European Economic Review 148 (2022) 104208

Contents lists available at ScienceDirect

European Economic Review

journal homepage: www.elsevier.com/locate/eer

Parenting values and the intergenerational transmission of time preferences☆

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ARTICLE INFO

JEL classification:
D15
J12
J24
J62

Keywords:
Intergenerational transmission
Time preferences
Patience
Parenting style
Parenting values
Parental involvement

ABSTRACT

We study how parents transmit patience to their children with a focus on two theoretically important channels of socialization: parenting values and parental involvement. Using high-quality administrative and survey data, and a setting without reverse causality concerns, we document a substantial intergenerational transmission of patience. We show that parenting values represent a key channel of the transmission. Authoritative parents (high in control and warmth) do not transmit patience to their children, in contrast to authoritarian and permissive parents. Thus, the authoritative parenting style seems to counteract the transmission of impatience. While parental involvement does not appear to be a relevant channel at the aggregate level, we document important heterogeneity by parent gender.

1. Introduction

Patient people generally experience better lifetime outcomes than their impatient peers.[1] Time preferences elicited during childhood are predictive of how individuals fare in later life—for instance, in terms of education, health, and earnings (Golsteyn et al., 2014; Mischel et al., 1988; Shoda et al., 1990).[2] If parents transmit time preferences to their children, parental patience may thus have long-term consequences for how their children fare during adulthood. This transmission is therefore also important for society as a whole, given the generally low social mobility and increasing economic inequality worldwide (Jones, 2015), and could

☆ We are grateful to Liaoliang Zhang for excellent research assistance. We thank Thomas Dohmen, David Dorn, Orla Doyle, Mette Ejrnæs, Ernst Fehr, Lukas Kiessling, Gregers Nytoft Rasmussen, Nicolás Salamanca, Daniel Schunk, Matthias Sutter, David Yanagizawa-Drott, Roberto Weber, Fabrizio Zilibotti, the Center for Economic Behavior and Inequality (CEBI), and seminar participants at DGPE Behavior and Incentives, the Copenhagen Education Network Workshop 2018, the CEBI Lunch Seminar 2018, the Education and Health Group at the University of Copenhagen, the IZA Brownbag Seminar, the Faculty Seminar at the University of Zurich, the Brown Bag Seminar at the University of St. Gallen, the Young Swiss Economists Meeting 2019, the European University Institute, the KIDS workshop 2019, the EALE conference 2019, and the University of York for helpful discussions and comments.

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[1] See e.g. Ayduk et al. (2000), Chabris et al. (2008), Epper et al. (2020, 2022), Golsteyn et al. (2014), Meier and Sprenger (2012) and Sutter et al. (2013).

[2] Watts et al. (2018) fail to replicate the key findings of Mischel et al. (1988). Two comments on this study (Falk et al., 2019; Doebel et al., 2020), however, point at differences in the design and an issue with the controls in the replication study. They conclude that the famous marshmallow task is indeed predictive for later life outcomes (see also Michaelson and Munakata (2020) for an independent, preregistered secondary analysis coming to the same conclusion). Beyond the correlational results, Alan and Ertac (2018) establish a causal link between patience and life outcomes over a three-year time horizon.

https://doi.org/10.1016/j.euroecorev.2022.104208
Received 25 April 2021; Received in revised form 25 May 2022; Accepted 19 June 2022
Available online 9 July 2022

be one explanation for the well-documented transmission of social disadvantage across generations.[3] Yet, we do not know much about the acquisition of time preferences, the transmission of these preferences across generations, and the mechanisms that are relevant for propagation from parents to children.[4]

In this paper, we address the following key questions on preference transmission: Are time preferences passed on to the next generation? If so, does the transmission persist or fade out as children age? How relevant is parenting (parenting values and parental involvement) as a device to counteract or strengthen the transmission of preferences from parents to children? Understanding whether intergenerational correlations in preferences are indeed due to the transmission from parents to children and how parenting influences this transmission is difficult given the usually available data. There are three reasons for these difficulties. First, it is rare to have validated time preference measures for both parents *and* children in the same data set. Second, even with such data at hand, the availability of sufficiently rich measures of family socialization is scarce. Third, given the typically short time frame between the elicitation of time preferences of both generations, there are inevitable concerns regarding reverse causality and spurious intergenerational correlations due to common shocks.

To circumvent these empirical challenges, we combine rich survey data on preferences, parenting values, parental time investments, and child-rearing practices with high-quality administrative data, including exceptionally rich information on socioeconomic status (SES). In particular, we use a unique, representative Danish survey that asks parents and children the same empirically validated,[5] intertemporal choice question four decades apart. This large time span between the elicitation of the preferences of parents (they were not parents at the time of measurement) and children thereby eliminates any concerns regarding reverse causality. The survey furthermore includes information on parenting values and parental involvement, allowing us to dig into the "black box" of socialization by carefully studying two distinct and theoretically relevant aspects of parenting that have been hypothesized to be the transmission channel of time preferences across generations (Bisin and Verdier, 2001; Doepke and Zilibotti, 2017). Finally, the availability of administrative data allows for the inclusion of comprehensive sets of controls, which further enable us to rule out that socioeconomic factors drive the transmission process.

We present three main results. First, we show that there is a substantial transmission of patience from parents to children. This intergenerational transmission of preferences is insensitive to the inclusion of a rich vector of administratively reported controls, including grandparental and parental socioeconomic background characteristics and child endowments, such as birth weight, IQ, and education. Interestingly, when comparing the strength of the intergenerational correlation in our setting without reverse causality to comparable studies with contemporaneous preference elicitation, the magnitudes are similar.

Second, the correlation coefficient between parental and offspring preferences is constant across child ages spanning from adolescence to midlife. This indicates the robustness and persistence of the intergenerational transmission regarding child age.

Third, we show that parenting style can be used as an effective device to undo or counteract the transmission of time preferences from parents to their children. Authoritative parents, who put high weight on both demandingness (control) and responsiveness (warmth) when raising children, do not transmit patience to their offspring, while authoritarian (high control, low warmth) and permissive (low control, high warmth) parents do. Put differently, the authoritative parenting style can be considered an effective tool to foster child patience regardless of the parent's own time preferences. Regardless of whether the transmission is due to genetics and/or socialization, we see that parenting style can reduce the strength of the transmission.

At the same time, we do not find heterogeneity in the intergenerational transmission of time preferences by parental involvement at the aggregate level. However, when investigating the transmission conditional on parent and child gender, we find that the aggregate results mask some important heterogeneity. In particular, the transmission is strongest in same-gender parent–child dyads and involvement becomes a relevant channel when focusing on mothers and fathers separately. Taken together, our results suggest that *how* parents interact with their children is a key moderator of the preference transmission and it is at least as important if not more important than *how often* they do so.

The objective of our contribution is to understand whether parents transmit patience to their children and what role parenting plays in this process, a theoretically important mechanism. Hereby, we bring new insights into the literature on intergenerational transmission of time preferences.[6] Previous work on the intergenerational transmission of preferences faces important challenges, which we discuss in Section 2 along with parenting as a theoretically relevant mechanism. Section 3 provides an overview of the data and descriptive statistics. Section 4 introduces our empirical strategy, Section 5 presents our results, and Section 6 concludes.

2. Understanding intergenerational correlations in preferences and potential mechanisms

In this section, we first briefly review the literature on important determinants of time preferences. We then consider prior work that more directly relates to our study on the transmission of time preferences and its empirical challenges. Finally, we discuss relevant theoretical mechanisms of the transmission process and our hypotheses.

[3] See e.g. Chetty et al. (2014), Landersø and Heckman (2017), Solon (1992).

[4] Only a few existing studies examine intergenerational correlations in time preferences, but they have some important limitations related to the timing of preference measurement and the availability of data to explore potential channels for the transmission process, as explained in Section 2.

[5] See Section 3.1 and Appendix A.1.1 where, for instance, we demonstrate that the hypothetical survey measure we use in our analyses is strongly and significantly correlated with a state-of-the-art real-incentivized time preference measure.

[6] To the extent that the transmission process of other (e.g., risk or social) preferences share channels through which parents transmit preferences to children, we potentially also bring a better understanding to a broader literature.

Sutter et al. (2019) survey experimental studies on children's time preferences and find that patience largely increases with age until late adolescence. Among adults, Falk et al. (2018) document a hump-shaped pattern between patience and age, with middle-aged individuals being most patient. Thus, the relationship between patience and age that we document in our data (Fig. B.1) is consistent with prior findings. In contrast, the evidence on the relationship between gender and patience is mixed (Falk et al., 2018; Sutter et al., 2019).

Other relevant determinants of individual time preferences relate to the social environment. Falk et al. (2021) document that children from low-SES families are substantially less patient than children from high-SES families. Interestingly, they show that parental investments (positive parenting style and time investments) predict child patience and that this is what drives the SES gap in child patience, as low-SES parents invest less in their children. In line with their findings, we also find that parenting values are relevant determinants of time preferences (Table 4).[7] Alan and Ertac (2018) implement a randomized intervention that promotes forward-looking behavior among children and find that it causally increases patience with long-lasting effects. Despite being delivered by teachers, this intervention could, to some extent, arguably be compared to a certain (authoritative) parenting style. Thus, when considering the determinants of time preferences, the parenting environment seems particularly important—we return to this below when discussing relevant channels of the intergenerational transmission of patience.

Our paper relates to the nascent research area of intergenerational correlations in economic preferences. Generally, work within this strand of literature finds positive correlations between parents' and children's time, risk, and social preferences (e.g. Alan et al., 2017; Brown and van der Pol, 2015; Chowdhury et al., 2022; Dohmen et al., 2012; Gauly, 2016; Giulietti et al., 2016; Kosse and Pfeiffer, 2012, 2013; Zumbuehl et al., 2021).[8] However, the data available in these studies make it difficult to overcome two important challenges: (i) ruling out reverse causality or common background shocks responsible for the observed correlations and (ii) identifying the relevant behavioral channels.

The fact that preferences of both generations are elicited within relatively short time frames (most commonly contemporaneously) leaves open whether it is: (i) parents who transmit preferences to children, (ii) children who affect parents' preferences, or (iii) the common environment that shapes both generations' preferences. Children with problems paying attention, for instance, typically react more impatiently and might, through their behavioral problems, lower parents' patience (case ii). Another important worry is that transitory shocks to the common environment might affect parents and children simultaneously, making their preferences appear similar even if they in reality were uncorrelated (case iii). For instance, a bad night's sleep (due to a thunderstorm or a heatwave) might make both parents and children appear impatient (more similar) than in the absence of this shock. Or, due to temporary distress, such as children's exam periods or parental unemployment (which potentially could last some months or even a few years), both parents and children might react less patiently over the period during which the survey was conducted.

Besides documenting intergenerational correlations in contemporaneously measured preferences, a crucial but much less studied topic is how to counteract the transmission of adverse traits—specifically, impatience in our setting. Bisin and Verdier (2001) theoretically study the dynamics of preferences across generations in a model with paternalistic altruism. They argue that each parent evaluates their child's actions from their own perspective and therefore, the parent always attempts to socialize the child to adopt the parent's preferences. Based on this and the conjecture that spending more time with the child enhances the adaptation and imitation process, Alan et al. (2017) and Zumbuehl et al. (2021) hypothesize that more-involved parents more strongly transmit preferences to their children.[9]

Relatedly, Doepke and Zilibotti (2017) build a model to study the role of parenting style in the intergenerational transmission of preferences by combining parental altruism and a paternalistic motive. In their model, the parent cares both about the child's current well-being (Beckerian altruism) and future well-being (paternalism). Due to children's natural preferences and inclinations for more short-sighted pleasure, the parent might disagree with the child's actions and therefore intervene through their parenting style (the paternalistic motive). Thus, parents can use their parenting strategically to enforce or counteract certain traits in their children. Meanwhile, child rearing requires parental effort, leading to different parental effort choices.

Inspired by developmental psychology (going back to Baumrind (1967)), Doepke and Zilibotti (2017) distinguish between three parenting styles: authoritarian, authoritative, and permissive. These parenting styles differ by the relative importance parents attach to the two broad dimensions of demandingness (control) and responsiveness (freedom and warmth) in their way of raising children.[10] Authoritarian parents restrict their children's choices to impose their will (i.e. they exhibit high control and low freedom). Permissive parents, in contrast, refrain from influencing their children's choices by displaying low demandingness and granting a high degree of freedom. Finally, authoritative parents attempt to influence their offspring's preferences so that the child makes his or her own decisions but makes decisions that parents believe are conducive to success in life (high control and high freedom). In other words, authoritative parents set consistent rules, while nudging and supporting their children to develop in a favorable way (Phelan, 2010)—the style that requires the greatest parental effort.

Given the positive association between patience and life outcomes, we expect that parents prefer their children to be patient. In this case, impatient parents may therefore not want to transmit their own impatience to their offspring. However, different parenting

[7] Other related factors studied in prior work are ethnicity and cognitive ability. Castillo et al. (2011) find that black children in the U.S. are less patient than their non-black peers. Dohmen et al. (2010) and Falk et al. (2018) report that people with higher cognitive ability are more patient. These two determinants typically strongly correlate with other factors in the family environment, such as SES, and it is therefore not clear whether they merely serve as proxies for other more important determinants.

[8] For a detailed overview of the few existing studies on the transmission of time preferences—the focus of our paper—see Table B.1.

[9] Alan et al. (2017) and Zumbuehl et al. (2021) are the only studies that more seriously dig into the black box of socialization by empirically examining the importance of parental involvement as a relevant mechanism. However, these studies focus on risk and trust preferences.

[10] For more details and references, see e.g. Cobb-Clark et al. (2019), Doepke and Zilibotti (2019) and Maccoby and Martin (1983).

styles might be more or less successful in shaping child patience and thereby counteract the transmission of impatience. It might, for instance, be difficult for authoritarian parents to preach patience through discipline, while being impatient themselves. Similarly, in absence of discipline, permissive parents might act as role models for their children, in which case the children would imitate their parents' preferences. Due to the nature of authoritative parents' approach to child rearing, authoritative parenting might in contrast be an effective tool to counteract the transmission of impatience (in case of impatient parents) and reinforce the transmission of patience (in case of patient parents). In particular, impatient, authoritative parents might be able to use explanations and reasoning behind the favorability of patience as an effective tool to counteract the imitation of impatient behaviors, despite not being the best role models themselves. Thus, we hypothesize that the transmission of patience from authoritative parents to their children is weak or absent. However, because the authoritative parenting style is particularly effortful, not all impatient parents will choose this parenting style.

In contrast to the theoretical models, the empirical literature offers only scarce evidence on actual moderators of the transmission process. However, in light of the theoretical models (especially the one by Bisin and Verdier, 2001), the general interpretation of the empirical findings of intergenerational correlations in economic preferences is that socialization is an important mechanism (e.g. Dohmen et al., 2012; Gauly, 2016; Falk et al., 2021). Besides cultural factors, genes might represent another natural mechanism. Robalino and Robson (2013) review the empirical literature supporting genetic and cultural transmission and conclude that both factors are important.[11] Yet, in terms of the latter, socialization has many facets, and it is therefore not clear what aspects of the family environment drives the preference transmission.

To our knowledge, Zumbuehl et al. (2018) is the only working paper[12] that reports estimates on the possible mechanisms of the intergenerational correlation in time preferences. They examine the extent to which this correlation is modulated by parental involvement. They find no heterogeneity in parental involvement for the transmission of impatience. However, whether time spent with children moderates the transmission is likely to depend critically on *how* this time is actually spent. Moreover, even in the case of low parental time investment, the parent might still have a strong influence on their child's acquisition of traits. The parent's decision on where the child spends his or her time when not with the parent is, for instance, likely to depend on the parent's values. Therefore, parenting might not sufficiently be captured by parental involvement; parenting style is another and potentially even more powerful dimension of parenting for the transmission of time preferences.

3. Data

Our main data sources are the Danish Longitudinal Survey of Youth (DLSY) and DLSY-Children, which we link to high-quality administrative data on the full Danish population from 1980 through 2016. This combined data set provides unique possibilities for studying the intergenerational transmission of time preferences. The DLSY is a longitudinal study of 3151 individuals born around 1954, whom we will refer to as parents. In 1968, these original respondents attended 152 different seventh-grade classes that were sampled to be nationally representative. The parents have subsequently been interviewed throughout their adult life with high response rates; around 75 percent of the original individuals participated in the last wave in 2004. In addition, the parents of the respondents (henceforth referred to as grandparents) were interviewed in 1969, making it possible to control for the parents' socioeconomic environment during their childhood. Finally, all the DLSY respondents' children, who were at least 14 years old, were interviewed in 2010, with an extraordinarily high response rate of 81 percent. We therefore have information on three generations: grandparents, parents, and children.

We link the survey data to rich administrative data, including several separate registers on education, income, (un)employment, fertility, and family structure. Therefore, in addition to the ample information on grandparents' SES during parents' childhood observed in the DLSY, we observe the SES experienced by the children during their childhood. We observe both parents' complete fertility history, labor market experience, and educational attainment. Based on these rich measures of parental SES, we construct an SES index (standardized with a mean of zero and a standard deviation of one), using the first principal component from a principal component analysis. For the children, we observe their date of birth, birth outcomes, and educational attainment by 2016. The rest of this section describes the main measures used for the analysis, while Data Appendix A supplements with additional details.

3.1. Measure of time preferences

In 1973 (at age 19), the parents answered a question regarding their time preferences. The question was:

If you were offered three jobs now and you could choose, which one would you take?

(a) *a job with average pay right from the beginning,*

[11] For instance, comparing monozygotic with dizygotic twins, Cesarini et al. (2009) conclude that approximately 25 percent of individual variation in preferences for giving and risk are explained by genetic differences. Benjamin et al. (2012) consider a wider set of political and economic preferences, including patience, and find that the estimated fraction of phenotypic variation of the traits explainable by genes (they use a method to compute the distance between dense single nucleotide polymorphisms (SNPs)) is about one-half of the narrow heritability estimated by twin studies. While our setup permits careful controls for family factors, our data do not include enough identical or fraternal twins for a detailed investigation of genetic transmission. Meanwhile, we have explored whether the transmission is weaker for non-biologically related child–parent pairs. This is not the case; see footnote 27 for details.

[12] The published version (Zumbuehl et al., 2021) does neither analyze nor discuss time preferences.

(b) *a job with low pay the first two years, but high pay later*, or
(c) *a job with very low pay the first four years, but very high pay later*.

We categorize respondents answering (b) or (c) as patient. Using all three possible responses does not, however, change our conclusions.[13] The children answered the same question nearly four decades later, in 2010, when they were between 14 and 40 years old, with an average age of 27. The timing of the parents' elicitation of time preferences allows us to rule out any issue of potential reverse causality, as only 2.8 percent ($N = 87$) of the children were born by 1973, and only ten children were more than one year old. As a robustness check, however, we exclude children born at the time of the parents' response to the time preference question and reach similar results. Thus, our empirical setup gives us the power to study intergenerational transmission of patience in the absence of reverse causality and temporary common shocks.

We observe responses to the intertemporal choice question for 3101 children and 1829 parents. Table 1 presents descriptive statistics for the full sample. Sixty-five percent of children and 74 percent of parents are patient. Children were on average older than parents at the time of preference elicitation. When restricting the sample of children to those in a similar age range (18–20 years) as when parents answered the time preference question, the share of patient children (72.8 percent) is similar to that of parents (73.8 percent) (Table B.2). Thus, the discrepancy between the rates of parent and child patience in the overall sample is most likely *not* due to cohort differences in time preferences. Instead, this discrepancy is more likely due to the age pattern of answers and thereby the framing of the question, as older children (those in their 30s) tend to be less patient than younger ones (Fig. B.1). While we find a gender difference in children's patience (favoring sons), the difference for parents is not statistically significant. This is not surprising given that the literature reports very mixed findings on gender differences in this domain (Falk et al., 2018; Sutter et al., 2019).

In comparison to experimental measures of time preferences (see e.g Frederick et al., 2002; Epper et al., 2011; Attema et al., 2016; Cohen et al., 2020), our measure has the clear advantage that our survey question is short, simple, and less abstract than typical intertemporal choices employed in experiments. Specifically, our question asks subjects about their choice in a real-life situation with substantial economic consequences. This contrasts with experimental measures that typically ask subjects to repeatedly choose between sooner smaller amounts and later larger amounts (usually materializing within some weeks or a few months). Our patience indicator is both internally and externally valid (for details, see Epper et al. (2019), Epper et al. (2020), and Appendix A.1.1). In Appendix A.1.1, for instance, we show that our indicator highly correlates with a measure of time preferences elicited using a real-incentivized monetary intertemporal choice task.

Finally, as expected, the individuals we categorize as being patient face significantly better socioeconomic outcomes in adulthood, even when controlling for a wide range of childhood family characteristics (Table A.2). For instance, patient parents score one-fifth of a standard deviation better on the SES index. Moreover, both patient parents and children attain around half a year more education than impatient individuals. Similarly, we observe that more patient individuals have a higher IQ score.[14]

3.2. Definition of parenting moderators

To explore the relevance of parenting as a socialization device through which parents transmit patience to their children, we consider parenting values (to proxy for parenting style) and parental involvement. Parenting styles are generally difficult to measure; the literature deals with this in two different ways. A common way to proxy for parenting styles is to measure actual parenting practices either reported by the parent or the child (e.g. Chan and Koo, 2010; Cobb-Clark et al., 2019). However, we consider this method to be problematic, as parents' child-rearing practices respond to actual child behavior. For instance, the parent only restricts the child's choices if the child does not choose what the parent wants. The other way to proxy for parenting style is through parenting values (e.g. Doepke and Zilibotti, 2017; Doepke et al., 2019). We follow this approach and use an additional data source to validate that the parenting values we consider indeed reflect particular child-rearing practices. We define three parenting values—proxying for the authoritarian, permissive, and authoritative parenting styles—based on a survey question that is similar to the one asked in the World Value Survey (WVS) as used by Doepke and Zilibotti (2017); for details, see Appendix A.1.2.

First, we define authoritarian parents as those who state that one of the most important qualities that children learn at home is good manners or obedience.[15] We interpret this parenting value as parents' wanting children to conform to societal norms through their behavior. In particular, we hypothesize that parents who value conformity would like their children to conform to the parents' preferences and attitudes. We expect the method for achieving similarity between the parent's and child's preferences to be discipline for these parents, as their values emphasize behavior. Therefore, we refer to parents with this parenting value as authoritarian.[16]

Second, we define permissive parents as those who state that one of the most important qualities that children learn at home is imagination. This parenting value stands in stark contrast to the authoritarian value and represents parents who value their children's living out their natural preferences and inclinations.

[13] Table B.3 shows the results from ordered probit models, suggesting that we do not lose much from generalizing parental and child time preferences to a binary indicator for patience rather than considering the original three categories in the survey question.

[14] For parents, we have the most reliable IQ measure, showing an IQ gap of 0.23 standard deviations between patient and impatient individuals. This gap is 0.10 standard deviations for children.

[15] Agostinelli et al. (2020) follow a similar definition when defining parenting style based on values.

[16] We note that this is of course only an approximation of the standard definition of the authoritarian parenting style.

Table 1
Descriptive statistics.

	Average (1)	Std.Err. (2)
Panel A: Children		
Child is patient	0.648	0.009
Daughter is patient	0.619	0.012
Son is patient	0.679	0.012
Parent is patient	0.742	0.008
Authoritarian parent	0.324	0.009
Permissive parent	0.275	0.008
Daughter	0.519	0.009
Mother	0.521	0.009
Child age (years)	27.092	0.101
Birth order	1.715	0.015
Twin	0.019	0.002
Birth weight (grams)	3427	10.111
Lives with both parents at age 16	0.734	0.008
Father's years of education	13.051	0.051
Mother's years of education	12.672	0.047
# of siblings	1.469	0.017
# of siblings in sample	1.042	0.016
Observations	3101	
Panel B: Parents		
Mother is patient	0.739	0.014
Father is patient	0.754	0.015
# of children	2.225	0.020
# of children in sample	1.695	0.018
Observations	1829	

Note: This table presents descriptive statistics for the sample of children and their parents. **Panel A** contains means and standard errors for all children with a measure of their own and their parent's time preferences. **Panel B** contains the respective information for all parents of the children in Panel A. Note that we observe one parent per family only, i.e. either the mother or the father. Differences between Panel A and B can be explained by the fact that parents may have multiple children.

Third, we define authoritative parents as parents who are neither authoritarian nor permissive. At first glance, this definition might seem inappropriate, as this remaining group of parents might be quite diverse. However, this suspicion is not justified by the data. Ninety-one percent of authoritative parents value sense of responsibility, which we consider the value that is most closely related to the authoritative parenting style in our data (Table B.4). Compared to authoritarian and permissive parents, authoritative parents also value to a much greater extent that the child learns the qualities of consideration, tolerance, and, to some extent, independence. Thus, it seems reasonable to refer to this omitted group as authoritative.[17] Our results are qualitatively similar with other definitions of the parenting styles.[18]

With these definitions of parenting style, 32 percent of children have a parent with authoritarian parenting values, while 28 percent of children have a parent with permissive parenting values (Table 1).[19]

To validate that our measures of parenting values indeed predict actual parenting practices, we draw on a different survey—the Danish Longitudinal Survey of Children (DALSC), described in more detail in Appendix A.2. When their children were four years old, mothers in the DALSC sample answered a question on parenting values that was identical to the question parents in the DLSY sample answered. Moreover, both mothers and fathers answered a question related to parenting values when their child was only six months old, making it unlikely that parents would have adjusted their values to the preferences or behavior of the child. As expected, parents with authoritarian parenting values tend to be much stricter by using more physical and verbal punishment in the upbringing of their child throughout childhood (Table A.6). In contrast, parents with permissive parenting values punish their child less compared to authoritative parents. Similarly, compared to authoritative parents, authoritarian parents spend less and permissive parents spend more quality time with their child. These broad patterns are both observed for mothers and fathers. Thus, parents with different child-rearing values have different parenting practices, especially in terms of the way they teach their child how to behave.

To construct a measure of parental involvement, we rely on parental reports regarding how often the family participated in different types of activities together. We use the first component from a principal component analysis, including the following

[17] Some subsequent work using (Baumrind, 1967)'s theory on parenting style also includes a fourth style, the neglecting parenting style (starting with Maccoby and Martin, 1983). Neglectful parents are low on both the dimension of demandingness and responsiveness. However, we do not consider this fourth style in our analysis, as it does not seem reasonable to define this category based on the values that parents can choose between in our survey question.

[18] As an alternative, if we instead define authoritative parenting as valuing sense of responsibility and not having authoritarian values and permissive parenting as valuing independence and/or imagination and not having authoritative or authoritarian values, the results are qualitatively similar (not shown). With this definition, 52.1 percent of parents are authoritative and 15.5 percent are permissive.

[19] Only 2.7 percent of parents simultaneously choose authoritarian and permissive values.

activities: visit the library, go to the swimming pool, go out in nature, go to the cinema, go to the theater, visit friends and family, do housework (cooking, cleaning, shopping), talk about homework and school, eat dinner, and attend sport activities. Finally, we standardize the index to have a mean of zero and a standard deviation of one. To address the possible concern that this measure of parental involvement is relatively crude, we replicate the intergenerational transmission analysis in the DALSC sample (Section 5.4.2), which includes much more detailed information on parental involvement. The two samples yield similar results.

Table B.5 displays correlations between parental patience, parenting values, and parental involvement. Panel A shows the raw correlations between each of the variables, while Panel B conditions on parental background variables similar to our preferred control version in Section 5. Authoritarian parents are less likely to be patient and they engage in slightly fewer activities with their family (5.6 percent of a standard deviation).[20] Meanwhile, permissive parenting values are uncorrelated with patience and despite a positive, but small, correlation with parental involvement, this correlation is insignificant once controlling for background characteristics.[21]

4. Empirical strategy

Our empirical analysis centers around the three research questions raised in the introduction: (1) Are time preferences passed on to the next generation? (2) Does such transmission persist or fade out as children age? (3) How relevant is parenting (parenting values and parental involvement) as a device to counteract or strengthen the transmission of preferences from parents to children? To answer these questions, we first examine the conditional correlations between parents' and children's preferences by specifying the following linear probability model for the full DLSY sample:[22]

$$\mathrm{T}_{cpgs} = \alpha \mathrm{T}_p + Q_c'\delta + R_p'\xi + X_g'\zeta + \theta_s + \nu_{cpgs}, \tag{1}$$

where c denotes the child, p the parent, g the grandparent, and s the school of the surveyed parent. T indicates whether the individual is patient (1) or not (0). Thus, α represents the intergenerational correlation coefficient of interest. ν_{cpgs} denotes the error term; we cluster the standard errors at the parent level to allow for serial correlation in the outcome between siblings.

To shed light on the nature of the intergenerational transmission of patience, we examine these correlations while adding extensive vectors of background characteristics one by one. First, we add a vector of child demographic characteristics, Q,[23] that adjusts for potential differences in child patience due to age and gender, among others. Second, we add a vector of parental demographic characteristics, R. Third, we include school fixed effects for the surveyed parent's school in 1968, θ_s, as this was the original level of sampling. Fourth, to control for differences in parents' SES during their childhood, we add a vector of grandparents' socioeconomic characteristics, X. Because parental patience correlates with parents' adult (and children's childhood) SES and because the latter may be a moderator of the intergenerational transmission, we prefer not to control for such variables in this part of the analysis. However, as a robustness check, we include parental adult socioeconomic controls, child endowments, and child risk preferences.

Second, we test whether the intergenerational transmission of time preferences persists or fades out as children age. We do so by including an interaction term between parental patience and child age. However, as parents' age at first birth is endogenous, it is not possible to say whether a differential transmission by child age in the full sample is due to the persistence (or fade-out) by child age or due to differences in the transmission process between parents who have children at young versus older ages. Therefore, we exploit the fact that the majority of parents have multiple children observed in the sample by further estimating a model comparing siblings. We do this by including parent fixed effects, μ_p, thus eliminating potential time-invariant characteristics within the same sibship. We estimate the sibling model for the total sample of siblings and for the sample of mothers and fathers, separately:

$$\mathrm{T}_{cpgs} = \phi \mathrm{T}_p \times \mathrm{Age}_c + \tau \mathrm{Age}_c + Q_c'\delta + \mu_p + \nu_{cpgs}, \tag{2}$$

where Age_c represents child age, normalized by subtracting the mean child age (i.e. 27) to ease the interpretation of ϕ. For each parent, we thus compare siblings born earlier versus later and who are therefore older versus younger at the time of the interview, keeping the parent's age at first birth constant. Consequently, this approach of comparing siblings of the same parent at different ages provides a fruitful setting for studying the persistence of the transmission, while keeping the childhood family environment constant.

Third, we investigate to what extent parenting moderates the transmission of time preferences. For this, the model is:

$$\mathrm{T}_{cpgs} = \beta \mathrm{T}_p + \mathrm{T}_p \times M_p'\gamma + M_p'\rho + Q_c'\delta + R_p'\xi + X_g'\zeta + \theta_s + \nu_{cpgs}, \tag{3}$$

where M_p represents the vector of moderators: parenting values (authoritarian and permissive) and parental involvement. From this part of the analysis, we are interested in two sets of estimates. First, we are interested in testing whether the general transmission

[20] Moreover, authoritarian parents are much less likely to be permissive, which, to an extent, is a mechanical relationship, as parents could only choose three values.

[21] These correlation matrices do not differ by parental gender. Yet, mothers are more likely to be authoritarian (not reported).

[22] The results are robust to non-linear specifications; Fig. B.2 illustrates marginal effects from probit models that are similar in magnitude to the ones reported in Table 2.

[23] See Data Appendix A.1.3 for details regarding the exact variables in the various vectors of controls.

coefficient, represented by β, changes in magnitude and statistical significance once we allow for a differential transmission from parents to children by the family socialization process. In the specification including both parenting dimensions, β represents the transmission of patience from authoritative parents with average parental involvement. Second, we are interested in estimating the moderating role of the two aspects of parenting for the transmission process, represented by the vector of estimates in γ. In other words, this part of the analysis examines potential heterogeneity in the intergenerational transmission of patience by different styles of parenting (values and involvement). This will help shed light on the moderators of the preference propagation process.

5. Results

5.1. Do parents transmit patience to children?

The main finding in Table 2 is that parents significantly transmit patience to their children and that this transmission is robust to the inclusion of comprehensive sets of controls. In Section 2, we discuss theories that are able to predict the intergenerational transmission of preferences. According to Bisin and Verdier (2001) each parent evaluates their child's actions from their own perspective and attempts to socialize the child to adopt the parent's preferences. Consequently, this model predicts a positive correlation between parental and offspring time preferences. The Doepke and Zilibotti (2017) model also produces a positive correlation of parent and child preferences at the aggregate level. It is noteworthy that both models allow for finer predictions, however. Specifically, Bisin and Verdier (2001) postulate that the strength of the preference transmission depends on the socio-economic status, whereas Doepke and Zilibotti (2017) postulate that there is an interaction between preference transmission and parenting style. We examine these heterogeneous responses in the subsequent subsections.

Column (1) of Table 2 shows the raw correlation between parental and child patience: patient parents are 8.1 percentage points more likely to have a patient child compared to impatient parents.[24] Once controlling for child demographic characteristics (column (2)), the estimated transmission coefficient decreases slightly due to the correlation between parental patience and age at childbirth (Table A.3) and the empirical pattern of patience by child age (Fig. B.1).[25] It is noteworthy that the magnitude of the intergenerational transmission remains similar when further adding parental demographic variables, parents' school fixed effects (column (3)), and a rich set of grandparental socioeconomic characteristics (column (4)).

The control version in column (4) represents our preferred model, as it includes comprehensive sets of controls predetermined at the time of the elicitation of parental time preferences. This model suggests that children of patient parents are 7.1 percentage points more likely to be patient themselves; this corresponds to an increased probability of 12.1 percent relative to the mean of children with impatient parents.[26] Considering this estimate differently, it also implies that children of impatient parents are 21.5 percent more likely to be impatient compared to children of patient parents. It is remarkable to observe such a strong transmission of patience from parents to children in this setting with a time lag of four decades between the elicitation of parents' and children's preferences.[27]

Column (5) includes additional sets of controls to compare children with similar health endowments, skills, and risk preferences, who grow up in similar family environments. This is not our preferred model because parental patience clearly influences children's socioeconomic family environment and might also influence child characteristics. Therefore, including these controls might absorb some of the variation in the transmission process. Put differently, we would expect that the inclusion of these additional, broad sets of controls would reduce the magnitude of the estimated correlation coefficient.[28] This is also what we see in model (5); the estimate is smaller in magnitude than the one in our preferred model. Yet, it illustrates that even when conditioning on a detailed set of characteristics in the family environment that are influenced by parental patience, we still observe a sizable intergenerational transmission of time preferences (with an estimate of 5.1 percentage points). This finding is consistent with the results in Chowdhury et al. (2022), indicating that the transmission of time preferences is independent of SES. Moreover, the result in model (5) also suggests that risk preferences are not an important confounding factor influencing our results on patience propagation.[29]

As mentioned previously, only 2.8 percent of children were already born when parents answered the time preference question. However, including those children in the analysis could be problematic, as having a child may affect revealed patience. To test for this possibility, column (6) replicates our preferred model while restricting the sample to those children born after the elicitation of parents' preferences. The results are robust to this restriction. Moreover, a concern with our measure could be that parents who planned to have children in the near future might have preferred the flat (impatient) wage profile simply to be able to afford having children and not because they were truly impatient. Therefore, column (7) excludes parents (and their children) who had their first child before the patient wage profile would have been fully implemented (i.e. before 1978). The results are again insensitive to this

[24] The strength of the intergenerational correlation coefficient does not differ significantly by parent gender in any of the models (not reported).

[25] The decreased magnitude of the transmission estimate is driven by the inclusion of child age controls (not reported).

[26] The probability that the child is patient (impatient) among children of impatient (patient) parents is 58.8 (33.1) percent.

[27] In the sample, 62 child–parent pairs (2 percent of our sample) are not biologically related. If we include an indicator for a non-biological relationship and an interaction term between this variable and parental patience, the estimate of the interaction term is positive but far from significant, possibly due to the small sample of non-biological links. The estimate is 0.044 ($se = 0.121$; p-value $= 0.714$). Consequently, in our data, there is no evidence for genetic transmission of patience, although we do not have the power to draw any strong conclusion. See also footnote 11.

[28] This is similar to the bad control problem. We do not claim, however, that our estimated transmission of patience is causal, as we do not have exogeneity in parental preferences.

[29] If we only add risk preference controls to model (4), the estimate is 0.067 ($se = 0.021$).

Table 2
Intergenerational transmission of patience.

	Dependent variable: Child is patient						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Parent is patient	0.081***	0.068***	0.071***	0.071***	0.051**	0.073***	0.067***
	(0.021)	(0.020)	(0.021)	(0.021)	(0.021)	(0.022)	(0.026)
Sample	All	All	All	All	All	1974+	1978+
Child demogra.		✓	✓	✓	✓	✓	✓
Parent demogra.			✓	✓	✓	✓	✓
Parent School FE			✓	✓	✓	✓	✓
Grandparent SES				✓	✓	✓	✓
Parent SES					✓		
Child endowm.					✓		
Child risk pref.					✓		
Observations	3101	3101	3101	3101	3101	3014	2197
Average of T_c	0.648	0.648	0.648	0.648	0.648	0.653	0.686

Note: Standard errors in parentheses, clustered at the parent level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. The outcome variable indicates whether the child is patient (1) or not (0). Each column presents the results from separate regressions. Each model is estimated as a linear probability model. *All* represents the full sample of children. The samples *1974+* and *1978+* only include, respectively, children born after 1973 and children whose surveyed parent had their first child after 1977. *Child demographics* includes five-year age interval dummies, birth order dummies, and an indicator for a being twin. *Parent demographics* includes indicators for being born before 1954, being born after 1954, being female, the child–parent gender combination, and birth order. *Parent School FE* includes fixed effects for the surveyed parent's school in 1968. *Grandparent SES* includes grand-parental attitudes towards child education and work, an index for the grandparents' educational investment in the parent, quadratic taxable income in 1967 reported by the tax authorities, quadratic number of grandparents' children, indicators for the grandmaternal/paternal level of education, vocational training/education, whether the grandmother/grandfather has work subordinates, grandmother is housewife, gender of the surveyed grandparent, the parent lives with both parents at age 14, and indicators for missing observations for the different control variables. *Parent SES* includes the surveyed parent's spatial, verbal, and inductive abilities measured at age 14, the mother's and father's length of education, cumulative work experience through 2004, cumulative length of unemployment through 2004, the natural logarithm of average annual labor earnings 1980–2004, quadratic number of children, indicators for the child living with both parents at age 16, the mother/father has children with a person other than the parent, and missing observations for the different control variables. *Child endowments* include squared birth weight, child IQ, standardized length of highest completed education by 2016 by cohort, and indicators for being born preterm and missing observations for the different control variables.

restriction, suggesting that our time preference measure is not just capturing correlations between parents' and children's fertility preferences.

Table B.1 lists other existing, empirical studies examining the intergenerational transmission of time preferences. Consistent with our findings, all these studies (except for Andreoni et al. (2019)) report a significant positive correlation of time preferences between generations. However, because the studies employ a broad variety of patience measures, it is hard to directly compare the magnitude of the transmission coefficients. Kosse and Pfeiffer (2013) find in a small sample of 5–6 year old children that if the mother has a one standard deviation greater present bias, then the child is 7.3 percent less likely to be patient. Chowdhury et al. (2022) find that an increase in parental patience by one standard deviation increases child patience (age 6–16) by around 0.15 standard deviations, while Gauly (2016) find a corresponding statistic among adult children of 0.05 and 0.09 standard deviations for respectively mothers and fathers. These three studies all elicit preferences simultaneously; the former two studies use experimental elicitation, while the latter relies on a survey question in the German Socio-Economic Panel (SOEP).

In comparison, if we rescale our intergenerational correlation coefficient, having a one standard deviation more patient parent increases child patience by 0.07 standard deviations.[30] Thus, our estimate lies between the estimate of mothers and fathers reported by Gauly (2016), which is the study in the literature that is closest to our setting (survey measure, answered by adult children). Remarkably, this similarity in magnitude is despite the large contrast in time between the elicitation of preferences in her study (simultaneous) compared to our (four decades).

5.2. Does the transmission persist?

To examine the permanence of the intergenerational transmission, we explore whether the intergenerational correlation differs by child age. Note that the existing theories modeling the intergenerational transmission of preferences (described in Section 2) do not make predictions on how this correlation evolves as the child grows older. Our exploratory analysis, however, can provide new insights on whether or not future theoretical work should model the preference transmission as a function of age.

Column (1) in Table 3 estimates our preferred model but now also includes an interaction term between parental patience and child normalized age. The estimate of the interaction term shows that the transmission of patience from parents to children does not vary by child age, suggesting that the preference propagation persists as children age. Yet, as discussed in Section 4, this result is not necessarily due to a lack of fade-out by age, but could be explained by a stronger transmission of patience among parents who have children at younger ages followed by some fade-out. Therefore, column (2) restricts the sample to siblings and includes parent fixed effects. Comparing siblings with each other clearly shows that parents do not differentially transmit patience to younger

[30] $0.07 = 0.071 \cdot (SD_p/SD_c)$, where 0.071 is the estimate reported in column (4) of Table 2. SD_p (0.4378) and SD_c (0.4776) represent the standard deviations in patience for parents and children respectively. Using the three-category version of our patience measure standardized, it gives an intergenerational transmission coefficient of 0.05 standard deviations.

Table 3
Intergenerational transmission of patience: Heterogeneity by child age.

	Dependent variable: Child is patient			
	(1)	(2)	(3)	(4)
Parent is patient	0.071***			
	(0.021)			
Parent is patient × Age	−0.002	0.000	−0.011	0.019*
	(0.003)	(0.008)	(0.011)	(0.011)
Sample	All	Siblings	Mothers	Fathers
Observations	3101	2255	1170	1085
Average of T_c	0.648	0.647	0.610	0.686

Note: Standard errors in parentheses, clustered at the parent level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. The outcome variable indicates whether the child is patient (1) or not (0). Each column presents the results from separate regressions. Each model is estimated as a linear probability model. *All* represents the full sample of children. The samples *Siblings*, *Mothers*, and *Fathers* only include, respectively, children with at least one sibling in the sample, siblings for whom the sampled parent is the mother, and siblings for whom the sampled parent is the father. Columns (1) controls for *Child demographics*, *Parent demographics*, *Parent School FE*, and *Grandparent SES*. Columns (2) to (4) control for *Child demographics* and parent fixed effects. *Age* is normalized by subtracting the mean child age (27 years), such that its mean is 0 and is controlled for in all models.

Table 4
Intergenerational transmission of patience: Heterogeneity by parenting values and parental involvement.

	Dependent variable: Child is patient (T_c)					
	(1)	(2)	(3)	(4)	(5)	(6)
Parent is patient (T_p)	0.085***	−0.021	−0.013	0.096***	−0.005	−0.005
	(0.022)	(0.031)	(0.038)	(0.026)	(0.038)	(0.038)
T_p × Authoritarian (A)		0.171***	0.168***		0.153***	0.158***
		(0.045)	(0.054)		(0.054)	(0.054)
T_p × Permissive (P)		0.141***	0.142**		0.134**	0.137**
		(0.049)	(0.057)		(0.056)	(0.056)
T_p × Involvement				−0.002	0.004	0.022
				(0.026)	(0.026)	(0.035)
T_p × A × Involvement						0.018
						(0.057)
T_p × P × Involvement						−0.072
						(0.055)
Authoritarian		−0.185***	−0.189***		−0.176***	−0.177***
		(0.039)	(0.047)		(0.047)	(0.047)
Permissive		−0.101**	−0.096*		−0.089*	−0.092*
		(0.044)	(0.052)		(0.051)	(0.051)
Involvement				0.033	0.024	0.010
				(0.023)	(0.023)	(0.031)
Observations	2859	2859	2132	2132	2132	2132
Average of T_c	0.645	0.645	0.657	0.657	0.657	0.657

Note: Standard errors in parentheses, clustered at the parent level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. The outcome variable indicates whether the child is patient (1) or not (0). Each model is estimated as a linear probability model. Each column presents the results from separate regressions. All models control for *Child demographics*, *Parent demographics*, *Parent School FE*, and *Grandparent SES*. Column (6) additionally includes the interactions terms between parental involvement and respectively authoritarian and permissive parenting.

versus older children. This of course does not tell whether the strength of the transmission is completely constant across all ages, as average spacing between the oldest and youngest sibling within a family in the sample is 5.8 years ($sd = 3.9$). However, it suggests that the influence of parents' preferences on children's preferences persists. The remaining two models split the sample by parent gender and show that, if anything, fathers tend to affect older children more strongly relative to younger siblings. Consequently, these findings emphasize the persistence of the transmission effect, stressing that it does not fade out with child age.

5.3. Heterogeneity by parenting?

So far, we have documented a significant and robust correlation in patience across generations and shown that this transmission persists as children age. Motivated by Doepke and Zilibotti (2017)'s theoretical work, this part of the analysis investigates the extent to which parenting strengthens or counteracts the intergenerational transmission of patience. As explained in Section 2, this model predicts that authoritarian parents restrict their children's choices to impose their will, that permissive parents refrain from influencing their children's choices, and that authoritative parents attempt to influence their child's choice so that the child makes decisions that parents believe are conducive to success in life. From this, we can expect that preference transmission is likely to occur for both authoritarian and permissive parents, whereas authoritative parents may counteract the propagation of their impatience to their child by taking proper actions.

All models in Table 4 control for the large set of covariates included in our preferred model. Column (1) replicates our preferred model in the sample of parents answering the parenting value question. Column (2) includes parenting values and their interactions with parental patience; column (3) replicates this specification for the sample with an observation on parental involvement. The non-interacted estimates of parenting values show that parenting values are strong predictors of child patience; both authoritarian and permissive parents have less-patient children, on average. As expected, this also implies that authoritative parents (the omitted

Table 5
Intergenerational transmission of patience: Heterogeneity by parent and child gender.

	Model 1				Model 2			
Panel A: Parameter estimates								
	T_p	$T_p \times F_p$	$T_p \times S_c$	$T_p \times F_p \times S_c$	T_p	$T_p \times I$	$T_p \times F_p$	$T_p \times F_p \times I$
Parent is patient (T_p)	0.049	−0.047	−0.100	0.071	0.004	0.090**	−0.039	−0.233***
	(0.073)	(0.123)	(0.111)	(0.171)	(0.049)	(0.045)	(0.075)	(0.076)
$T_p \times$ Authoritarian (A)	0.206*	−0.186	−0.044	0.264	0.207***	0.074	−0.085	−0.024
	(0.115)	(0.177)	(0.179)	(0.252)	(0.077)	(0.076)	(0.111)	(0.111)
$T_p \times$ Permissive (P)	0.135	0.117	−0.174	0.210	0.059	−0.131	0.208*	0.172
	(0.121)	(0.175)	(0.171)	(0.246)	(0.082)	(0.101)	(0.113)	(0.130)
$T_p \times$ Involvement (I)	0.101*	−0.123	−0.083	−0.051				
	(0.053)	(0.078)	(0.074)	(0.108)				
Panel B: Linear parameter combinations. Within each group of parenting style, is there a...								
	...transmission from Parent to Child?				...differential transmission from more- vs less-involved Parents?			
	M to D	F to D	M to S	F to S	From M		From F	
Authoritative	0.049	0.002	−0.051	−0.027	**0.090**		**−0.142**	
Authoritarian	**0.255**	0.022	0.112	**0.213**	**0.165**		−0.092	
Permissive	*0.184*	**0.254**	−0.090	**0.261**	−0.041		*−0.101*	
Involvement	*0.150*	−0.020	−0.033	−0.182				

Note: Observations: 2132; Average of T_c: 0.657. **Panel A**: Standard errors in parentheses, clustered at the parent level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Each model represents the results from one regression. Both models control for *Child demographics*, *Parent demographics*, *Parent School FE*, and *Grandparent SES*, and all the necessary interaction terms for the moderators. Model 1 also control for *Child demographics*, *Parent demographics*, and *Grandparent SES* interacted with indicators for the parent being the father (F_p), the child being the son (S_c), and the combination of these. Model 2 only includes the former interaction (i.e. an indicators for the parent being the father). **Panel B**: Each estimate represents the respective parameter combination for the specified test (for the exact parameter combinations, see Table B.6). M (F) refers to mother (father), and D (S) to daughter (son). Bold (italic) indicates statistical significance at the 5 (10) percent level.

category) have more-patient children. This is consistent with Falk et al. (2021) finding that mothers with a more positive parenting style have more patient children.

The estimates of the interactions between parental patience and parenting style show that authoritarian and permissive parents are in fact those who drive the transmission of time preferences. Put differently, impatient authoritative parents are able to counteract the transmission of their own impatience to their children. Regardless of the nature of such transmission (genetics or socialization), this suggests that authoritative parenting is an effective tool to create patience in children. This is in accordance with Doepke and Zilibotti (2017)'s model according to which authoritative parents "attempt to mold their children's preferences, with the aim of inducing choices that parents view as conducive to success in life" (page 1332).

To test whether parental involvement moderates the intergenerational transmission of patience, column (4) includes parental patience interacted with this aspect of family socialization. This model suggests that involvement is not an important moderator, as the estimated interaction term is very close to zero and is not statistically significant. This result is similar to the one reported by Zumbuehl et al. (2018), who do not find heterogeneity in terms of the similarity between parents' and children's impatience with respect to parental involvement. At the same time, this is in contrast to findings on risk and trust preferences (Alan et al., 2017; Zumbuehl et al., 2021).

Next, column (5) simultaneously includes both dimensions of parenting and their interactions with parental patience. The results from this model confirm the previous findings that parenting values are important dimensions for heterogeneity in the transmission of patience, while involvement does not appear to be so. Finally, column (6) further interacts parenting values with parental involvement and parental patience. These interaction effects do not seem to be important for patience propagation. Consequently, the main finding from Table 4 is that parenting values, in contrast to parental involvement, are important moderators of the socialization process.

It might seem surprising that involvement is not a relevant dimension for the moderation of time preference propagation. We therefore dig deeper into these results by investigating whether there are important differences by parent and child gender. In Table 5, Panel A reports the estimates from two different models, each focusing on one dimension of heterogeneity, while Panel B reports tests of specific linear parameter combinations. For the latter, we indicate linear combinations that are statistically significant at the five (ten) percent level in bold (italic); Table B.6 reports the exact linear estimate combinations and *p*-values.

Model 1 studies heterogeneity by the specific child–parent gender dyads, by fully interacting the preferred specification with indicators for the parent being the father, for the child being the son, and the combination of the two. In Panel B, within each parenting style, we test whether mothers transmit patience to their daughters, fathers to their daughters, etc. These results show that both authoritarian and permissive mothers propagate time preferences to daughters. Importantly, for the mother–daughter combination, we now see that involvement works as a channel of the patience propagation. Similar results are documented by Alan et al. (2017) for risk preferences. In addition, and also in line with their results, we also do not find any transmission from mothers to sons.[31] In contrast, we see that permissive fathers transmit their time preferences to both daughters and sons, while only authoritarian

[31] However, we must note that due to a relatively small sample size for each subgroup for these heterogeneity tests in Models 1 and 2, we do not have statistical power to detect correlations that are in the magnitude of the overall intergenerational correlation seen in Table 2.

parenting works as a channel for the preference propagation from fathers to sons (and not from fathers to daughters). Meanwhile, we still see that the authoritative parenting style seems to be an effective tool in counteracting the transmission for all parent–child gender combinations.

Thus, the overall results in Table 4 mask some important heterogeneity in the transmission by parent–child gender with respect to the role of parenting style. In particular, we do find that for the mother–daughter dyad, involvement plays a role as previously found for risk preferences (Alan et al., 2017). Overall, same-gender parent–child dyads experience the strongest transmission—a finding that is consistent with prior research on gender-specific parenting and influences (Bonke and Esping-Andersen, 2009; Brenøe and Lundberg, 2018; Brenøe, 2021; Leaper et al., 1998; Noller and Callan, 1990).

Model 2 tests whether respectively mothers and fathers with a specific parenting style differentially transmit patience if they have high versus low involvement. For the tests of the linear parameter combinations, we let low investments correspond to the mean of zero and high investments to take the value of one standard deviation. Again, we here observe some interesting patterns of heterogeneity. Both authoritative and authoritarian mothers more strongly transmit their time preferences when they are more involved compared to less involved. As Alan et al. (2017) suggest, this might be because children who spend more time with their mothers have a greater opportunity to observe and imitate maternal behavior.

Interestingly, for fathers, a reverse pattern emerges. More-involved patient authoritative and permissive fathers are less likely to have patient children than their less-involved counterparts. This difference by parental gender is likely due to the different roles mothers and fathers play in the upbringing of children. Thus, there are gender-specific interactions between parenting style and involvement, which the overall analysis in Table 4 did not pick up due to the different directions of the influence of involvement for mothers and fathers. Together with the overall results, these heterogeneity results clearly provide new insights into the black box of family socialization.

5.4. Robustness of moderation results

5.4.1. SES as an alternative moderator?

Given a correlation between parenting values and parental SES (Table B.5), one concern regarding the interpretation of the heterogeneity results is that SES might indeed be a more relevant moderator than parenting values. For instance, in light of the model by Bisin and Verdier (2001), parents of higher SES might have a stronger degree of paternalistic altruism (imperfect empathy) and therefore exhibit weaker transmission of preferences to their offspring. Table 6 tests the relevance of SES as a moderator of the intergenerational transmission of patience, using the SES index. From this, it is clear that childhood SES does not moderate the transmission process.

Including the SES index and its interaction with parental patience in the main model illustrates the absence of any relevant moderating role of the socioeconomic childhood family environment (column (1)), with a precisely estimated zero. As an alternative measure of SES, column (2) interacts average parental education with parental patience instead of the SES index. We do this because parental education is the only socioeconomic variable that has some (albeit small) predictive power in terms of predicting child patience. From this, we still do not find that the socioeconomic environment moderates the preference propagation. Further, including simultaneous interactions between parental patience and SES, parenting values, as well as parental involvement does not change the previous results. Consequently, the heterogeneity results with respect to parenting are robust to the inclusion of SES as an alternative dimension of family socialization.

Table 6
Intergenerational transmission of patience: Heterogeneity by SES.

	Dependent variable: Child is patient (T_c)				
	(1)	(2)	(3)	(4)	(5)
Parent is patient (T_p)	0.064***	0.064***	−0.031	−0.017	−0.011
	(0.021)	(0.021)	(0.031)	(0.038)	(0.038)
T_p × SES index	0.002		0.003	0.007	
	(0.022)		(0.024)	(0.030)	
T_p × Parental Edu		−0.004			0.011
		(0.021)			(0.030)
T_p × Authoritarian			0.172***	0.158***	0.159***
			(0.045)	(0.054)	(0.055)
T_p × Permissive			0.146***	0.142**	0.133**
			(0.049)	(0.056)	(0.058)
T_p × Involvement				0.004	0.004
				(0.026)	(0.026)
Observations	3101	3101	2859	2132	2132
Average of T_c	0.648	0.648	0.645	0.657	0.657

Note: Standard errors in parentheses, clustered at the parent level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. The outcome variable indicates whether the child is patient (1) or not (0). Each model is estimated as a linear probability model. Each column presents the results from separate regressions. All models control for *Child demographics*, *Parent demographics*, *Parent School FE*, and *Grandparent SES*. Each model controls for the moderators that are interacted with T_p.

5.4.2. Replication in a different sample

The analysis so far, relying on the DLSY, has demonstrated that parents transmit patience to their offspring and that parenting values are important moderators of the relationship. The purpose of this analysis is twofold: (1) to replicate the main findings on moderators in a different sample with a different measure of time preferences (impulsivity) and (2) to test the robustness of the findings for involvement when having richer data on this aspect of parents' socialization with their children.

Table 7
Replication in DALSC sample: Heterogeneity in the intergenerational transmission of impulsivity.

	Dependent variable: Child impulsivity (standardized)					
	(1)	(2)	(3)	(4)	(5)	(6)
Mother impulsivity (I_m)	0.12***	0.07***	0.07***	0.07***	0.07***	0.07***
	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
I_m × Authoritarian		0.08**	0.09**	0.08**	0.08**	0.08**
		(0.03)	(0.04)	(0.04)	(0.04)	(0.04)
I_m × Permissive		0.03	0.03	0.03	0.03	0.03
		(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
I_m × Quality Time			0.02			
			(0.02)			
I_m × Non-Ed Quality Time				0.03**	0.03	0.03*
				(0.02)	(0.02)	(0.02)
I_m × Ed Quality Time				−0.02	−0.02	−0.02
				(0.02)	(0.02)	(0.02)
I_m × Quality Talking					0.03	0.03
					(0.02)	(0.02)
I_m × Avg Parental Educ						−0.00
						(0.02)
Observations	3833	3833	3767	3767	3767	3767

Note: Danish Longitudinal Survey of Children (born in 1995). Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. The outcome variable is a continuous index of child impulsivity, standardized with a mean of zero and standard deviation of one. Each column represents the results from one regression. All models control for mother's and father's length of education and age at childbirth, child gender, birth order, indicators for size of town of residence at birth, indicators for missing observations on the former controls, and indicators for the number of times the quality time variables included in the model were measured. *Quality Time* is the mean of the standardized first component from a principal component analysis, including how often the mother does the following activities with the child at age 7 and 11 years: play, do out-of-school activities, go on an excursion, help with homework, and read/sing. *Non-Ed Quality Time* (*Ed Quality Time*) is constructed similarly, including play, do out-of-school activities, go on an excursion (help with homework, read/sing). *Quality Talking* is the mean of the standardized first component from a principal component analysis, including how often the mother discusses the following with the child at age 4, 7, and 11 years: the child's own activities at kindergarten/day-care (4); the child's planned activities at kindergarten/day-care (4); activities at school and after-school care, out-of-school activities (7/11); relationship to other children (4/7/11); relationship to teachers and after-school care staff (4/7/11); physical well-being (4/7/11); and mental wellbeing.

For this analysis, we draw on the DALSC, which has followed children and their parents throughout childhood and contains detailed information on parental involvement and an identical parenting value measure as the one in DLSY. The DALSC data do not, however, include our intertemporal choice question. As a coarse proxy for time preferences, we instead use a standardized index measuring impulsivity.[32] One caveat concerning this measure is that mothers and children were asked the impulsivity questions contemporaneously when the children were 15 years old. In other words, similar to previous studies on the intergenerational correlation of preferences, we cannot rule out the possibility of reverse causality. For more details about the data and the different measures, see Appendix A.2.

Using the DALSC sample, column (1) in Table 7 replicates the finding in Table 2 of an intergenerational correlation in preferences. Having a mother scoring one standard deviation higher in the impulsivity index increases child impulsivity by 0.12 standard deviations. The magnitude of this coefficient is comparable to the correlation between mothers' and children's risk preferences (0.15 standard deviations) in Dohmen et al. (2012) and between children's and respectively mothers' (0.10 standard deviations) and fathers' impulsiveness (0.13 standard deviations) in Gauly (2016).

The intergenerational correlation between mothers' and children's impulsivity is much stronger for mothers with authoritarian values (column (2)). This is consistent with the gender-specific findings in Table 5. Using a richer measure of quality time than that used in the main analysis confirms the previous result that maternal involvement does not moderate the preference correlation (column (3)). However, when splitting involvement into non-educational and educational quality time, the estimates indicate that non-educational quality time additionally moderates some of the transmission (columns (4)–(6)). This result is again in line with the gender-specific findings in the DLSY sample, for which the involvement measure mainly includes non-educational activities. At the same time, quality talking does not moderate the transmission. Finally, parental education does not moderate the relationship either. Consequently, all the main findings in the DLSY sample replicate in the DALSC sample, when using better measures on maternal involvement and when using a different time preference measure.

[32] Epper et al. (2019) document a strong and significant association between experimentally elicited patience and survey-measured impulsivity in a representative Danish population data set with 14,191 individuals.

6. Concluding remarks

We study the intergenerational transmission of time preferences in a broad and heterogeneous population using an internally and externally validated survey measure. Parental and offspring patience were elicited four decades apart, thereby eliminating concerns regarding reverse causality. We document that the transmission of patience across generations is both strong and robust. Children with patient parents are 7 to 8 percentage points more likely to also be patient. The transmission is insensitive to the inclusion of a comprehensive set of administratively reported controls, and the size of the transmission coefficient does not diminish as children age. Moreover, when comparing to other studies, the strength of the transmission is substantial taken into account the large time difference between measurement of parental and offspring preferences.

We further open up the black box of family socialization by considering two theoretically relevant channels of the transmission process. Specifically, we explore the moderating roles of parenting values and parental involvement in patience propagation. We find that authoritarian and permissive parents transmit patience to their children, while authoritative parents do not. Put differently, authoritative parenting can be seen as a tool to counteract the transmission of time preferences from parents to children. Interestingly, more parental time investment does not overall contribute to the patience transmission. However, when investigating these overall effects by parent and child gender, we show that our aggregate-level results mask some important heterogeneity. Consistent with previous research, same-gender parent–child dyads experience the strongest transmission, still with the authoritarian and permissive parenting styles being important moderators. Moreover, again in line with prior findings in the literature, we do indeed find that involvement moderates some of the transmission when focusing on mothers and their daughters, while a different pattern emerges for fathers—likely due to their different role in the upbringing of children.

Moreover, we show that our findings are robust to the inclusion of a third potentially relevant dimension of socialization, namely, SES. We further replicate the findings in another independent survey. This latter survey also permits us to validate parenting values with self-reported parenting behaviors. Specifically, we show that parents who report authoritarian values indeed implement stricter parenting practices, such as more physical and verbal punishment, and that the opposite is true for parents reporting permissive parenting values.

Despite the unique setup of our study and the rich controls we employ, our study faces some limitations. We see two directions that require further exploration for a better understanding of the mechanisms behind economic preference propagation. First, our study does not permit establishing a causal link between parenting style, parental patience, and offspring patience. Demonstrating such a link would require some form of random assignment of children to parents—for instance, by exploiting orphan status or adoptions—*and* exogenous changes in parenting style. For obvious reasons, such a setup would pose different challenges. Children's time preferences may, for instance, be affected by emotional and financial shocks they experience during childhood. Moreover, programs that affect parenting style might well influence other dimensions of the family socialization process, other than purely the parents' way of parenting.

Second, and linked to our first point, we believe that genetic factors as a moderator of preference transmission deserve further attention. Most work has been devoted to the genetic origins of risk and social preferences (see e.g. Linnér et al., 2019). For time preferences, however, this issue still remains underresearched. A notable exception is Benjamin et al. (2012), who conclude that there is significant genetic transmission of patience, albeit the estimated heritabilities of genotyped single nucleotide polymorphisms (SNPs) are consistently lower than twin-based estimates suggest. This research is complementary to ours; it provides important insights regarding genetic transmission, but disregards the many faceted roles of socialization. Future studies tackling the question of patience transmission may thus simultaneously investigate the roles of fixed (genetic) and changeable (nurturing) factors and decompose the observed variation of this trait into genetic and socialization components.

Our findings have a number of important implications. First, our transmission results and the fact that individual time preferences are highly predictive of peoples' real world economic outcomes suggest an explanation for the cross-generational correlation of economic outcomes. Therefore, the transmission channel may also help us better understand sources of economic inequality and the varying degrees of social mobility observed across different communities within the same country as well as across countries (e.g. Chetty et al., 2014; Corak, 2013). Second, macroeconomic models considering multiple generations usually assume that time preferences propagate from parents to offspring (see e.g. Krusell and Smith, 1998). The empirical evidence on the intergenerational transmission of preferences, however, has previously only considered relatively short time horizons. Our study provides support for the assumption in macroeconomic models that time preferences indeed transmit from generation to generation and that this propagation persists over a very long time period.

Data availability

The authors do not have permission to share data.

Appendix A. Data appendix

In this data appendix, we provide additional information, not already described in Section 3, about the two surveys and the administrative data that we use.

Table A.1
Attrition in DLSY.

Type of attrition	T_p NA (1)	T_p or T_c NA (2)	Values NA | (2) not NA (3)	Values or involvement NA | (2) not NA (4)
Father			+	
P birth order 3+				+
P inductive reasoning	–	–		–
Grandfather edu NA			+	+
Grandmother edu NA		+		
Grandparents NA	+			
P IQ NA			–	
Grandparents' income NA				–

Note: All dependent variables are binary and are conditioned on having any children born by 1996. The level of observation is the parent. T_p *NA* indicates that parental patience is unobserved. T_p *or* T_c *NA* indicates that either parental patience is unobserved or all his/her children have missing information on patience. *Values NA | (2) not NA* indicates that parenting values are missing for the sample of parents with patience observed for both the parent and at least one child. *Values or involvement NA | (2) not NA* indicates that parenting values or parental involvement are missing for the sample of parents with patience observed for both the parent and at least one child. Each column reports the by-1969-predetermined variables that are statistically significant at the 5 percent level and their estimated sign in a Probit model; the model includes 34 predetermined variables.

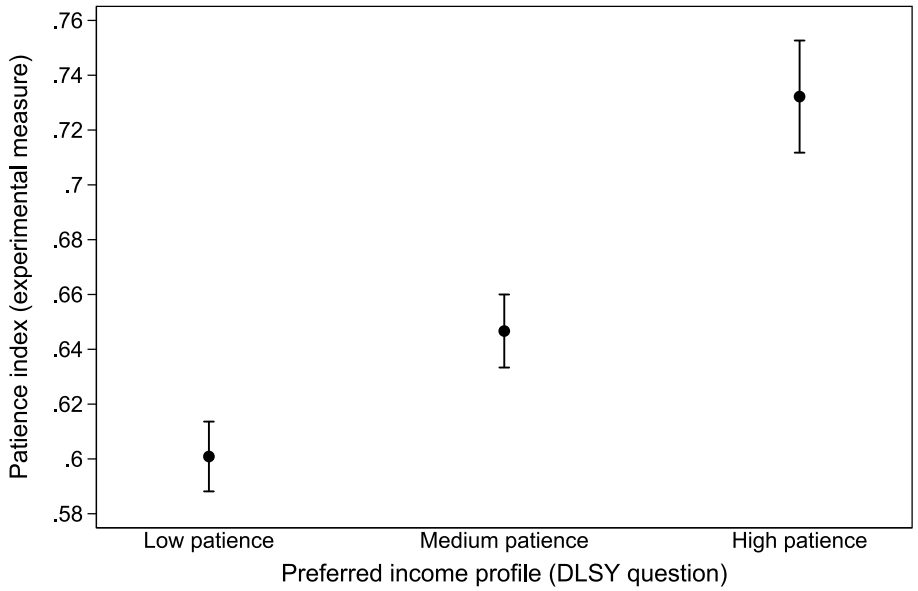

Fig. A.1. Experimentally validated measure. *Note*: This graph comes from Epper et al. (2020), Appendix D.1. It illustrates the mean of the incentivized experimentally elicited patience index by the three options respondents have when answering our time preference question (for details, see Epper et al., 2020). The whiskers indicate 95 percent confidence intervals.

A.1. Danish Longitudinal Survey of Youth (DLSY) and DLSY-children

The data set is provided by VIVE (The Danish Center for Social Science Research). For the parents who have at least one child who would be eligible to participate in the survey, only a few baseline characteristics predict attrition (Table A.1). We do not observe all the original 3151 DLSY respondents in the sample of parents for several reasons: 618 individuals did not have any children by 1996; of those with at least one child by 1996, 301 individuals did not have a patience observation; of those with at least one child by 1996 and with a patience observation, 390 individuals did not have a child surveyed in 2010.

A.1.1. Validation of patience measure

In comparison to experimental measures of time preferences (see e.g Frederick et al., 2002; Epper et al., 2011; Attema et al., 2016; Cohen et al., 2020), our survey measure has both advantages and disadvantages. The possibly most important advantages are that our survey question is short, simple, and less abstract than typical intertemporal choices employed in experiments. Specifically, our question asks subjects about their choice in a real-life situation with substantial economic consequences. This contrasts with experimental measures that typically ask subjects to repeatedly choose between sooner smaller amounts and later larger amounts (usually materializing within some weeks or a few months). This context-dependence might also be viewed as a shortcoming of our measure, in that considerations other than pure time preferences might lead subjects to choose a particular wage profile. Risk-averse

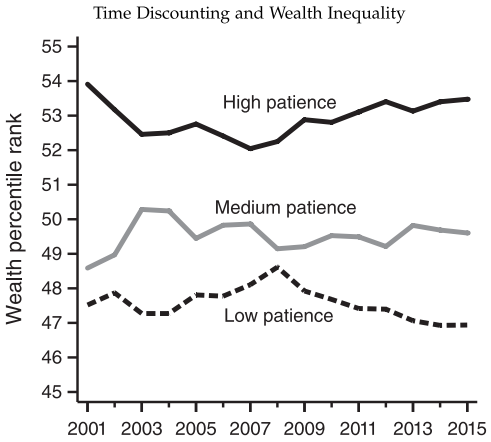

Fig. A.2. Time discounting and wealth inequality. *Note*: This graph comes from Epper et al. (2020). It illustrates the mean wealth percentile rank by the three options respondents have when answering our time preference question (for details, see Epper et al., 2020).

individuals may, for instance, choose the average pay, fearing they would not reach the high pay (although the question does not explicitly associate risk with future pay raises).

Our patience indicator is both internally and externally valid. Epper et al. (2020) document that the DLSY measure is highly predictive of time preferences elicited in an experiment with real monetary incentives among a broad and heterogeneous population born between 1967 and 1986 (Fig. A.1). Furthermore, examining the validity of our measure in an experiment with a large representative sample of the Danish population, Epper et al. (2019) find that our survey measure is a good predictor for experimentally elicited time preferences. Epper et al. (2020) further show for our sample of parents that the subjects we classify as patient have a consistently higher percentile rank in the within-cohort wealth distribution over a 15-year period (Fig. A.2).

Finally, the individuals we categorize as being patient face significantly better socioeconomic outcomes in adulthood, even when controlling for a wide range of childhood family characteristics (Table A.2). For instance, patient parents score one-fifth of a standard deviation better on the SES index. Moreover, patient mothers (fathers) have 0.42 (0.61) more years of education and earn 43 (26) log-points more from age 26 through age 50 than impatient mothers (fathers). Similarly, patient daughters (sons) attained 0.50 (0.53) more years of education by 2016. These findings demonstrate that the DSLY measure captures patience well and that it is a good predictor of real-life economic outcomes. Table A.3 further explores associations between parents' time preferences and fertility preferences at age 22 and their realized lifetime fertility. Women's fertility preferences are independent of their time preferences,

Table A.2
Associations between patience and socioeconomic status.

	(1)	(2)	(3)	(4)	(5)	(6)
	Parents by age 50					Child
	SES Index	Education (years)	Unemployment	Work Experience	Log (Earnings)	Education (years)
Panel A: Women						
Patient	0.16**	0.42**	−0.81***	2.58***	0.43***	0.50***
	(0.06)	(0.18)	(0.19)	(0.59)	(0.14)	(0.10)
Observations	1369	1369	1369	1369	1369	1807
Average	0.064	12.181	1.863	21.012	11.450	14.164
Panel B: Men						
Patient	0.21***	0.61***	−0.42***	0.74	0.26**	0.53***
	(0.06)	(0.19)	(0.14)	(0.58)	(0.11)	(0.11)
Observations	1370	1370	1370	1370	1370	1666
Average	0.073	12.943	1.322	21.814	11.916	13.560

Note: Standard errors in parentheses, clustered at the parent school level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Each panel–column presents the results from separate regressions. The sample of parents corresponds to the original DLSY respondents who have at least one child. The sample of children are children to the DLSY parents. All models include *Parent demographics*, *Parent School FE*, and *Grandparent SES* (see the table note in Table 2 for details). Column (6) also include *Child demographics*. *SES Index* (standardized with mean zero and standard deviation one) is the first principal component from a principal component analysis; see Table A.5. *Education* measures the length of highest completed education in years by 2016. *Unemployment* measures the cumulative length of unemployment between 1980–2004. *Work Experience* measures the cumulative length of work experience between 1964–2004. *Log(Labor Earnings)* is the natural logarithm of average annual labor earnings between 1980–2004.

Table A.3
Associations between patience and fertility preferences.

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Fertility preferences at age 22 and early fertility						
	Desired # of Children			Has Any Children by		
	0	1	2	1973	1976	1979
Women						
Patient	0.01	−0.02	0.00	−0.05***	−0.14***	−0.10***
	(0.02)	(0.02)	(0.03)	(0.02)	(0.03)	(0.03)
Observation	1267	1267	1267	1369	1369	1369
Average	0.093	0.066	0.539	0.071	0.264	0.496
Men						
Patient	−0.07***	0.01	0.07**	−0.00	−0.02	−0.04
	(0.02)	(0.02)	(0.03)	(0.01)	(0.02)	(0.03)
Observation	1211	1211	1211	1370	1370	1370
Average	0.116	0.043	0.597	0.012	0.087	0.231
Panel B: Complete fertility by 2016 (Age 62)						
	Has any child	# of Children	Age at first birth	Age at last birth	# of T_c Obs	Daughter w T_c Obs
Women						
Patient	0.01	−0.04	1.49***	0.93**	−0.10	−0.03
	(0.02)	(0.06)	(0.32)	(0.41)	(0.07)	(0.04)
Observation	1369	1369	1191	1191	1191	964
Average	0.870	1.836	25.653	28.919	1.376	0.669
Men						
Patient	0.09***	0.21***	0.74	0.43	0.00	0.01
	(0.03)	(0.08)	(0.45)	(0.47)	(0.07)	(0.05)
Observation	1370	1370	1061	1061	1061	871
Average	0.778	1.680	28.900	31.884	1.413	0.659

Note: Standard errors in parentheses, clustered at the parent school level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Each panel-column-gender presents the results from separate regressions. All models are estimated by OLS. The sample includes all original DLSY respondents. All models include *Parent demographics*, *Parent School FE*, and *Grandparent SES* (see the table note in Table 2 for details). *Desired # of Children* indicates whether the respondent in 1976 reported that their desired number of children was respectively, 0, 1, or 2, leaving 3 or more children the omitted category (due to the survey question, those who already had children and did not want more have a coded desired number of children equivalent to the number of children they had by 1976; the correlations between patience and desired fertility is similar when excluding those who already had children in 1976). *Has Any Children by* indicates whether the respondent had at least one child by 1973, 1976, and 1979, respectively. *Has Any Child* indicates whether the person has any children by 2016. *# of Child w T Obs* measures the parent's number of children with an observation on patience, conditional on having at least one child by 1996. *Daughter w T Obs* indicates whether the parent has at least one daughter with an observation on patience, conditional on having at least one child in the survey.

while patient women are less likely to have children early. In contrast, patient men are more likely, at age 22, to desire having any children and are accordingly more likely to have (recognized) children by age 62.

A.1.2. Moderators

Parenting values Parents were asked: *Here is a list of qualities which children can be encouraged to learn at home. Which do you consider to be especially important for children to acquire at home?* They could choose up to three answers from the following eight options: Independence (86% of parents chose this option), Tolerance (36%), Imagination (27%), Good manners (30%), Thrift (3%), Sense of responsibility (72%), Obedience (6%), and Consideration for others (39%).

The question is similar, though not identical, to the one asked in the WVS, as the response options differ slightly. In the WVS, respondents are asked to choose up to five values and are given the following eleven options: Good manners; Independence; Hard work; Feeling of responsibility; Imagination; Tolerance and respect for other people; Thrift, saving money and things; Determination, perseverance; Religious faith; Unselfishness; and Obedience. Therefore, we cannot define parenting values exactly as in Doepke and Zilibotti (2017). Note also the different focus of Doepke and Zilibotti (2017) and our study: Doepke and Zilibotti (2017) are interested in studying *cross-country* differences in parenting, while we are interested in studying *within-country* differences in parenting. Doepke et al. (2019) also use the WVS to define parenting styles and define relaxed (similar to permissive) parenting as parents answering either "independence" or "imagination". In our setting, it would not make sense to consider independence, however, as most parents choose this option. Moreover, independence as a quality might be considered a key characteristic for not only permissive parents but also for authoritative parents, as the goal of the latter group of parents is that their children can make choices on their own that lead to success in life, which naturally requires independence.

More specifically, parents answered this question in 1992 (i.e. at age 38). We acknowledge that parents would ideally have been asked this question before having children. However, given that most parents have more than one child and the question is general

Table A.4
Principal component analysis: Parental involvement by activity.

	First component	Average
Library	0.37	4.93
Swimming	0.35	4.72
Nature	0.41	16.80
Cinema	0.31	2.18
Theater	0.21	0.66
Visit friends and family	0.37	19.90
Do housework (cooking, cleaning, shopping)	0.31	38.40
Talk about homework and school	0.24	47.27
Eat dinner	0.16	51.08
Attend sport activities	0.34	17.71
	Eigenvalue	Proportion
Component 1	2.21	0.22
Component 2	1.24	0.12
Component 3	1.14	0.11
Component 4	0.97	0.10
Observations	2712	

Note: Principal component analysis (PCA) of parental involvement by activity. The sample includes all children born by 1996 (including those who did not answer the survey in 2010). We use the first component to construct the involvement index.

(as it does not target a specific child), we do not consider it a major concern that parents would have chosen their parenting values endogenously to their children's (or a specific child's) time preferences. If anything, parents might choose their values as a response to how their first child behaves; yet, we do not find any heterogeneity in the moderation analysis by birth order (not reported).

Parental involvement The survey question was asked in 2001 (i.e. age 47) and answered by parents who, at the time, had at least one child living at home, which was the case for the vast majority of the sample. The exact question is *How often does the family—including the children living at home—do the following activities together?: visit the library, go to the swimming pool, go out in nature, go to the cinema, go to the theater, visit friends and family, do housework (cooking, cleaning, shopping), talk about homework and school, eat dinner, and attend sport activities.* We scale at least once a week/month/year/never to 52/12/1/0 times a year. To construct the involvement index, we use the first component from a principal component analysis, including the scaled measures on all the reported activities, standardize the index to have a mean of zero and a standard deviation of one (Table A.4).

SES index Based on the rich measures of parental socioeconomic status in the administrative data, we construct an SES index (standardized with a mean of zero and a standard deviation of one), using the first principal component from a principal component analysis (Table A.5). In the SES index, we include the mother's and father's length of education, cumulative work experience through 2004, cumulative length of unemployment through 2004, and the natural logarithm of average annual labor earnings 1980–2004; the DLSY-parent's number of children; indicators for the child living with both parents at age 16, the mother/father has children with another person than the parent, and the mother/father has missing educational information. For labor market outcomes, we restrict the focus to 1980–2004 (i.e. through age 50 of the parents) to proxy for children's childhood family environment (the average child turned 21 years in 2004).

A.1.3. Vectors of controls

Child demographics includes indicators for being female, five-year age intervals, birth order, and being a twin.

Parent demographics includes indicators for being born before 1954, born after 1954, gender, child–parent gender combination, and birth order.

Grandparent SES includes grandparental attitudes towards child education and work; an index for the grandparents' educational investment in the parent; quadratic taxable income in 1967 reported by the tax authorities; quadratic number of grandparents' children; indicators for the grandmaternal/paternal level of education, vocational training/education, grandmother/grandfather has work subordinates, grandmother is housewife, gender of the surveyed grandparent, the parent living with both parents at age 14, and missing observations for the different control variables.

Parent SES includes the surveyed parent's spatial, verbal, and inductive abilities measured at age 14; the mother's and father's length of education, cumulative work experience through 2004, cumulative length of unemployment through 2004, the natural logarithm of average annual labor earnings 1980–2004; quadratic number of children; indicators for the child living with both parents at age 16, the mother/father has children with another person other than the parent, and missing observations for the different control variables.

Table A.5
Principal component analysis: SES index.

	First component	Average
Mother's education (years)	0.27	12.63
Father's education (years)	0.32	12.97
Mother's education missing	−0.21	0.0017
Father's education missing	−0.26	0.0045
Parent's # of Children	−0.12	2.47
Mother has children with other than Father	−0.21	0.14
Father has children with other than Mother	−0.14	0.17
Mother's years of unemployment 1980–2004	−0.30	2.01
Mother's years of work experience 1964–2004	0.37	20.58
Father's years of unemployment 1980–2004	−0.22	1.17
Father's years of work experience 1964–2004	0.25	23.36
Log(Mother's mean labor earnings 1980–2004)	0.40	11.69
Log(Father's mean labor earnings 1980–2004)	0.38	12.18
	Eigenvalue	Proportion
Component 1	2.87	0.22
Component 2	1.59	0.12
Component 3	1.41	0.11
Component 4	1.25	0.10
Component 5	1.05	0.08
Component 6	0.92	0.07
Observations	3518	

Note: Principal component analysis (PCA) of the socioeconomic status experienced during children's childhood. The sample includes all children born by 1996 (including those who did not answer the survey in 2010). We use the first component to construct the SES index.

Child endowments includes squared birth weight, child IQ, standardized length of the highest completed education by 2016 by cohort and indicators for being born preterm and missing observations for the different control variables.

Child risk preferences The children are asked three questions capturing risk preferences: (1) *You have the opportunity to buy a lottery ticket. There are 10 people in the lottery. The prize is 20,000 DKK. The winner of the lottery is found by lottery, i.e. everyone has the same chance of winning. What price do you want to pay for a lottery ticket for this lottery?*, (2) *You have won 500,000 DKK in the lottery! You are contacted by a reputable bank that offers you an investment opportunity. The terms are as follow: You have a 50 percent probability of doubling your investment within two years. However, there is also a 50 percent probability of losing your investment. How much of the 500,000 DKK will you invest?*, and (3) *Do you perceive yourself as a person willing to take risks to achieve something in life, or avoid any risks? Answer on a scale from 1–10, where "1" means avoiding risks and "10" means you do not mind taking risks.* We group answers into four categories for the two first questions and three categories for the third question and control for the categories in the regression. We do not observe parents' risk preferences.

A.2. DALSC: Validation and replication sample

To relate our measures of parenting values to actual parenting practice, we draw on the Danish Longitudinal Survey of Children (DALSC). The survey includes randomly sampled children born between September and October 1995 to a mother with Danish citizenship. It has followed children and their parents throughout childhood and contains very detailed information on parenting practices and parental involvement as reported by mothers and fathers individually. This data set is also provided by VIVE.

When their children were four years old, mothers in the DALSC sample answered a question on parenting values that was identical to the question parents in the DLSY sample answered. Moreover, both mothers and fathers answered a question related to parenting values when their child was only six months old. It is therefore unlikely that parents would have adjusted their values to the preferences or behavior of the child. Parents answered on a four-point scale: *How important do you find the following qualities are when bringing up children?* (i) *A firm hand*, (ii) *An ability to command the respect of others* (instill respect), and (iii) *An ability to identify oneself with the feelings of the child* (empathy with child). We rescale these parenting values from zero to one, with one being very important. To relate parenting values to actual (self-reported) parenting styles, we construct two measures on physical and verbal punishment for each parent (standardized with a mean of zero and a standard deviation of one). These measures are constructed based on questions that each parent answered when the child was age 4, 7, and 11 (see Appendix A.2.1 of this appendix for details on the index constructions).

To measure parental involvement in the child's upbringing, we consider two dimensions: quality time spent with the child and quality talking with the child (both measures are standardized with a mean of zero and a standard deviation of one). We construct a *Quality Time* index as the mean of the first component from a principal component analysis at each child age for each parent and include measures on how often the parent does the following activities with the child when the child is age 7 and 11: help with homework, read/sing, play, do out-of-school activities, and go on an excursion. For the analysis in Section 5.4.2, we further split this index into non-educational (play, do out-of-school activities, go on an excursion) and educational quality time (help with homework, read/sing). Similarly, we construct a *Quality Talking* index as the mean of the first component from a principal component analysis.

Table A.6
Validation of parenting values and practice.

	Punishment		Quality	
	Physical (1)	Verbal (2)	Time (3)	Talking (4)
Panel A: Maternal values at child age 4 years				
Authoritarian	0.22***	0.12***	−0.09***	−0.02
	(0.03)	(0.03)	(0.03)	(0.03)
Permissive	−0.06**	−0.08***	0.06*	0.01
	(0.03)	(0.03)	(0.03)	(0.03)
Observations	5282	5283	5035	5254
Panel B: Maternal values at child age 6 months				
A firm hand (0–1)	0.22***	0.24***	−0.01	−0.03
	(0.05)	(0.05)	(0.05)	(0.05)
Instill respect (0–1)	0.18***	0.10*	−0.01	0.10*
	(0.06)	(0.06)	(0.06)	(0.06)
Empathy with child (0–1)	−0.44***	−0.40***	0.36***	0.58***
	(0.11)	(0.11)	(0.12)	(0.11)
Observations	5060	5060	4861	5036
Panel C: Paternal values at child age 6 months				
A firm hand (0–1)	0.26***	0.03	−0.10	−0.01
	(0.06)	(0.06)	(0.06)	(0.06)
Instill respect (0–1)	0.11	0.28***	−0.12*	0.10
	(0.07)	(0.07)	(0.07)	(0.07)
Empathy with child (0–1)	−0.37***	−0.24**	0.43***	0.51***
	(0.10)	(0.10)	(0.10)	(0.10)
Observations	3265	3238	3271	3234

Note: Danish Longitudinal Survey of Children (born in 1995). Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Each panel–column represents the results from one regression. All models control for mother's and father's length of education and age at childbirth, child gender, birth order, and indicators for size of town of residence at birth, indicators for missing observations on the former controls, and indicators for the number of times the outcome variable was measured. In Panel A, *Authoritarian* and *Permissive* are defined as in DLSY; mothers answered this question when child was 4 years old. The parenting values in Panels B and C were asked when the child was 6 months old and are measured on a 4-point scale, rescaled from 0 (not important at all) to 1 (very important). The dependent variables are standardized (mean 0, SD 1) and measure maternal practice in Panels A and B and paternal practice in Panel C. Maternal punishment is measured at child ages 4, 7, and 11, while paternal punishment is measured at age 7 and 11. *Quality Time* is measured at the child's age of 7 and 11 for both parents and is the mean of the first component from an principal component analysis at each child age. *Quality Talking* is measured at age 4, 7 and 11 for mothers and at age 7 and 11 for fathers and is the mean of the first component from an principal component analysis at each child age.

This index includes measures on how often the parent discusses different aspects of the child's well-being and daily life with the child at age 4, 7, and 11 years.

As expected, parents with authoritarian parenting values (including the proxies thereof in terms of a firm hand and instill respect) tend to be much stricter by using more physical and verbal punishment in the upbringing of their child (Table A.6). In contrast, parents with permissive parenting values (including empathy with the child) punish their child less compared to authoritative parents (the reference group). Similarly, compared to authoritative parents, authoritarian parents spend less and permissive parents spend more quality time with their child. For quality talking, we only observe increased involvement for parents valuing empathy with the child at age six months. These broad patterns are both observed for mothers and fathers. Thus, parents with different child-rearing values have different parenting practices, especially in terms of the way in which they teach their child how to behave.[33]

In addition to this validation exercise, we also use the DALSC sample to replicate the moderation analysis in the main sample. The DALSC data do not, however, include our intertemporal choice question. As a coarse proxy for time preferences, we instead use a standardized index measuring impulsivity.[34] One caveat concerning this measure is that mothers and children were asked the impulsivity questions contemporaneously when the children were 15 years old. In other words, similar to previous studies on the intergenerational correlation of preferences, we cannot rule out the possibility of reverse causality. Moreover, unlike the main sample, we can only say something about the correlations between mothers' and children's preferences. Yet, using the DALSC sample adds two advantageous features to the main analysis. First, it allows for a replication of intergenerational correlations and its moderators within another domain of time preferences between mothers and children. Second, the DALSC contains much more

[33] Table A.7 further shows correlations between parenting values and maternal educational expectations for the child and splits quality time into educational and non-educational.

[34] Epper et al. (2019) document a strong and significant association between experimentally elicited patience and survey-measured impulsivity in a representative Danish population data set with 14,191 individuals.

Table A.7
Validation of parenting values and practice.

	Mother's expectation for child ed (1)	Child edu performance very important (2)	Non-Ed Quality Time (3)	Ed Quality Time (4)
Panel A: Maternal values at child age 4 years				
Authoritarian	−0.40***	0.05***	−0.05	−0.09***
	(0.08)	(0.02)	(0.03)	(0.03)
Permissive	0.01	−0.04**	0.05	0.01
	(0.08)	(0.02)	(0.03)	(0.03)
Observations	3874	4033	5035	5036
Average	14.37	0.52	−0.00	−0.01
Panel B: Maternal values at child age 4 months				
A firm hand (0–1)	−0.10	0.05	0.03	−0.03
	(0.14)	(0.03)	(0.05)	(0.05)
Instill respect (0–1)	−0.41***	0.11***	−0.04	0.04
	(0.15)	(0.03)	(0.06)	(0.06)
Empathy with child (0–1)	0.37	−0.10	0.22*	0.38***
	(0.30)	(0.06)	(0.12)	(0.12)
Observations	3773	3938	4861	4862
Average	14.37	0.52	−0.00	0.01
Panel C: Paternal values at child age 4 months				
A firm hand (0–1)			−0.10	−0.09
			(0.06)	(0.06)
Instill respect (0–1)			−0.12*	−0.14**
			(0.07)	(0.07)
Empathy with child (0–1)			0.39***	0.39***
			(0.10)	(0.10)
Observations			3276	3273
Average			−0.00	0.03

Note: Danish Longitudinal Survey of Children (born in 1995). Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Each panel–column represents the results from one regression. All models control for mother's and father's length of education and age at childbirth, child gender, birth order, and indicators for size of town of residence at birth, indicators for missing observations on the former controls, and indicators for the number of times the outcome variable was measured. *Mother's expectation for child ed* represents the mother's expectation at child age 15 years of the child's highest educational attainment measured in years. *Child edu performance very important* is an indicator for the mother answering at child age 15 years that it is very important for her that the child performs well in school. *Non-Ed Quality Time* and *Ed Quality Time* are measured at age 7 and 11 for both parents and is the mean of the first component from a principal component analysis at each child age.

detailed measures on parental involvement than the DLSY and therefore serves as a robustness check of the specification and measure of parental involvement in the main sample.

A.2.1. DALSC index constructions

Physical and verbal punishment The survey question is: *It's different what parents do when they want to teach children what's right and wrong. I now mention different ways to do it and would like to hear how often you react in these ways (weekly/rarely/never)*. *Physical Punishment* is the mean of the first component from a principal component analysis at each child age by parent gender and includes answers to: *I emphasize that something is wrong by grabbing the child firmly*, *I mark something is wrong by giving a slap over the fingers*, *I spank the child*, and *I slap the child*. Similarly, *Verbal Punishment* is the mean of the first component from a principal component analysis at each child age by parent gender and includes *I scold the child*, *I tell the child that it has done something wrong*, *I send him/her into their room*, and *I say he/she cannot do something that he/she would like to*. Fathers answer only these questions when their child is age 7 and 11.

Quality talking The exact topics of discussion are (with the age at observation in parenthesis): the child's own activities at kindergarten/day-care (4); the child's planned activities at kindergarten/day-care (4); activities at school and after-school care, out-of-school activities (7/11); relationship to other children (4/7/11); relationship to teachers and after-school care staff (4/7/11); physical well-being (4/7/11); and mental wellbeing (4/7/11). Fathers only answer these questions at child age 7 and 11 years.

Impulsivity The impulsivity measure is based on eight questions asked to elicit hedonic behavior; respondents answered each question on a five-point Likert scale (ranging from *"Fits very well"* (1) to *"Does not fit at all"* (5)). We construct the index by adding the points from each question, reversing the values for some of the questions, such that a higher value always represents more-impulsive behavior. We standardize the index for children and mothers separately, with a mean of zero and a standard deviation of one. The question is *"How well does it describe you?"* and the eight statements are: (1) You may run a risk, otherwise it will be too boring (−), (2); It annoys you to be late for appointments (+), (3); When listening to your favorite music, you often lose any sense of time and place (−), (4); You can say no to temptations when you know there is work to be done (+), (5); You take every day as it comes, rather than planning (−), (6); You often act impulsively (i.e. without making plans) (−), (7); You often follow your heart rather than your head (−), and (8); You finish your things on time by making progress at all times (+). Note

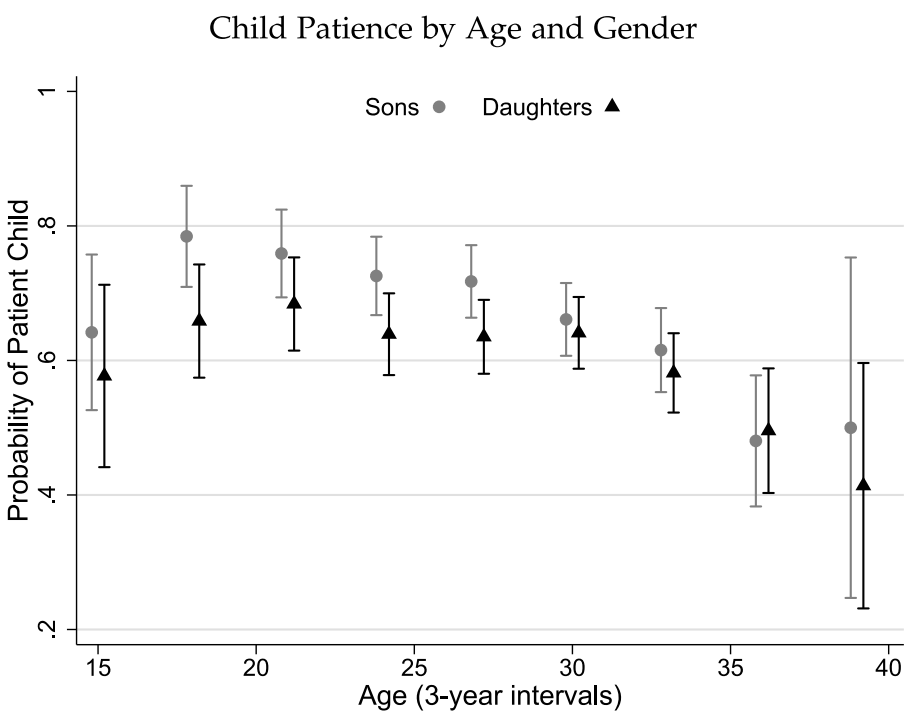

Fig. B.1. Child patience by age and gender. *Note*: This graph illustrates the share of patient children by age and gender. Age is shown in 3-year intervals. The whiskers represent the 95 percent confidence interval.

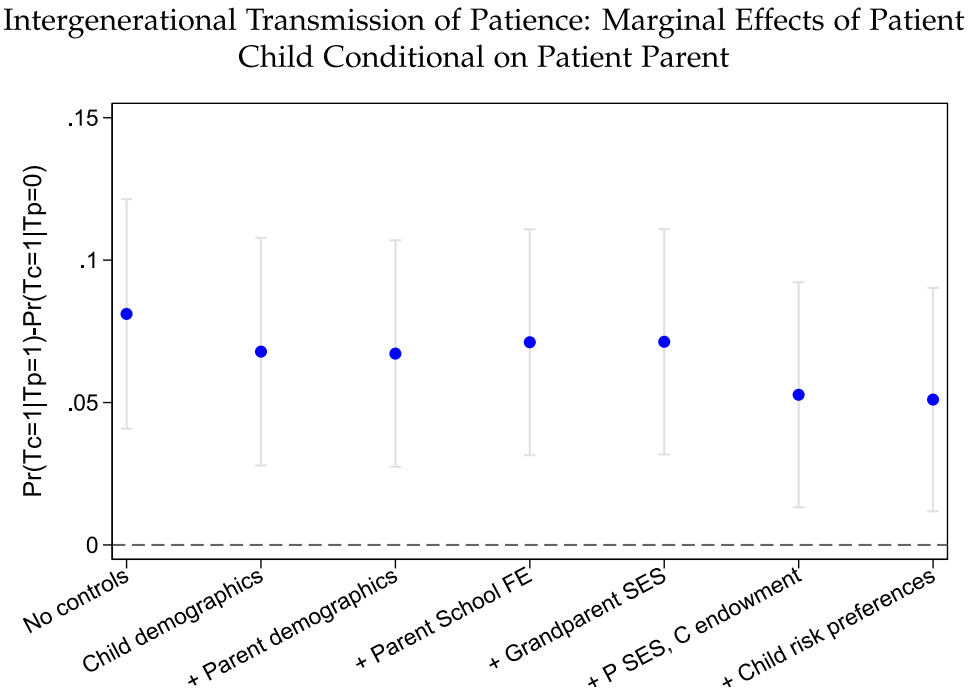

Fig. B.2. Intergenerational transmission of patience: Marginal effects of patient child conditional on patient parent. *Note*: Each blue dot presents the results from separate regressions and illustrates the marginal effect of observing a patient child conditional on having a patient parent, with the gray whiskers representing the 95 percent confidence interval. Observations: 3101; Average of T_c: 0.648. The outcome variable indicates whether the child is patient (1) or not (0). Each model is estimated by probit. The legend explains the controls included in each model; the sets of controls correspond to the ones in Table 2.

that our measure of impulsivity is considerably richer than the one-question impulsivity measure widely used in surveys (see e.g. Epper et al. (2019)).

Appendix B. Tables and figures

See Figs. B.1, B.2 and Tables B.1–B.6.

Table B.1
Literature on transmission of time preferences.

Article	Type of measure	Measure	Sample (#, age)	Delay between parent and child measurement	Main findings	Comment
Andreoni et al. (2017)	Experimental	Choice lists with tradeoffs between today and tomorrow (children) or five weeks (parents). Candies (children) or money (parents) outcomes. For children, parents handed over the candies at the due time.	1265 children (the majority in a single wave) (ages 3 to 12). 643 parents.	Simultaneous measurement. Last measurement of parents time preferences with a short delay.	No significant intergenerational correlation.	Result could be due to the vast differences between the tasks and outcomes administered to children and parents.
Bartling et al. (2010)	Experimental	Intertemporal choices over money (mothers; delays of 6 and 12 months) and gummy bears (children; later today, tomorrow, or the day after)	270 children (ages 5–6) and their mothers, i.e. no fathers	Simultaneous measurement in separate rooms	Children of more patient mothers are more likely to be patient. Only significant correlations for the near-present tradeoffs	Only weak evidence; small sample
Kosse and Pfeiffer (2013)					Mothers' and children's preferences for immediate gratification (present bias) are positively correlated (a decrease in maternal present bias by 1 SD increases the probability that the child is patient by about 7.3 percent; 78 percent of children are patient). No significant correlation between mothers' and children's impatience.	Use data described in Bartling et al. (2010).
Brown and van der Pol (2015)	Survey question	Question on planning horizon as a proxy for time preferences	Panel data from Household Income Labor Dynamics of Australia (HILDA), 6 waves; children: 2757 (male) + 2555 (female); parents: 2965 mothers + 2338 fathers; analysis restricted to young adults (age 16–25) and both parents; examine all four dyads	Have data from 6 waves over 8 years; compare transitions in answer categories from one to next year and find relatively stable responses; do not explore persistence of transmission, however.	Support for transmission of time preferences; children of mothers (fathers) with long vs. very short planning horizon are themselves 3–5 (2–4) percent more likely to have a long planning horizon.	Hypothesize correlation of planning horizon and discount rate
Chowdhury et al. (2022)	Experimental	Choice lists with tradeoffs between next day vs. 3 weeks (children), 3 months (all) or 1 year (parents)	Household sample from Bangladesh; relatively poor families; 911 children (age 6–17); 544 pairs of mothers/fathers	Simultaneous measurement in separate rooms	Significant correlation between mothers', fathers', and children's preferences (around 0.15 SD).	Relatively homogeneous sample; SES has only limited predictive power for children's preferences
Gauly (2016)	Survey question	Patience question of the German Socio-Economic Panel (SOEP)	2395 "children" for whom it was possible to identify biological parents; age not reported	Simultaneous measurement (same year of SOEP)	Parents transmit own attitudes to children via direct socialization. Find lowest correlation (of all measures) for patience (0.05 SD between children and mothers; 0.09 SD between children and fathers), but large correlations between father–son and mother–daughter pairs.	Includes a measure of reciprocity and examines the persistence of the correlation across five years. Find weaker correlations when delay increases.

SD: standard deviation. This table restricts attention to studies eliciting time preferences or proxies of these. There is a larger literature focusing on other preference domains (see Section 1.).

Table B.2
Patience by cohort.

Age	Children		Parents	
	Percent	Observations	Percent	Observations
18	0.682	107	0.778	126
19	0.776	98	0.742	2285
20	0.730	122	0.692	312
Average	0.728	327	0.738	2723

Note: This table presents the share of patient children and parents by age at preference elicitation. The sample of parents consists of all original respondents who were 18–20 years old when they were interviewed, including individuals who did not end up having children at all or having children observed in the sample.

Table B.3
Ordered probit models: Intergenerational transmission of patience.

	Dependent variable: Child time preferences	
	(1)	(2)
Parent is very patient	0.178***	
	(0.063)	
Parent is medium patient	0.140**	
	(0.055)	
Parent is patient		0.154***
		(0.052)
Observations	3101	3101
Intercept Cut 1	−0.401	−0.411
	(0.347)	(0.348)
Intercept Cut 2	1.037	1.034
	(0.348)	(0.349)

Note: Standard errors in parentheses, clustered at the parent level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. The outcome variable indicates whether the child is impatient (1), medium patient (2), or very patient (3). Each column presents the results from separate ordered Probit regressions. Both models control for *Child demographics*, *Parent demographics*, *Parent School FE*, and *Grandparent SES*.

Table B.4
Parenting values by parenting styles.

	Authoritarian	Permissive	Authoritative
Independence	0.75	0.84	0.94
Tolerance	0.12	0.31	0.56
Imagination	0.08	1.00	0.00
Good manners	0.90	0.08	0.00
Thrift	0.04	0.01	0.04
Sense of responsibility	0.60	0.51	0.91
Obedience	0.17	0.02	0.00
Consideration for others	0.32	0.23	0.53
Observations	539	452	709

Note: For our three parenting style definitions, each column shows the share of parents with the particular style valuing each of the eight qualities parents can choose between (each parent could choose up to three). Each parent only appears once, although he/she might have multiple children observed in the survey.

Table B.5
Correlations between parental patience, values, involvement, and SES.

	Patient (1)	Authoritarian (2)	Permissive (3)	Involvement (4)
Panel A: Raw correlations				
Authoritarian	−0.059***			
	(0.021)			
Permissive	0.007	−0.314***		
	(0.024)	(0.021)		
Involvement	−0.001	−0.057***	0.033**	
	(0.012)	(0.015)	(0.015)	
SES	0.059***	−0.062***	0.037***	0.008
	(0.014)	(0.014)	(0.013)	(0.035)
Panel B: Conditional correlations				
Authoritarian	−0.050**			
	(0.023)			
Permissive	−0.013	−0.283***		
	(0.027)	(0.023)		
Involvement	−0.012	−0.056***	0.027	
	(0.014)	(0.016)	(0.016)	
SES	0.051***	−0.036**	0.008	−0.006
	(0.013)	(0.014)	(0.016)	(0.041)

Note: (Clustered) standard errors in parentheses (at the school level) in Panel A (Panel B). * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Each row column presents the results from separate regressions, with the variable in the column being the dependent variable. All models are estimated by OLS. Panel A shows the raw correlations, while the correlations shown in Panel B include *Parent demographics*, *Parent School FE*, and *Grandparent SES* (see the table note in Table 2 for details). The level of observation is the parent.

Table B.6
Linear combinations of estimates for Panel B of Table 5.

Linear combinations of estimates	Estimate	P-value
Panel A: Model 1		
Parent is patient (T_p)	0.049	0.502
$T_p + T_p \times$ Authoritarian (A)	0.255	0.005
$T_p + T_p \times$ Permissive (P)	0.184	0.074
$T_p + T_p \times$ Involvement (I)	0.150	0.064
$T_p + T_p \times F_p$	0.002	0.984
$T_p + T_p \times F_p + T_p \times \mathrm{A} + T_p \times F_p \times \mathrm{A}$	0.022	0.817
$T_p + T_p \times F_p + T_p \times \mathrm{P} + T_p \times F_p \times \mathrm{P}$	0.254	0.012
$T_p + T_p \times F_p + T_p \times \mathrm{I} + T_p \times F_p \times \mathrm{I}$	−0.020	0.848
$T_p + T_p \times F_p$	−0.051	0.502
$T_p + T_p \times S_c + T_p \times \mathrm{A} + T_p \times S_c \times \mathrm{A}$	0.112	0.283
$T_p + T_p \times S_c + T_p \times \mathrm{P} + T_p \times S_c \times \mathrm{P}$	−0.090	0.340
$T_p + T_p \times S_c + T_p \times \mathrm{I} + T_p \times S_c \times \mathrm{I}$	−0.033	0.691
$T_p + T_p \times S_c + T_p \times F_p + T_p \times F_p \times S_c$	−0.027	0.746
$T_p + T_p \times S_c + T_p \times F_p + T_p \times F_p \times S_c + T_p \times \mathrm{A} + T_p \times S_c \times \mathrm{A} + T_p \times F_p \times \mathrm{A} + T_p \times F_p \times S_c \times \mathrm{A}$	0.213	0.019
$T_p + T_p \times S_c + T_p \times F_p + T_p \times F_p \times S_c + T_p \times \mathrm{P} + T_p \times S_c \times \mathrm{P} + T_p \times F_p \times \mathrm{P} + T_p \times F_p \times S_c \times \mathrm{P}$	0.261	0.007
$T_p + T_p \times S_c + T_p \times F_p + T_p \times F_p \times S_c + T_p \times \mathrm{I} + T_p \times S_c \times \mathrm{I} + T_p \times F_p \times \mathrm{I} + T_p \times F_p \times S_c \times \mathrm{I}$	−0.182	0.101
Panel B: Model 2		
$T_p \times \mathrm{I}$	0.090	0.044
$T_p \times \mathrm{I} + T_p \times \mathrm{I} \times \mathrm{A}$	0.165	0.008
$T_p \times \mathrm{I} + T_p \times \mathrm{I} \times \mathrm{P}$	−0.041	0.659
$T_p \times \mathrm{I} + T_p \times F_p \times \mathrm{I}$	−0.142	0.022
$T_p \times \mathrm{I} + T_p \times F_p \times \mathrm{I} + T_p \times \mathrm{I} \times \mathrm{A} + T_p \times F_p \times \mathrm{I} \times \mathrm{A}$	−0.092	0.249
$T_p \times \mathrm{I} + T_p \times F_p \times \mathrm{I} + T_p \times \mathrm{I} \times \mathrm{P} + T_p \times F_p \times \mathrm{I} \times \mathrm{P}$	−0.101	0.080

Note: This table specifies the exact linear combinations of estimates shown in Panel B of Table 5.

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