coefficient that is twice as large as the latter's. However, both measures and a rich set of background variables capture only a small part of the variation in paternalistic decisions. Our data imply that, on average, parents implement more patient decisions for their children compared to their own

[16] In particular, Bangladesh belongs to the few countries in the world in which patience is not predictive of education outcomes, suggesting that a reduced present bias at the expense of less patience may not be costly for children. Specifically, the upper right panel of Fig. 7 in the Online Appendix of Falk et al. (2018) shows an estimated coefficient of −0.021 for the relation between patience and education (two-sided test: $p = 0.19$).

[17] In Tables E.1 and E.2 in the appendix we split our Table 6 into two subgroups: the first one in which only one parent participated in the experiment, and the second one where both parents took part. While coefficients differ slightly, we observe the same overall pattern of results across both types of households.

[18] Columns (2) and (4) in Table 6 show that the differences in β and δ for beliefs and paternalistic decisions are not driven by the large difference in the curvature α.

choices. The share of their children's stars that parents allocate to the sooner date is smaller than the same share in the parents' allocations for themselves. Specifically, we observe that 76% of paternalistic choices are at least as patient as parents' own choices, with 27% of choices being strictly more patient. This suggests that parents' paternalistic decisions cannot be explained by these factors alone, but rather capture a distinct set of factors, e.g., parents may aim to "teach" their children some preferred behavior through their paternalistic decisions. The differences between parents' own choices and their paternalistic decisions also speak against the interpretation that parents simply maximize the joint family budget by enforcing their own decisions on the children's decisions. This is also not a plausible interpretation because interfering never pays off monetarily for parents, as we will show in the next section.

5. Parents' willingness to interfere and its determinants

5.1. Descriptive evidence

While it is interesting to see what parents want to implement for their children, this does not tell us how committed parents actually are to interfering in their children's decision-making. To provide evidence on the actual extent of paternalism, our experimental design featured an investment possibility for parents that increased the probability of parents' paternalistic decisions actually being implemented for their children. Fig. 3 illustrates how much parents were willing to spend to increase the probability of implementing their paternalistic decisions (by 1/6 for each 10 Taka spent). While 45% of parents decided not to spend anything and keep the 100 Taka for themselves, a majority of 55% of parents decided to invest 34.0 Taka on average (approx. 7% of average daily household income; unconditional mean investment: 18.6 Taka). Of those, the majority spent the maximum of 50 Taka which implemented their paternalistic decisions with certainty.[19]

Thus, parents have a sizable willingness to pay to override their children's choices. One key takeaway from this large willingness to pay is that parents' decisions to interfere with their children's decision-making cannot have a purely instrumental value. In fact, given the parents' beliefs and preferences, we can show that it is never optimal for them for monetary reasons alone to spend money to increase the probability of overriding their children's choices. To arrive at this conclusion, we make the simplifying assumption that parents gain utility from their children's choices as well as from the 100 Taka minus their amount invested to interfere with their children's decision-making. For every scenario, we then calculate the expected utility of not investing anything, i.e., $5/6 \times U_i\left(s_t^{\text{belief}} + E^*, s_{t+k}^{\text{belief}}|\Theta_i\right) + 1/6 \times U_i\left(s_t^{\text{pat.}} + E^*, s_{t+k}^{\text{pat}}|\Theta_i\right)$, taking into account that, with a 1/6 chance, parents' paternalistic decisions are still implemented, and compare it to the expected utility of investing, i.e., I, $(5 - 0.1I)/6 \times U_i\left(s_t^{\text{belief}} + E^* - I^*, s_{t+k}^{\text{belief}}|\Theta_i\right) + (0.1I + 1)/6 \times U_i\left(s_t^{\text{pat.}} + E^* - I^*, s_{t+k}^{\text{pat.}}|\Theta_i\right)$. Here, E denotes parents' endowment of 100 Taka, I is parents' willingness to pay to interfere (in steps of 10 Taka), and $(\cdot)^*$ denotes that a monetary amount is translated into stars. We evaluate the utility function using each parent's individual parameter estimates $\Theta_i = (\beta_i, \delta_i, \alpha_i)$, which we estimate as described in Appendix H, and average over the 12 scenarios, yielding the result that it does not pay off for parents to interfere.

This raises the question of why parents actually have a positive willingness to pay. In the remainder of this section, we explore this positive willingness to pay by studying its correlates, how it relates to more commonly investigated parenting behaviors, and whether there exists heterogeneity in paternalistic decisions with respect to this behavioral measure of paternalism.

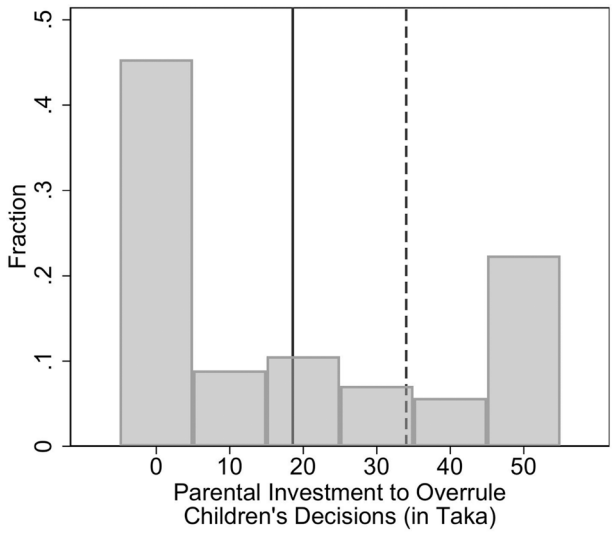

Fig. 3. Distribution of parents' investment to increase the probability of overriding their children's choices.
Notes: This histogram presents the distribution of parents' investment to increase the probability of overriding their children's choices. Each parent's decision is considered separately. The solid line indicates the mean investment of 18.6 Taka, whereas the dashed line indicates the mean investment conditional on investing (55% of parents; 34.0 Taka).

5.2. Correlates and motives of parental paternalism

In Table 7, we examine the determinants of whether and how much parents invest in interfering with their children's choices. As explanatory variables we consider the parents' own allocations, their beliefs about their children's choices, and their paternalistic decisions for their children. Additionally, we consider the absolute difference between parents' paternalistic decisions and their beliefs about children's choices. This latter variable captures whether parents are more likely to invest money if they believe their child does not act in a way they want him or her to act. Column (1) of Table 7 reports OLS regressions with an indicator variable for whether a parent invested *any* money in interference, while column (2) presents a Tobit model of the amount invested (censored at zero and 50 Taka). We see in both columns that parents are more likely to invest any money and invest larger amounts if (a) parents are more patient themselves (i.e., allocate a smaller share to the sooner date), (b) parents believe their children are more patient, and (c) parents implement more patient allocations for their children in their paternalistic decisions. Only the difference between the latter and parents' beliefs does not matter for interference.[20]

Furthermore, to better understand the underlying motives that parents use to justify their behavior, we elicited parents' agreement with ten statements capturing different motives on a scale from −2 ("I strongly disagree") to + 2 ("I strongly agree") (see Appendix Table F.2 for the wording of statements and their estimated relationship to parental paternalism). Parents agree mostly with statements highlighting the importance of patience, children's obedience to their parents, and the classical paternalistic motive of superior knowledge. At the same time,

[19] We find that 52% of fathers and 57% of mothers are willing to forgo some of their endowment to increase the probability of their decisions being implemented (see Appendix Fig. F.1 for histograms). Unconditionally, they spend similar amounts (fathers: 19.2 Taka, mothers: 18.1, Mann-Whitney-U test of difference: $p = 0.84$), but the distributions differ by gender (Kolmogorov-Smirnov test of equal distributions: $p = 0.05$).

[20] In Appendix Table F.1, we explore how sociodemographic characteristics are associated with parents' willingness to interfere. We find that parents are no more likely to interfere with boys than girls. Nor do we observe differences by children's age, which means that parents are equally likely to interfere paternalistically with older and younger children. Parents with more resources are more likely to act paternalistically.

Table 7
Correlates of parental interference.

	$\mathbb{1}\{\text{Interfering}\}$	Investment
	(1)	(2)
Parents' share of stars paid earlier	−0.05***	−3.64*
	(0.02)	(2.18)
Parents' belief about	−0.05***	−4.57*
share of stars paid earlier	(0.02)	(2.51)
Parents' paternalistic decisions	−0.06***	−7.09***
about share of stars paid earlier	(0.02)	(2.36)
Abs. diff. between parental beliefs	−0.01	−2.93
and paternalistic decisions	(0.03)	(3.30)
Parental controls	Yes	Yes
Child controls	Yes	Yes
Household characteristics	Yes	Yes
Decision FEs	Yes	Yes
Mean of dependent variable	0.55	18.65
Observations	21,674	21,626
Households	609	609
(Pseudo-)R^2	0.04	0.01

Notes: This table explores potential determinants of parental interference. Column (1) presents OLS regressions of an indicator for whether a parent invests money to increase the likelihood of implementing his or her choice for their children on parents' own allocations, their beliefs and paternalistic decisions. Column (2) uses parents' investment to override their children's choices as the dependent variable and presents results from a Tobit specification with censoring at investments of 0 and 50 Taka. Control variables include age and gender of both the parent and the child, whether the parent can read and write, received a secondary school leaving certificate, the household being Muslim, access to electricity, whether the father works in agriculture, whether the mother is a housewife, log household income, and indicators for whether one of two parents in a household did not participate in the experiment, whether only one child participated in the experiment although there were at least two children in the household. Standard errors in parentheses are clustered at the household level. *, **, and *** denote significance at the 0.10, 0.05, and 0.01 level.

children's perceived lack of understanding or parents' intentions to take away the money the children earn in the experiment have the lowest agreement.

In fact, our questionnaire reveals that the two items with the largest explanatory power for parental interference are "Patience is important to succeed in life" as well as "I know better what is good for my child than he or she does". These results suggest that parents acknowledge that patience is important, consistent with their aim of reducing their children's present bias, and that parents believe they possess superior knowledge. Thus, interfering with their children's decision-making not only restricts children's autonomy, but also seems to have educational and altruistic reasons (due to parents implementing "better" decisions and signalling to their child what the right choice is). In support of altruistic reasons, we observe a positive correlation between parents' agreement with the statement "I am willing to sacrifice my own desires to satisfy those of my child" (answered on a 5-point Likert scale) and our indicator of parental interference (Pearson correlation $\rho = 0.14$, p-value < 0.01).

Before moving to the structural estimates, we would like to discuss in more detail the item that asked parents whether they planned to take away the money earned by their children. One might argue that parents having such an intention do not act in a paternalistic manner (because they want their child to act in a specific way), but that they simply implement their own preferences in their paternalistic decisions, without any consideration for their child (as parents would ultimately confiscate the children's earnings). Such a reasoning may be further supported by the parents' agreement to the statement that they expect their child to contribute financially to the household. To start with the latter, while financial contributions may be expected from children of age or as old-age support for parents, less than 5% of 6–11-year-old children and only 10–15% of the older children actually work for money. Furthermore, almost all children in our sample (97%) receive pocket money or money from relatives that they can dispose of completely on their own. Thus, parents' expectations that their children contribute financially to the household are *not* related to the earnings from the experiment. To turn to the issue of taking away those experimental earnings from children, we first would like to emphasize that this question is among those that receive the weakest support in our motives questionnaire. Nevertheless, we can look at whether the paternalistic choices of parents who agree or disagree with this statement differ. We do so by splitting the sample into those parents who indicate agreement or strong agreement to the statement "I plan to take away the money my child earned during the experiment" (35% of parents) and all others (who do not agree; 65% of parents). We present the results in Tables F.3 and F.4 in the Appendix. In Table F.3 we present parents' own choices, split by the median intention to take away children's earnings from the experiment. There is no difference between both groups in the extent of present bias (β), but parents with a stronger intention to take away money discount more heavily. In Table F.4 we then show the estimates for paternalistic choices, again for the two separate groups. Again, the two groups do not differ in their present bias (in paternalistic choices), but in their degree of discounting. Yet, the important observation when comparing Tables F.3 to F.4 is the following: even for parents who indicate an intention to take away their children's earnings we see that their own choices differ significantly from their paternalistic choices for children. Hence, choices of parents for their children do not simply reflect their own preferences, even for the subgroup of parents that indicates in the questionnaire an intention to take away money from their children. For these reasons, we are confident that even for the latter group of parents we are measuring their paternalistic choices—striving for less present-biased choices for their children—, not simply their own preferences.[21]

5.3. Implications of parental interference for structural estimates of paternalistic decisions

As we have seen, parents interfere with classical paternalistic motives and are more likely to interfere when they themselves are more patient or if they want their children to make more patient decisions. Therefore, an alternative way to look at parental interference is to study how the decisions parents make for their children differ by parents' willingness to interfere. To do so, we re-estimate the structural parameters using the NLS specification, but allow the parameters to differ by parents' willingness to interfere, both on the extensive margin (do parents invest money to increase the probability of overriding their children's decisions?) and on the intensive margin (how much do parents invest?).

We present the results in Table 8 and find that interfering parents, i.e., those who invest money, implement decisions that exhibit less present bias ($\beta^{\text{interfering}}_{\text{paternalistic}} = 0.96$ vs. $\beta^{\text{non-interfering}}_{\text{paternalistic}} = 0.90$; t-test: $p = 0.05$) and less time-consistent discounting ($\delta^{\text{interfering}}_{\text{paternalistic}} = 0.73$ vs. $\delta^{\text{non-interfering}}_{\text{paternalistic}} = 0.68$; t-test: $p = 0.05$). The difference between interfering and non-interfering parents appears to be driven by the decision to invest rather than the level of investment.[22]

[21] It can be noted, however, that there are some differences in household characteristics and parental characteristics between the group of households where parents indicate they will take away money from their children and those households where parents do not do this. In Table F.5 in the appendix we present the differences. We see that those parents who say they intend to take away money from their children are 9 percentage points more likely to interfere in their children's decision-making, are more likely to be Muslim, have lower levels of education and literacy, and fathers are more likely to work in agriculture.

[22] We de-mean the investments of parents who decide to invest money and estimate all parameters in a single NLS regression. The difference in parameters

Table 8
Heterogeneity in paternalistic choices by willingness to interfere.

	(1) Present bias β	(2) Monthly discounting δ	(3) CRRA curvature α
A. Parameters			
Non-interfering parents	0.90***	0.68***	0.42***
	(0.02)	(0.02)	(0.04)
Interfering parents	0.96***	0.73***	0.43***
	(0.02)	(0.02)	(0.03)
B. Differences			
Extensive margin	0.06*	0.05**	0.01
	(0.03)	(0.03)	(0.05)
Intensive margin	−0.01	−0.03	−0.06**
	(0.02)	(0.02)	(0.03)
Share interfering	0.55		
Observations	21,783		
Parent-child pairs	1816		
Parents	1119		
Households	610		

Notes: This table presents non-linear least squares (NLS) estimates of the structural parameters of interest for non-interfering and interfering parents, as well as estimates of the extensive and intensive margin of interference. The extensive margin is defined as the difference between interfering and non-interfering parents evaluated at the mean investment of interfering parents. The intensive margin is defined as the change in parameters due to changes in the demeaned amount of investments among interfering parents only. Standard errors in parentheses are clustered at the household level. Share interfering denotes the share of parents that invested to increase the probability that their choices are implemented for the child under consideration. *, **, and *** denote significance at the 0.10, 0.05, and 0.01 level.

5.4. Parental interference and parenting styles

In our experiment, parental interference is a one-shot decision. Yet, it might capture parents' tendencies to engage in certain parenting practices in everyday interactions with their children, which would provide important evidence for the external validity of our novel, incentivized measure of parental willingness to pay to override children's decisions. We therefore investigate the relationship of parental interference with more common measures of parenting. In particular, we focus on parenting styles capturing the mode of parent–child interactions.

In order to analyze how parenting styles are related to parental paternalism, we elicited parents' parenting styles using two established survey measures for the warmth (Perris et al., 1980) and control dimensions of parenting styles (Schwarz et al., 1997), comprising three and four items, respectively.[23] In contrast to other studies, we elicited parenting styles separately for each child, as we also have separate measures of parents' willingness to interfere for both children. Moreover, our data indicate that the willingness to interfere is not fixed at the parent level, but varies across children. In fact, we observe that 22% of parents with two children interfere with the decision-making of only one of their children, but not the other.

Table 9
Parents' willingness to interfere predicts parenting styles.

	Control			Warmth		
	(1)	(2)	(3)	(4)	(5)	(6)
$\mathbb{1}\{\text{Interfering}\}$	0.39***	0.39***	0.37***	0.39***	0.37***	0.11*
	(0.06)	(0.05)	(0.07)	(0.05)	(0.05)	(0.06)
Parental and child controls	No	Yes	Yes	No	Yes	Yes
Household Characteristics	No	Yes	Yes	No	Yes	Yes
Share interfering	0.55	0.55	0.55	0.55	0.55	0.55
Parent-child-pairs	1816	1804	1762	1816	1804	1762
Households	608	607	565	608	607	565
R^2	0.04	0.16	0.54	0.04	0.08	0.58

Notes: This table presents regressions of standardized indices of two dimensions of parenting styles (control and warmth) on an indicator for whether a parent invests money to increase the likelihood of implementing their choices for their children. Control variables include age and gender of both the parent and the child, whether the parent can read and write, received a secondary school leaving certificate, the household being Muslim, access to electricity, whether the father works in agriculture, whether the mother is a housewife, log household income, and indicators for whether one of two parents in a household did not participate in the experiment, whether only one child participated in the experiment although there were at least two children in the household. Standard errors in parentheses are clustered by households. *, **, and *** denote significance at the 0.10, 0.05, and 0.01 level.

Table 9 shows that parental paternalism is significantly related to both the control and warmth dimensions of parenting. In columns (1), (2), (4), and (5) we see that those parents who have a positive willingness to intervene score 0.37-0.39 standard deviations higher on both scales. This suggests that parental paternalism is related to authoritative parenting styles that are characterized by high levels of both warmth and control. In columns (3) and (6), we include household fixed effects and thus identify the variation in parenting styles present within families (between parents and/or towards different children). The results show that the associations between parental paternalism and the control dimension of parenting remain stable, while the coefficient for warmth reduces by two thirds. Thus, the results indicate that our behavioral measure of parental interference predicts more intensive parenting styles, particularly for the control dimension.

Overall, we have seen in this section that parents interfere with their children's decision-making not for instrumental or monetary reasons, but to foster patience in their children. Parents willing to interfere implement decisions for their children that exhibit close to no present bias. While these results only capture a cross-sectional relationship at one point in time, the fact that they are related to parenting styles suggests that the willingness to interfere most likely also has dynamic implications. In particular, if parents interfere repeatedly with their children's decision-making, this presumably has consequences for the development of skills and preferences. In a final part of our analysis, we therefore study how our behavioral measure of parental interference relates to the formation and intergenerational transmission of patience.

6. Parental paternalism and intergenerational transmission of patience

6.1. Intergenerational correlation in intertemporal choices: reduced-form results

Contributing to the large literature on the intergenerational transmission of time preferences that we summarize in Appendix Table G.1, Table 10 presents how parents' own choices are related to their children's choices. Column (1) of Panel A shows that increasing the parents' share of stars paid earlier by 10 percentage points is associated with

in panel A of Table 8 therefore corresponds to the difference at average investments as shown as the extensive margin difference. In Appendix Tables F.6 and F.7, we disaggregate these results for mothers, fathers and for children's gender.

[23] The warmth dimension corresponds to how responsive parents are to their children's needs, while the control dimension captures parents' strictness. These two dimensions span four distinct parenting styles (see, e.g., Maccoby et al., 1983): neglectful parenting with low levels of warmth and control; permissive parenting characterized by high levels of warmth, but low levels of control; authoritarian parenting with high control, but low warmth; and authoritative parenting featuring high levels of both warmth as well as control. Recently, these concepts have also been studied in the economics literature, both theoretically and empirically (see, e.g., Doepke and Zilibotti, 2017; Doepke et al., 2019; Cobb-Clark et al., 2019; Kiessling, 2021; Falk et al., 2021).

Table 10
Intergenerational transmission of patience I.

A. Pooled transmission estimates	Children's share of stars paid earlier					Survey measure of patience
	(1)	(2)	(3)	(4)	(5)	(6)
Parents' share of stars paid earlier	0.14***	0.14***	0.09***	0.09***	0.07***	
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	
Parents' paternalistic decisions about share of stars paid earlier					0.06***	
					(0.01)	
Parents' patience (survey measure)						0.13***
						(0.03)
Parental, child, and household controls	No	Yes	Yes	Yes	Yes	Yes
Decision parameters	No	No	Yes	No	No	No
Decision FEs	No	No	No	Yes	Yes	No
Observations	21,840	21,696	21,696	21,696	21,689	1801
Households	610	609	609	609	609	608
R^2	0.02	0.04	0.08	0.08	0.08	0.04

B. Heterogeneity by parental interference	Children's share of stars paid earlier					
	(1) Non-int.parents	(2) Inter.parents	(3) *p*-valueof diff.	(4) Non-int.parents	(5) Inter.parents	(6) *p*-valueof diff.
Parents' share of stars paid earlier	0.10***	0.07***	0.02	0.09***	0.05***	0.04
	(0.01)	(0.01)		(0.01)	(0.01)	
Parents' paternalistic decisions about share of stars paid earlier				0.06***	0.07***	0.65
				(0.01)	(0.01)	
Parental, child, and household controls	Yes			Yes		
Decision FEs	Yes			Yes		
Observations	21,696			21,689		
Households	609			609		
R^2	0.08			0.08		

Notes: Columns (1)-(5) of Panel A relate children's share of stars allocated to the sooner payment date in each of the 12 decisions to parents' analogous decisions. Column (6) presents the intergenerational transmission of patience using standardized survey items of time preferences. Panel B presents heterogeneous transmission estimates by parents' willingness to interfere with their children's decision-making. Control variables include age and gender of both the parent and the child, indicators for whether the parent can read and write, received a secondary school leaving certificate, the household being Muslim, access to electricity, whether the father works in agriculture, whether the mother is a housewife, and log household income. Decision parameters refers to the five parameters that characterize the 12 decision sheets, whereas decision fixed effects (FE) refers to a set of indicators for each decision sheet. Standard errors in parentheses and clustered at the household. *, **, and *** denote significance at the 0.10, 0.05, and 0.01 level.

children allocating 1.4 percentage points more towards the sooner payment date. Controlling for characteristics of children, parents, and the household in column (2) or using a survey measure of time preferences in column (6) yields similar estimates.[24]

In columns (3) and (4) of Panel A, we additionally control for parameters characterizing each of the 12 decisions, or use fixed effects for each decision, which reduces the coefficient of interest to 0.09, while remaining statistically significant (t-tests yield $p < 0.01$ for both estimates). These coefficients are comparable to existing estimates in the literature, which find modest correlations for well-powered studies (cf. Appendix Table G.1).[25]

Our experimental design also allows us to study the role of paternalistic decisions in addition to parents' own decisions for the formation of children's intertemporal decisions. As a first step, we therefore enhance the previous specifications by including parents' paternalistic decisions as an additional regressor in column (5). While the coefficient of parents' own decisions decreases slightly, both the parents' own as well as their paternalistic decisions are significantly related to children's intertemporal decisions. An increase of 10 percentage points in either the parents' own or the paternalistic share allocated to the sooner date is associated with a 0.6-0.7 percentage point increase in children's own allocations to the earlier date. This indicates that both parents' own preferences as well as their paternalistic preferences – which have been shown to be related to parenting styles – are relevant predictors of children's time preferences.

In Panel B of Table 10, we then study the heterogeneity of this intergenerational transmission by introducing our second new measure in the analysis: parents' willingness to pay to interfere with their children's decision-making. While we find that the transmission estimates are significant for both interfering and non-interfering parents, columns (1) through (3) show that the transmission is more pronounced for non-interfering parents (t-test of the difference yields a p-value of 0.02). As shown in columns (4)–(6), this also holds once we take parents' paternalistic preferences into account (p-value = 0.04).[26]

6.2. Parental paternalism and intergenerational transmission of patience

The preceding analysis has shown that intertemporal decisions of parents and their children are correlated, and this transmission is stronger for non-interfering parents. This raises the question of why we observe a weaker transmission for more involved parents. Before addressing this question, we would like to note that reverse causality

[24] Children were asked for their agreement to the statement "I am good at giving up something nice today (e.g., a reward) in order to get something even nicer in the future (e.g., a larger reward)" on a 5-point Likert scale, while parents were asked "How willing are you to give up something that is beneficial for you today in order to benefit more from that in the future?" on an 11-point Likert scale. We standardize both measures to have a mean of zero and a standard deviation of one.

[25] Our simultaneous measurement of the patience of parents and children may increase the estimate of intergenerational transmission due to recent shared experiences within a family.

[26] In Appendix Table G.2, we replicate Table 10 using two-limit Tobit regressions to account for observations with shares of zero and one. The results are similar, both qualitatively and in terms of their significance. We also report transmission estimates of intertemporal choices for several splits in Appendix Table G.3. The intergenerational correlation is similar for boys and girls, and from mothers and fathers to their children and independent of the age of the child.

could be at work when studying these relationships. Specifically, it could be the case that parents who are successful in transmission (i.e., those whose children have similar preferences to their own) do not need to interfere and choose an authoritative parenting style, while those who are not successful are more motivated to interfere. It is beyond the scope of this paper to investigate the direction of causality between interference and similarity of children's and parents' preferences. Nevertheless, even though this is a side-aspect of our paper, we believe it's interesting to explore the relation between paternalism and transmission within the boundaries of our data.

First, we put some structure on the intertemporal decisions, allowing us to distinguish two dimensions in the intergenerational transmission of time preferences: Parents could transmit their present bias (β_i), their longer-run discounting behavior (δ_i), or both. We therefore estimate the structural discounting parameters for present bias and longer-run discounting for each individual separately.[27] Using these individual-specific estimates for present bias and longer-run discounting, Table 11 relates children's preference parameters of present bias (Panel A) and time-consistent discounting (Panel B) to their parents' preference parameters. In order to account for the fact that the regressors are estimates themselves, we bootstrap standard errors with 1000 repetitions.[28]

In Panel A of Table 11, we begin by analyzing the transmission of present bias. Columns (1) through (3) show that both parents' present bias and their longer-run discounting are related to children's present bias, with the former having a more pronounced effect than the latter. We then turn to potential heterogeneous effects by parents' willingness to interfere in their children's decision-making. In Fig. 4(a), we present non-parametric estimates of children's present bias (on the vertical axis) on their parents' present bias (on the horizontal axis) and differentiate between interfering and non-interfering parents. Interestingly, we find that children of interfering parents are consistently less present-biased, i.e., have present bias parameters closer to one. Thus, the intergenerational transmission of present bias seems to be driven entirely by non-interfering parents, while the relationship is flat for interfering parents.

In columns (4) and (5) of Table 11, we corroborate and quantify these findings in a regression framework. Children of interfering parents have present bias parameters β_i that are 0.09–0.16 points larger, corresponding to 13–24% of a standard deviation of children's present bias parameters. When accounting for parents' interference, the intergenerational correlation between the present bias of parents and children is dampened, reducing the estimated transmission estimates to 0.03 and 0.05, which are not significantly different from zero (t-tests yield p-values of 0.30 and 0.24, respectively), although we lack power to reject the null hypothesis of no difference in the strength of the transmission between interfering and non-interfering parents (t-tests yield p-values of 0.19 and 0.11, respectively). Moreover, we observe that the role of interfering parents' longer-run discounting is also less pronounced for their children's present bias.

Turning to the transmission patterns for longer-run discounting in Panel B of Table 11, we observe that only parents' longer-run discounting, but not their present bias, is related to children's longer-run discounting. This contrasts with our results on children's present bias, which correlates with both parents' present bias and time-consistent discounting. When studying the transmission by parental interference in columns (4) and (5) as well as Fig. 4(b), we do not find similarly

Table 11
Intergenerational transmission of patience II.

A. Transmission of present bias (β)	Children's present bias $\beta_{children}$				
	(1)	(2)	(3)	(4)	(5)
Parental present bias β_{parent}	0.05*	0.06**	0.08**		
	(0.03)	(0.03)	(0.03)		
Parental monthly discounting δ_{parent}			0.07**		
			(0.04)		
$\mathbb{1}\{Interfering\}$				0.09*	0.16*
				(0.05)	(0.09)
$\mathbb{1}\{Non\text{-}interfering\} \times \beta_{parent}$				0.09**	0.13***
				(0.04)	(0.04)
$\mathbb{1}\{Interfering\} \times \beta_{parent}$				0.03	0.05
				(0.03)	(0.04)
$\mathbb{1}\{Non\text{-}interfering\} \times \delta_{parent}$					0.11**
					(0.05)
$\mathbb{1}\{Interfering\} \times \delta_{parent}$					0.05
					(0.04)
Parental, Child, and Household Controls	No	Yes	Yes	Yes	Yes
p-val. (H_0: $\mathbb{1}\{Non\text{-}Int.\} \times \beta_p = \mathbb{1}\{Int.\} \times \beta_p$)				0.20	0.10
p-val. (H_0: $\mathbb{1}\{Non\text{-}Int.\} \times \delta_p = \mathbb{1}\{Int.\} \times \delta_p$)					0.39
Parent-child pairs	1371	1362	1362	1362	1362
Households	545	543	543	543	543
R^2	0.40	0.42	0.42	0.42	0.42
B. Transmission of long-run discounting (δ)	Children's montly discounting $\delta_{children}$				
	(1)	(2)	(3)	(4)	(5)
Parental monthly discounting δ_{parent}	0.07***	0.07***	0.07**		
	(0.03)	(0.03)	(0.03)		
Parental present bias β_{parent}			0.02		
			(0.02)		
$\mathbb{1}\{Interfering\}$				0.05	0.09
				(0.05)	(0.08)
$\mathbb{1}\{Non\text{-}interfering\} \times \delta_{parent}$				0.08**	0.10**
				(0.04)	(0.04)
$\mathbb{1}\{Interfering\} \times \delta_{parent}$				0.06*	0.05
				(0.03)	(0.04)
$\mathbb{1}\{Non\text{-}interfering\} \times \beta_{parent}$					0.04
					(0.03)
$\mathbb{1}\{Interfering\} \times \beta_{parent}$					0.01
					(0.03)
Parental, Child, and Household Controls	No	Yes	Yes	Yes	Yes
p-val. (H_0: $\mathbb{1}\{Non\text{-}int.\} \times \delta_p = \mathbb{1}\{Int.\} \times \delta_p$)				0.63	0.39
p-val. (H_0: $\mathbb{1}\{Non\text{-}int.\} \times \beta_p = \mathbb{1}\{Int.\} \times \beta_p$)					0.49
Parent-child pairs	1371	1362	1362	1362	1362
Households	545	543	543	543	543
R^2	0.18	0.20	0.20	0.20	0.20

Notes: This table presents linear regressions of children's discounting (present bias in the top panel, monthly discounting in the bottom panel) on their parents' preferences and an indicator for parental interference (i.e., whether parents invested money to increase the probability that their preferences are implemented). The sample comprises those parent-child pairs for which we can estimate preference parameters (see Footnote 27). All regressions include indicators equal to one if the structural parameters β or δ were winsorized at the 75th percentile+1.5×interquartile range, and zero otherwise. Control variables include age and gender of both the parent and the child, indicators for whether the parent can read and write, received a secondary school leaving certificate, the household being Muslim, access to electricity, whether the father works in agriculture, whether the mother is a housewife, and log household income. Bootstrapped standard errors with 1000 repetitions in parentheses. *, **, and *** denote significance at the 0.10, 0.05, and 0.01 level.

[27] As pre-specified, we impose a common utility curvature, similar to Augenblick et al. (2015), and estimate each individual's β_i and δ_i using the non-linear least squares model specified in Eq. (4) with $\alpha_i = 0.46$, as explained in more detail in Appendix H. For our main specification, only 5 estimations do not converge, while we cannot estimate parameters for 294 respondents, who always allocated their whole endowment to the sooner date. We present the distribution of the resulting individual-level parameters in Appendix Fig. H.1. We also present results using alternative assumptions to back out individual-level parameters. Specifically, we (i) allow the utility curvature to vary between families and impose the same curvature for all family members, (ii) estimate the curvature for each individual separately, and (iii) impute structural parameters for those who do not have any switching points, which prohibits the estimation of structural parameters. The results from these alternative specifications support the findings reported in this section (which follows our pre-registered specification).

[28] To take outliers into account, we winsorize the individual estimates for present bias and longer-run discounting at the 75th percentile plus 1.5 times the interquartile range following Imai et al. (2021), and control for an indicator for whether the restriction is binding. See Appendix H.1 for more details.

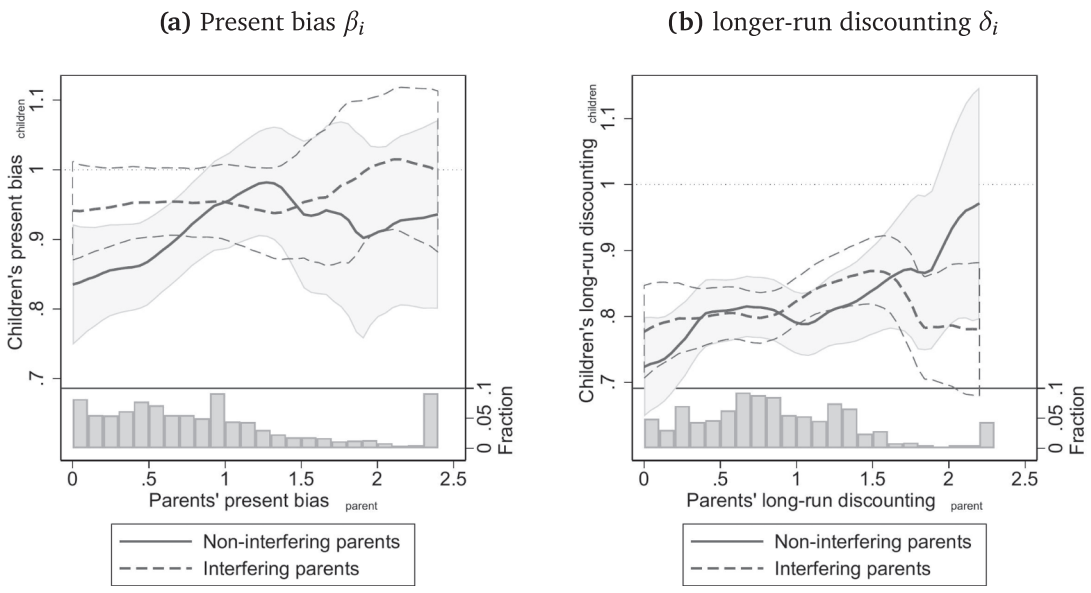

Fig. 4. Intergenerational transmission of present bias and longer-run discounting.

Notes: This figure presents the relationship of parents' present bias (β_{parent}; Panel A) and longer-run discounting parameters (δ_{parent}; Panel B) with their children's parameters (β_{children} and δ_{children}). The lower part of the figures presents histograms of parents' parameters, while the upper part presents a locally weighted polynomial regression with an Epanechnikov kernel of children's parameters on their parents' parameters including 90% confidence intervals. Parameter estimates are bounded at the 25th percentile − 1.5 × interquartile range (never binding) and 75th percentile + 1.5 × interquartile range (binding for 8.4% and 3.3% of β_i and δ_i parameters).

pronounced differences between interfering and non-interfering parents as for the transmission of present bias.

Taken together, these results suggest that parents' willingness to interfere with their children's decision-making is related to the intergenerational transmission process. In particular, we find that the intergenerational correlation of time preferences of parents who are willing to override their children's decisions is significantly lower than that of their non-interfering counterparts. More specifically, we find that this finding is driven by the transmission of present bias: interfering parents have less present-biased children and they do not transmit their own present bias to their offspring. Thus, given that interference is related to parenting styles, our results are in line with Brenøe and Epper (2022), who find that parenting values moderate the intergenerational transmission of time preferences.

7. Conclusion

This paper innovates in several respects. First, we introduce a novel method to measure parents' paternalistic preferences. Recent theoretical models of parent–child interactions highlight the importance of paternalistic preferences (e.g., Doepke and Zilibotti, 2017), but related empirical research is scarce. Applying our new measurement tool in a large-scale experiment with more than 2000 family members in Bangladesh, we provide a detailed characterization of parents' paternalistic preferences with regard to their children's intertemporal choices—a domain of economic preferences that has been shown to be particularly important for life outcomes (e.g., Mischel et al., 1989; Chabris et al., 2008; Meier and Sprenger, 2010, 2012; Castillo et al., 2011; Sutter et al., 2013; Golsteyn et al., 2014; Cadena and Keys, 2015; Castillo et al., 2019; Epper et al., 2022).

Second, our results provide quantitative evidence that paternalism is widespread among parents and highly consequential. Parents not only anticipate their children's present bias, but more than half of all parents are willing to forgo money to interfere with their children's choices, even though it does not pay off for parents for monetary reasons. This parental interference seems to have important consequences for the formation of children's time preferences. Parents' paternalistic choices for their children reflect that parents strive to reduce their children's present bias. We show that paternalistic parents do indeed have less present-biased children, i.e., they seem to achieve what they strive for. At the same time parents implement more impatient choices (lower δ) for their children than they expect from children. Interestingly, the Global Preference Survey of Falk et al. (2018) shows that Bangladesh is one of the very few countries in the world where patience and education levels are not significantly related, which is why the parental implementation of more impatient (but more time-consistent) choices for children may be inconsequential with respect to education.

Third, our data also allow for a comprehensive characterization of paternalistic parents. Parents with more resources and those who are more altruistic towards their children are more likely to act paternalistically. The willingness to pay for paternalistic interference is also related to parents' own intertemporal preferences—more patient parents are more likely to interfere—and to parental beliefs about children's preferences—parents expecting their children to be relatively patient are more likely to interfere to reduce their present bias almost to zero. Importantly, paternalistic interference is closely associated with parenting styles as well. Parents with an authoritative parenting style who score relatively higher on warmth and control are more likely to interfere with their children's preferences.

Jointly, these results suggest that those children who are already better off to start with may benefit from parental paternalism by becoming even less present-biased. They live in (relatively) richer families with more patient parents, and their parents adopt more authoritative parenting styles—all of which are associated with better child outcomes. Parental paternalism thus adds a further important dimension in which parental investments in their children differ by family background, possibly reinforcing vicious and virtuous cycles in the development of children's skills and preferences.

We think our work points towards several avenues for further research on parent–child interactions. For example, it would be interesting to examine whether our results on the extent and influence of parental paternalism extend into other prominent preference domains such as risk attitudes or social preferences. Their formation and intergenerational transmission have been extensively studied (see, e.g., Dohmen et al., 2012; Sule et al., 2017; Falk et al., 2021), yet without any consideration

of parental paternalism so far. Accumulating evidence on parental paternalism across different domains and horizons would shed light on the question of its stability across tasks and over time. In this way, it would promote a better understanding of how children's preferences are formed.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary data

Supplementary data to this article can be found online at doi:10.1016/j.jpubeco.2026.105711.

Data availability

Data will be made available on request.

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