The Preoccupied Parent: Household Choices under Low Income

Sergiu Burlacu* Anandi Mani† Piero Ronzani‡ Lucia Savadori‡

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Abstract

Poor children receive lower quality parental attention and have worse human capital outcomes. Is their parents' behavior a cause of their poverty, or its consequence? To address this question, we test a hypothesis based on the *psychological* impacts of poverty, rather than its effect on resources or knowledge: Financial concerns arising from low and uncertain incomes preoccupy poor parents, reducing their attention available for more important, but less urgent parenting tasks. In an online experiment, we study how being primed with financial concerns affects parents' purchase decisions, including responsiveness to discounts. We find that, in the absence of financial concerns, both low and higher income parents respond rationally to a discount on child learning products. However, under financial concerns, poorer parents alone prioritize purchase of immediate household needs over child learning. Within this group, this effect is driven by parents farther away from their last payday. Our results show that low parental attention to children can be a consequence of poverty, and why it may not be resolved with financial incentives.

JEL Codes: D11, D87, I14, I32, J24

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*FBK-IRVAPP; e-mail: *sburlacu@irvapp.it*

†University of Oxford

‡University of Trento

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1 Introduction

Being born into a poor family is a strong predictor of low human capital in a child's early years, and affects her outcomes throughout life (Garces et al., 2002). No doubt, access to fewer learning resources and the lower quality of the living environment play a role in these outcomes. However, ample evidence also shows that poor parents are less engaged with their children's lives: they have fewer conversations with their children (McLoyd, 1998), are much less likely to monitor how much television they watch or how they are performing in school, or to read to them at home (Evans, 2004).

Early childhood interventions developed to improve parenting practices do improve outcomes (Heckman et al., 2013), but even in the best of programs, the effects on parental engagement tend to fade out when the program ends (Gennetian et al., 2017). This cannot be explained by parents' lack of information or wrong beliefs about expected returns to investment in their children. Are such scant allocations of time and attention to children by poorer parents carefully considered, rational choices? Is it such choices that perpetuate poverty – or does poverty somehow push parents towards such choices? In this paper, we examine evidence for a hypothesis that suggests it may be the latter: that it is the mental burdens imposed by poverty itself that drives poor parenting choices and diminished attention to children.

Such a view draws on recent work which documents how poverty diminishes mental capacity, limiting an individual's ability to focus on issues other than pressing immediate concerns (Mullainathan and Shafir, 2013; Mani et al., 2013). When a parent is one missed rental payment away from eviction, juggling mounting expenses with irregular incomes, financial worries can be all-consuming. This could leave her will little mental bandwidth to cope with anything other than her family's immediate needs – hence relegating less urgent (even if very important) everyday actions such as talking to her children or playing with them, to the periphery. When a person is continually walking a financial tightrope, the cumulative impact of recurring crises on such everyday parenting choices could be considerable.[2]

The present study aims to examine how such psychological challenges of poverty (also referred to as the 'Scarcity' hypothesis) could affect parents' resource allocation choices across competing household priorities. We are also interested in how such challenges may affect parents' response to commonly used policies to encourage investments in children, such as financial subsidies. To address these questions, we examine budget allocation choices of parents with young children across competing household priorities: basic needs of the family, needs of the children and of the parents themselves.

Our experimental study was conducted in the UK with parents having young children under the age of four. Parents were tasked with allocating a household budget across three cate-

[2]For instance, evidence shows that slower growth in the productive vocabulary of two-year old children over time is largely accounted for by more limited conversation initiated by their mothers (Hoff, 2003).

gories of products offered for online purchase. Our study used a 2 x 2 cross-cutting study design that sequentially combined a psychological intervention, with an economic one. Participants made their purchase decisions under one of the four resulting treatments, to which they were randomly assigned.

The psychological intervention, to which participants were first exposed, aimed to mirror challenges they face in their daily lives that could trigger financial concerns. Equal numbers of participants were randomly assigned to one of two sets of hypothetical scenarios that varied in the intensity of the financial challenge they entailed (Easy or Hard, adapted from Mani et al. (2013)). They were asked to reflect on how they would cope with these challenges, hence priming financial worries during such reflection. The idea behind these psychological treatments was to mimic financial situations British families commonly experience in their daily lives, some of which would be especially worrisome for lower income households. After parents had responded on how they would cope with these situations, they were asked to allocate a budget of £30 across three categories of products: (i) groceries and household essentials (ii) books and toys for their child and (iii) treats/luxuries for parents. The economic intervention, embedded within this task, consisted of a 50% discount on the products for children; this too was randomly offered to half of the participants.

Given our interest in examining 'Scarcity' effects, two features of the products we offered are worth noting. First, the product categories were chosen to capture tradeoffs across competing household priorities with different time horizons: i.e. immediate/urgent household needs, investments in children with longer term benefits, and short-term gratification for parents. Second, given our interest in understanding how much attention parents devote to their children, the products for children were specifically selected to require parental input for effective use. The overall aim of the combination of interventions described above was to examine whether and how financial worries affect parents' purchase priorities (e.g. between immediate versus longer term goals) and whether subsidies for investments in children mitigated any adverse impacts of these worries.

Examining the purchase decisions of low versus higher income British parents across these different experimental treatments, we find some striking results[3] When offered the 50% discount under low financial pressure, both poor and richer parents respond enthusiastically to it by spending more on books and toys for their children. In fact, low income parents offered the discount spend double of what other poor parents do, with no discount. However, when this discount is offered after exposure to high financial pressure scenarios, lower income parents change their purchases significantly: they reallocate more of their budget to their family's immediate needs (groceries) away from investments in their child's development. They also cut back on luxuries for themselves. In contrast, high financial pressure does not really affect the purchases of higher income parents offered the discount at all; if anything, they take more advantage of the discount, by spending

[3]The income categories were split based on sample median income adjusted for household size (dividing by its square root).

slightly more on child learning products, on average.

When a family's finances are a tightrope walk, its resources are likely to vary considerably between the beginning versus end of each payment cycle.[4] Recent literature in economics has used differences in financial strain before versus after monthly paydays, to study the impact of poverty on cognitive function (Carvalho et al., 2016; Mani et al., 2020). Using a similar approach, we investigate if the treatment effects described above vary by time since a parent's last paycheck. Indeed, we find this to be the case. Among low-income parents exposed to greater financial concerns, it is parents further away from their last payday who reallocate their budget away from children to more basic needs. Poor parents who've just got paid are unperturbed by such concerns; they take full advantage of the discount, and spend more on their child. For each additional day gone by since their last payday, exposure to financial worries (under the Hard treatment) triggers less spending on children and more on groceries.[5]

Both sets of results above provide clear evidence of *scarcity* effects: financial worries cause poorer parents to focus (or *tunnel*) their attention on their family's basic and immediate needs, prioritizing these over less urgent (even if important) investments in their child's development. We note that the difference in poor parents' response to the discount under less versus more challenging financial scenarios is not rational: they cut back on investments in their child in response to purely hypothetical financial scenarios, with no informational content. It is as if groceries become Giffen goods for poor parents because financial worries make them *feel* poorer.[6]

Our paper make three key contributions. First, it shows that preoccupation with financial concerns could be one important factor that explains poor parents' low (and somewhat erratic) engagement with their children. In doing so, it adds value to the vast literature on child development and human capital formation. (Heckman, 2006; Heckman et al., 2006; Cunha et al., 2010; Attanasio, 2015; Almond et al., 2018), in particular by offering a fresh perspective on the determinants of parental investment in children (Bettinger et al., 2021; Madeira et al., 2020; Attanasio et al., 2020).

Second, it contributes to the literature on the adverse cognitive impacts of poverty (Mani et al., 2013; Mullainathan and Shafir, 2013), by providing concrete evidence of how scarcity affects one of the most important domains of real-world behavior, i.e. parenting (Madeira et al., 2020; Kaur et al., 2019; Burlacu et al., 2020). While these papers all examine real-world outcomes, the paper closest to our work among these is Madeira et al. (2020), which also examines parenting

[4]For instance, 52% of Britons with family responsibilities reported being unable to make ends meet for a full month. (Office of National Statistics(ONS)– Wealth and Assets Survey of Great Britain, April 2018-September 2019.

[5]Such shifts in parent's priorities and attention away from their children around payday may partly explain the 40% higher incidence of disciplinary events at school among children of food stamps recipients at the end of the month (Gennetian et al. (2011)).

[6]We find no impact of financial pressure on the behavior of poor or richer parents, in the absence of the discount. This could be partly attributed to a floor effect given that 55% of poor parents and 38% of richer parents who face Easy financial scenarios do not invest in children's learning products.

choices.A nice feature of their work is that they show how financial pressures result in *inefficient* parental decisions (over text reminders about schooling). Unlike their focus on efficiency, our findings here trace not just the reduction in the household budget for child investments, but also its reallocation to pressing household needs. In this domain, our findings on parental purchases also contribute to the literature on how financial constraints affect consumer choice(Shah et al., 2018). Our findings on such adverse cognitive effects of financial worries are also significant given knock-on effects of low cognitive ability in other domains, for instance on cooperation(Proto et al., 2019) and technology adoption(Barham et al., 2018).

Finally, from a policy perspective, our results show why financial subsidies for children's learning may not always achieve the desired effects: because parents are preoccupied with financial concerns. In the context of the education literature, this finding explains why parents may inefficiently choose not to prioritize children's learning, for instance by withdrawing household resources from schooling in response to subsidies(Pop-Eleches and Urquiola, 2013; Das et al., 2013). An important policy implication is the the value of behavioral tools (such as text reminders, goal-setting, and social rewards) instead of financial incentives, to help low income parents offer consistent attention to their children.[7] Recent interventions using such behavioral approaches show promising results on parental engagement and child educational outcomes.[8]

This paper is structured as follows. Section 2 discusses the empirical design, Section 3 describes the data and key variables of interest. Section 4 presents the main results and heterogeneous treatment effects. Finally, Section 5 concludes the paper.

2 Experimental Setting

2.1 Experimental Setting

We conducted our study in the United Kingdom (UK) using an experimental platform called Prolific (Palan and Schitter, 2017). Prolific is a rapidly growing online service that facilitates social science research, offering nationally representative samples of participants according to the research questions of interest (Peer et al., 2017).

Given our interest in decision-making by poor parents in the UK, our eligibility criteria for participants were that they should (i) be UK residents (ii) with an annual household income below £50,000 and (iii) a child under 4 years of age. Restricting household income to below £50,000 meant that we oversampled people from the lower end of the UK household income spectrum. As a result, we ended up with a sample where the median income matches that of the UK (£28,000) – but the mean income (also at £28,000), is somewhat lower than the UK mean for 2018 (£33,800). We picked the 0-4 age group for children because (i) it is widely emphasized as the key period in a

[7] See Gennetian et al. (2017) and Gennetian and Shafir (2015) for a nice articulation of this point.

[8] See for instance, (York et al., 2018; Mayer et al., 2019; Bettinger et al., 2021).

child's development and (ii) parents' behavior has a larger influence on this process since children spend more time with them in this pre-school phase.

2.2 Experimental Design

Our aims is to understand how financial pressures affect resource allocation decisions of poor parents. Our underlying hypothesis is that scarcity can affect their perception of tradeoffs between competing family priorities, for instance between urgent short-term needs versus longer-term goals. To test this hypothesis, our experiment examines parents' online purchase decisions across three types of goods: those that cater to basic household needs, to children's (cognitive and emotional) development and to parents' own well-being. We also examine parents' responsiveness to typical policies used to encourage investment in children.

Our experiment adopts a 2×2 design that has two key features: (1) equal shares of participants randomly exposed to easy versus hard hypothetical scenarios, where the latter could trigger greater financial worries and (2) a 50% discount on the price of child investment goods, again randomly offered to half the participants. The discount represents a common type of financial subsidy that poor parents may be offered to encourage higher learning inputs for their child.

Our experimental design thus results in parents being randomly assigned to one of four groups, as described below:

1. **Easy Scenarios (Easy)**: exposed to easy financial scenarios and baseline prices.
2. **Hard Scenarios (Hard)**: exposed to hard financial scenarios that could trigger financial worries and baseline prices.
3. **Discount:** exposed to easy financial scenarios and 50% discount on child investment goods.
4. **Hard Discount:** exposed to hard financial scenarios and 50% discount on child investment goods.

Next, we describe the details of financial scenarios used to trigger financial worries and the financial subsidy (discount).

Financial Scenarios: Parents were asked how they would cope with each of 3 hypothetical scenarios involving shocks to real income. Two of these shocks were adapted from Mani et al. (2013) and the third shock was one that specifically pertained to parents. The first scenario described a drop in real income due to higher prices of basic necessities; the second one described an unanticipated expense; the final scenario described an increase in the cost of childcare in the UK. What differed between Hard ('Hard' and 'Hard Discount') versus not ('Easy' and 'Discount') was the severity of the price/cost increases and income shock that participants were exposed to[9].

[9]The order of the scenarios was randomized at individual level. The scenarios, the complete instructions and screenshots of the experimental market are available in Appendix B.

Parents responded with free-form answers on how they would cope with each of these scenarios. They also answered two questions on how worried they were about (i) their current financial condition and (ii) being able to find money, for which the answer options were coded using Likert scales. The latter serve as outcomes to check if our experimental manipulation successfully triggered higher financial worries among participants exposed to Hard scenarios.

Household Purchases Task: Upon completing their responses to the three financial scenarios, parents were presented with the main task of interest: to allocate an experimental budget of £30 across three types of goods: (i) educational goods for children (ii) groceries and (iii) luxuries (i.e. treats for themselves)[10]. We use educational goods as a measure of parents' investment in their children, groceries are a measure of essential family needs and luxuries (non-essential items) as treats or indulgences of parents for themselves.

For the first of these three categories of goods, i.e. educational goods for children, we consciously chose only goods that require parental engagement for the children in the 0-4 age group to enjoy them, e.g. picture, story and activity books and educational games. In other words, the goods offered were not substitutes for parental attention, but at least a partial proxy for it. We also chose to offer only goods that parents were very familiar with; this was to rule out the risk of goods not being purchased because parents lacked a sense of their value for their child's development. The price of these educational goods ranged from £3.5-£5.5 for most books and £4-£10 for the educational games. Half the participants received a 50% discount on all (child) investment goods. They were informed in the task instructions that some of the goods would have a 50% discount on the retail price. On screen, they saw the old price crossed out and the new price written right next to it.

For groceries, participants could choose from a wide selection of goods, including basic foods and cooking supplies (e.g. cereals, meats, milk, cooking oils etc.) as well as cleaning and hygiene products from one of UK's major low cost retailers. We chose brands that were most often purchased by online customers of this retail store, with prices ranging from less a £1 to £6.

For luxury goods, we offered branded coffee, perfumes, sun glasses and some other products that parents could exclusively consume. The prices for these goods were higher, ranging from £5.5 to £27, which allowed us to examine how financial pressures affect parents' susceptibility to (costly) temptations. Due to ethical consideration, we could not include goods most typically associated with temptation such as tobacco and alcohol.

In total, we offered 66 different items, which constitutes a considerable variety. The order of the categories of goods and the order of goods within each category, was randomized. We chose not to randomize across all goods irrespective of category, so as to avoid high search costs for the study participants. As in a typical online retail store format, participants could observe the name,

[10]To avoid the trouble of spending exactly £30 which would require cognitive effort and may results in the choice of some products just to reach the required value, we allowed a lower limit of £28 to proceed further with the survey. The remainder from £30 was transferred as bonus payment on Prolific.

price and picture of each good. By clicking on any picture, they could get all the information that is typically provided by retailers. The range of goods, the online retail store format and their offer at actual market prices, all served to make the experimental task very realistic. Further, participants were incentivized to take the task seriously with a one in 100 chance of receiving the actual goods they chose, as in the experimental design in Carvalho et al. (2016). They were also paid at an hourly wage rate set to the U.K. minimum wage, for taking part in the survey.

Interpretation of Experiment Outcome Differences across Treatments

The difference in outcomes between the first two treatments (Easy versus Hard) aimed to capture how financial worries affect parents' investment in their child's development, relative to other basic household needs and items for their personal enjoyment. The difference between treatments (1) and (3) (Easy versus Discount) captures the effect of being offered the 50% discount on parents' investment in the child's development; it tests participant's responsiveness to price discounts (or price elasticity of demand). Finally, comparing the last two groups ((3) and (4)) (Discount versus Hard Discount) captures how parents respond to financial incentives (i.e. discounts) that encourage them to invest in their child's development, when under financial pressure versus not. The experiment was pre-registered on the American Economic Association's registry for randomized controlled trials (ID number AEARCTR-0003026).

Further Considerations: A few additional concerns come to mind, with regard to the experimental design outlined above. One potential concern is that parents' purchase decisions may not reflect their true preferences – either if there is scope to reallocate their expenditure budget outside of the experiment, or opportunities for resale of those purchased within the experiment. However, such concerns would not explain differences in outcomes across different experimental treatments. Another concern, with the educational goods requiring parental time inputs. While we consciously chose these so as to be a good proxy for parent's engagement with their child, we do not observe parents' actual actions after purchase. In this sense, their purchase reflect their intention to engage with their child rather than their actual engagement. However, such a concern about the distinction between use and intent to use could equally be applied to other goods not requiring a time input, that are purchased in any experiment.

3 Data Description

All participants who registered on Prolific's website are required to fill in an extended baseline survey, which gave us access to a rich set of demographics. We also gathered information at the end of our experiment on income, family size and labor market outcomes (since these could have changed since participants registered), together with additional information on financial strain and access to credit. We obtained a sample of 349 participants on Prolific's platform whose profile fits our eligibility criteria specified at the beginning of section 2.1.

Table 1 presents data on key participant characteristics and balance checks for these variables across the different treatment arms. As mentioned earlier, the median annual household income in our sample (at around £28,000) approximates the UK median income in 2018; since we did not sample participants with annual income over £50,000, the sample mean here falls bellow the UK average of £33,800 in the year 2018. 13% of household have yearly incomes below £13,000. The average age of people in our sample is 31 years, roughly 50% completed higher education and 59% are employed either full or part time. The average number of household members and children is 3.8 and 1.9 respectively. The average age of the youngest child is 22.7 months, 53% of them girls. In 34% of the households, there is more than one child in the targeted 0-4 age group.

Table 1: Descriptive statistics and Balance Checks

	Easy	Hard	Discount	Hard Discount	p-value
	(1)	(2)	(3)	(4)	(5)
Child gender (Male)	0.43	0.53	0.44	0.50	0.56
Age in months	21.31	23.00	22.84	23.80	0.43
No formal childcare	0.46	0.41	0.45	0.44	0.92
Any sibling bellow 4	0.35	0.33	0.36	0.34	0.97
Age of parent	30.92	31.99	31.74	31.39	0.54
Gender of parent (male)	0.09	0.14	0.24	0.23	0.02
Completed higher education	0.51	0.45	0.47	0.55	0.60
Student	0.12	0.06	0.03	0.05	0.08
Nationality UK	0.89	0.95	0.90	0.92	0.47
Country of birth UK	0.88	0.93	0.90	0.88	0.75
Language English	0.93	0.95	0.94	0.93	0.93
Household size	3.98	3.65	3.97	3.80	0.20
Number of children	2.02	1.79	2.02	1.88	0.43
Spouse or cohabiting partner	0.89	0.88	0.88	0.92	0.81
Yearly income per adult equivalent	14.27	14.73	15.06	15.48	0.65
Yearly household income	27.85	27.78	29.17	29.72	0.66
Material Deprivation	-0.03	0.07	0.04	-0.05	0.56
Perceived SES (1-10 ladder)	4.81	4.76	4.76	4.92	0.91
Parent is employed	0.53	0.56	0.64	0.64	0.30
Spouse is employed	0.72	0.75	0.76	0.76	0.94
Any payments received in past month	0.61	0.71	0.67	0.58	0.27
Any payments received in past month (spouse)	0.59	0.77	0.70	0.54	0.02
Days since last payment	12.50	11.48	13.47	13.33	0.66
Has a credit card	0.68	0.74	0.64	0.69	0.61

Note: Columns (1) - (4) show the means across treatment arms. Column (5) displays the p-value associated with the F test of join orthogonality across treatment arms. Easy indicates participants exposed to easy scenarios. Hard indicates participants exposed to hard scenarios. Discount indicates participants who received a 50% discount on child investment goods after being exposed to easy scenarios. Hard Discount indicates participants who received a 50% discount on child investment goods after being exposed to hard scenarios. Yearly household income is computed by dividing total yearly household income by the square root of household size. Material Deprivation is computed by averaging and standardizing the incidence of several income shocks in the previous year (not able to pay bills, rent, to afford heating, skipped meals, took loans from payday lenders, sought financial help from family or friends).

The last column of Table 1 displays the p-value associated with the F-test for the joint equality of averages across the treatment arms. Out of the 22 variables considered, 3 differences are statistically significant at 10% or 5% levels: the percentage of fathers (in the Easy and Hard groups), the percentage of students (in the Easy group relative to the other groups) and the percentage of spouses reporting to have received payments in the past month (in the Hard and Discount groups).

Given that the main results of the paper are based on analysis by income subgroups, we report balance checks separately for the lower and the higher income groups in Table 5 in Appendix A. We find that the unbalanced variables are mostly driven by differences across treatment arms within the higher income group. For the lower income group, differences are smaller and none are statistically significant. Nonetheless, we include almost the full set of variables reported in Table 1 as controls throughout our data analysis, so as to improve the precision of our estimates[11].

Selective attrition can be of particular concern in online experiments, given that participants face lower social and psychological costs from dropping out than in lab experiments (Zhou and Fishbach, 2016; Horton et al., 2011). This is plausible in our experiment – for instance, the hard financial scenarios could have induced negative feelings while the discount could have added an extra incentive for participants to complete the study. This can become a concern if attrition becomes differential across treatment arms. Fortunately, we find no evidence of selective attrition in our experiment. Table 4 reports regressions for attrition by treatment status. 39 participants did not complete the study, corresponding to a 11% attrition rate, which is remarkably low for an online experiment (Zhou and Fishbach, 2016). Results in column (1) show that the decision to leave the survey is not different across treatment arms. Column (2) controls for the fact that some participants could not advance past a page where the code was not compatible with non-updated browsers or with browsers on which the survey link was not tested. The differences in attrition rates then become even smaller and more precise as well (with higher associated p-values)[12].

4 Results: How Financial Concerns affect Parents' Household Purchase Decisions

We begin this section by examining whether our experimental treatments had the expected impact on participants' worries about money (Subsection 4.1). Subsection 4.2 then presents our main results on parental purchase decisions. The next two subsections examine the heterogeneity of treatment effects described in Subsection 4.2, in ways that further articulate the key mechanisms

[11]The excluded variables are: the number of children (highly correlated with household size: Pearson correlation coefficient = 0.93), nationality and language given that they are almost collinear with country of birth, and yearly household size since we include its equalized value (divided by household size) (OECD, 2011)

[12]Participants were informed that the survey application was tested only on the major five browsers and that they should not participate if using other browsers. However, the platform did not allow us to screen out participants based on the browser or operating system used.

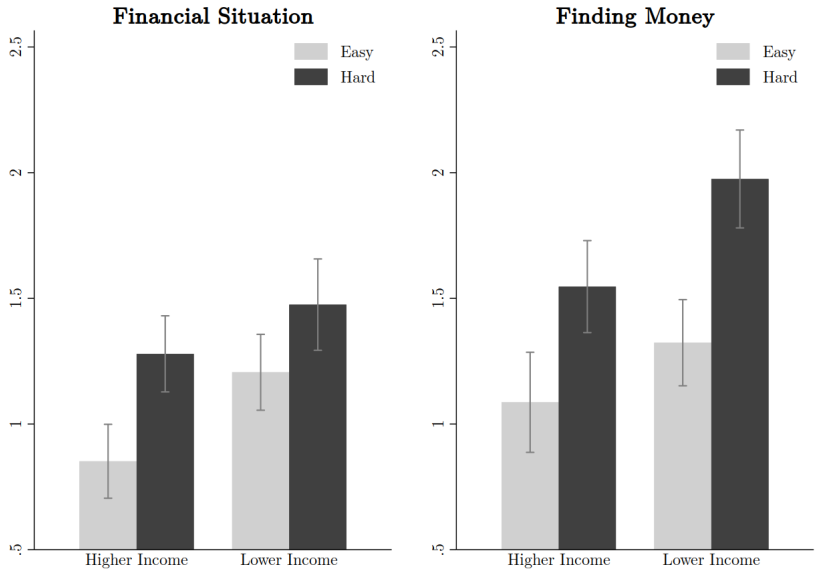
of interest.

4.1 Effects of Hypothetical Scenarios on Financial Worries

Two of our four treatments arms (Hard and Hard Discount) ask participants how they would respond to challenging financial scenarios. Our aim with these scenarios was to trigger worries commonly experienced by poor parents in their every day lives, in order to then examine how such worries affect their family resource allocation decisions. Participants' free-form responses on how they would cope with them provide qualitative evidence that the scenarios were perceived to be hard to overcome, requiring difficult sacrifices.

Following their free-form responses, we also tried to quantify the effect of these treatments, by asking participants how worried they were about (i) their financial situation and (ii) not being able to find money, on a scale between 0 and 3 (with 0 representing 'not worried at all' to 3 representing 'desperately worried'). The results are presented in Figure 1 which plots the means with 95% confidence intervals for the treated and control group, separately for the lower income and higher income groups (i.e. below and above median UK income, per adult equivalent).

Figure 1: Impact of Hard vs. Easy Hypothetical Scenarios on Financial Worries



Notes: The outcome variables in the figures are responses to the question (left figure): "How worried do you feel about your financial situation?" and (right figure): "How worried do you feel about not being able to find money in case you really need it?". Both variables are coded as: 0 "not worried as all", 1 "somewhat worried", 2 "very worried" and 3 "desperately worried". The bars indicate the means while the brackets indicate 95% confidence intervals. Easy/Hard indicates mean responses of individuals assigned to easy/hard financial scenarios respectively.

As seen in Figure 1, responses to both questions show a clear increase in worries among the participants exposed to the hard financial scenarios relative to the easy scenarios, that is

significant at the 1% level[13]. Although there is a rise in worries among both lower and higher income participants, the *level* of worries are consistently higher for the lower income group. In fact, with regard to their financial situation, we note that the worry levels of lower-income participants *not* exposed to the hard financial scenarios are already close to those of higher-income participants exposed to them. Given this, it is not so surprising that the increase in worry over their financial situation from being exposed to the hard scenario is not significantly higher for the lower income group.

4.2 Parental Purchase Decisions

To identify the causal impact of the the different treatments on the demand for the three types of household goods (investments, groceries and luxuries), we estimate the following model:

$$Y_i = \beta_0 + \beta_1 Hard_i + \beta_2 Discount_i + \beta_3 HardDiscount_i + \theta + X_i'\gamma + \epsilon_i$$

(1)

where Y_i is the amount (in pounds) expressed at baseline (i.e. no discount) prices, allocated by parent i on goods of a particular type. $Hard_i$ indicates being exposed to the hard financial scenarios and offered no discount. $Discount_i$ and $HardDiscount_i$ indicate being offered a 50% discount on child investment goods after being exposed to easy and hard scenarios, respectively. The Control (omitted) arm is exposure to easy financial scenarios with no discount (Easy condition). Note that $\widehat{\beta_3}$ indicates the difference in the outcomes between the Hard Discount condition and the Easy condition, therefore it should not be interpreted as an interaction term but as a separate treatment arm. θ are fixed effects for the order in which the categories of goods appeared on participants' screens during the task, while X_i is a vector of parent, child and household characteristics listed in Table 1 that can plausibly affect the purchase decisions. [14]. Throughout the analysis we use robust standard errors.

Table 2 presents ordinary least squares results, separately for the lower and higher income groups (below and above median income). The dependent variable in each column is the expenditure on one of the three types of goods in the household purchase task[15].) Also, since the dependent variable is censored, we run the main analysis using a Tobit model as a robustness check. The results are are qualitatively similar and stronger in magnitude – see Table 7 in Appendix A for details. . Some strikingly interesting patterns emerge.

[13]Table 6 in Appendix provides regression estimates for the impact of hard financial scenarios on worries across both income groups, controlling for child and household characteristics.

[14]This is as recommended by (Bruhn and McKenzie, 2009). In case of any pair of such variables were highly collinear, we dropped one of them. (Subsection **??** provides further details

[15]We estimate the equations for each of the three types of products as separate OLS regressions rather than as an SUR. There is no efficiency gain from the latter approach in our context, since the set of regressors is identical

Table 2: Treatment effects on demand for child investment goods, groceries and luxury goods

	Lower Income			Higher Income		
	(1)	(2)	(3)	(4)	(5)	(6)
	Investment	Groceries	Luxuries	Investment	Groceries	Luxuries
Hard (H)	-0.57	-0.44	1.11	3.14	-2.40	-1.19
	(1.93)	(2.02)	(1.38)	(2.32)	(2.33)	(1.19)
Discount (D)	7.39***	-1.57	0.71	5.38*	0.44	0.0095
	(2.73)	(1.99)	(1.21)	(3.02)	(2.27)	(1.29)
Hard Discount (HD)	1.90	3.79**	-1.37	7.82***	-2.74	1.61
	(2.51)	(1.71)	(0.84)	(2.54)	(2.07)	(1.43)
Easy Mean	7.14	20.00	1.95	6.40	20.59	2.13
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.04	0.07	0.01	0.02	0.07	0.14
Observations	182	182	182	167	167	167
p-values - Tests:						
$D = HD$	0.078	0.005	0.053	0.454	0.166	0.301
$H^{LI} = H^{HI}$	0.220	0.526	0.207			
$D^{LI} = D^{HI}$	0.621	0.506	0.695			
$HD^{LI} = HD^{HI}$	0.099	0.016	0.073			

Note: Estimates are obtained via OLS regressions. Robust standard errors in parentheses.*, **, *** denote significance at the 10%, 5% and 1% levels respectively. Outcome variables are expenditure on child investment goods, groceries and luxury goods, expressed in pounds at baseline prices. Higher/lower income group denote the upper/lower 50% of the sample income per adult equivalent distribution. All models control for individual and household characteristics, and for order in which the three types of goods appeared in the investment task. Hard indicates participants exposed to hard scenarios. Discount indicates participants who received a 50% discount on child investment goods after being exposed to easy scenarios. Hard Discount indicates participants who received a 50% discount on child investment goods after being exposed to hard scenarios. The first listed p-value is associated to the t-test of equality of the coefficients on the Discount group and the Hard Discount group. The p-values listed with the subscripts LI and HI test the equality of the coefficients from the regression on the lower income group (LI) and the higher income group (HI) estimated from models where each treatment assignment variable and each covariate is interacted with the income group dummy.

We begin by interpreting the findings for the lower-income group (columns (1)-(3)). Some of their responses are perfectly consistent with rationality, but not others. An instance of a rational response is how lower income participants respond to discounts on the educational (investment) goods for children (row 2): a 50% discount results in a strong substitution effect, with significantly more money allocated to the purchases of such goods. In fact, the increase in expenditure on such goods of over £7 is practically as large as the entire amount the control group spends on such goods (with no discount). There is no significant reallocation of the increased purchasing power from such a discount towards groceries or luxury goods.

In contrast, low-income participants respond very differently to this same 50% discount if they are exposed to Hard financial scenarios prior to the purchase task (Hard Discount treatment,

across regressions((Wooldridge, 2013), chapter 16

row 3). Here, we see that it prompts them to reallocate their increase in purchasing power from the discount more towards the family's basic needs, spending £3.79 more on groceries – and even cutting back £1.37 on luxuries for themselves. The increase of £1.90 on educational (investment) goods is not statistically significant. In other words, groceries become Giffen goods for poor families – not when a discount is offered on educational goods on its own, but only when they experience heightened worry through exposure to Hard financial scenarios, prior to the discount offer. The p-values reported at the bottom of the table (row 1, testing D=HD within income group) confirm this difference in the purchase decisions of the lower income group when exposed to Hard financial scenarios (p=0.078, 0.005 and 0.053 for child investment goods, groceries and luxuries respectively)[16].

The purchase behavior of higher income parents across the different treatments is notably different from that of the low income ones (columns (4)-(6)). Their response to the discount remains consistent, irrespective of exposure to Easy versus Hard financial scenarios (i.e. Discount versus Hard Discount treatment, rows 2 and 3): in both cases, the discount significantly increases their expenditure on child investment goods for their child's cognitive development (by £5.38 and £7.82 respectively). The discount does not affect expenditure on groceries or luxuries when preceded by Easy financial scenarios (i.e. Discount group) (£0.44 and £0.009 respectively). Estimates are larger in the Hard Discount group, showing a decreases in their expenditure on groceries (by £2.74) and an increase in luxuries purchases (by £1.61), although these latter changes are not statistically significant.

The contrast in the response of the two income groups within the Hard Discount treatment is striking (as confirmed by the p-values for tests of equality in their coefficients (bottom row, $HD^{LI} = HD^{HI}$; p = 0.099, 0.016 and 0.073 for child investment goods, groceries and luxuries respectively). It is indicative of a *scarcity* mindset triggered by financial worries which affects poor parents' decisions Shah et al. (2015): financial worries cause poorer parents to focus (or *tunnel*) their attention on their family's basic and immediate needs, prioritizing these over less urgent (even if more important) investments in their child's development, or luxuries for themselves.

Note that the difference in poor parents' purchase decisions across the Discount versus Hard Discount treatment is not rational: going from former to the latter treatment, their choices are altered by purely hypothetical financial scenarios, even though they carry no added informational content. In contrast, higher income parents' response to the discount is largely unaffected by challenging hypothetical financial scenarios because the greater slack in their financial budget mitigates their worries[17]

[16]There is also no discernible impact of being exposed to the Hard versus Easy financial scenarios on purchases in any of the three categories in either income group (row 1, columns(1)-(3) and (4-6)). This could be partly explained by floor effects: nearly half (47%) of low-income parents did not choose any investment goods at all. Negative treatment effects cannot be observed for participants who, in the absence of the treatment too, would have invested nothing on these goods.

[17]In Appendix A, Table 8, we report estimates of the main model interacting treatment with the continuous measure of income. Results remain qualitatively similar to those reported above, although precision is lower.

4.3 Heterogeneous Effects by Days Since Last Payment

According to Britain's Office of National Statistics(ONS) Wealth and Assets Survey for the period April 2018-September 2019, 52% of Britons looking after family and home reported being able to make ends meet for less than a month. It is thus likely that people in our sample too experience greater financial strain further away from their last payday. In this sub-section, we therefore examine how the impact of the experimental treatments differ by heterogeneity in the degree of financial strain, as measured by the time elapsed since participants' last payday[18]. This constitutes a further test of our underlying hypothesis on the psychological effects of poverty on parents' behavior.

We use a modified version of Equation (1) as our regression specification, by introducing an additional variable, the number of days since the last paycheck, as well as interaction terms with each of the treatment arms. We report results in Table 3. As before, the Easy condition remains the control condition. In this modified specification, the coefficients for the treatment dummy in any given row represent the average expenditure (in pounds) allocated to the three categories of goods, by parents in that treatment who participated in our study *on their payday*. The coefficients on the variable 'Days since last payment' represent the change in expenditure on individual categories of goods, by parents in the control (Easy) condition, for each additional day since their last payment. The interaction terms for individual treatments report the average change in the expenditure on each category of goods, the further away from payday that participants took part in our study. Our sample sizes in this table are lower because some parents reported not having received any payments in the past month[19].

Columns (1) to (3) in Table 3 report our findings for the lower income group. Note the similar magnitudes of the coefficients for Discount and Hard Discount (rows(2) and (3), column (1)). They indicate that exposure to financial worries in the latter treatment does not affect how lower income parents respond to the discount if they participated in the study on their payday - when they have just received income (Discount vs. Hard Discount coefficient: £13.2 and £11.6 respectively). However, the coefficient for the interaction term (Hard Discount x Pay) shows that, for each additional day since their last payment, parents primed with financial worries cut back their spending on educational goods for their child by 0.66 pence, on average and allocate 39 pence more to groceries instead (row 7, columns (1) and (2)). In other words, it is the combination of financial strain and worries under which poor parents react by narrowing their focus and

[18]As seen in Table 1, the distance to the last payday variable is balanced across the four treatment arms. This pattern holds for the lower and higher income group sub-samples as well.

[19]It is possible that some of these parents read the survey question as referring to payments in the past calendar month and not the past 30 days (the experiment was conducted between the 21st and 25th of June, 2018). It is plausible that at least some of them would have received payments in the latter days of the month. Our results are robust to including the full sample used in Table 2, by assigning several values (25, 30, 35 and 40 days) for the 'days since last paycheck' variable for these parents who reported not having received any payments in the past month. Please refer to Appendix A, Table 9 for these results. We note also that the variables reported in Table 1 are balanced for this smaller sub-sample of lower income participants too. Results available upon request.

Table 3: Heterogenous treatment effects by days since last payment

	Lower Income			Higher Income		
	(1)	(2)	(3)	(4)	(5)	(6)
	Investment	Groceries	Luxuries	Investment	Groceries	Luxuries
Hard (H)	-1.68	-1.47	3.44	3.58	-2.68	-1.50
	(2.49)	(2.86)	(2.43)	(4.44)	(4.57)	(2.85)
Discount (D)	13.2***	-8.13**	3.41*	10.9	0.91	-3.41
	(4.45)	(3.41)	(1.93)	(7.14)	(5.73)	(3.41)
Hard Discount (HD)	11.6**	-3.50	-0.18	7.45	-2.16	1.87
	(5.15)	(3.08)	(1.20)	(7.04)	(6.37)	(3.79)
Days since last payment (Pay)	-0.014	-0.039	0.011	-0.10	0.20	-0.081
	(0.22)	(0.21)	(0.12)	(0.21)	(0.21)	(0.10)
H × Pay	0.23	-0.092	-0.12	-0.22	0.14	0.059
	(0.23)	(0.25)	(0.16)	(0.28)	(0.28)	(0.15)
D × Pay	-0.31	0.44*	-0.24*	-0.16	-0.13	0.22
	(0.29)	(0.25)	(0.14)	(0.36)	(0.30)	(0.20)
HD × Pay	-0.66**	0.39*	-0.0043	-0.038	0.040	-0.045
	(0.30)	(0.23)	(0.12)	(0.39)	(0.34)	(0.18)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.12	0.04	0.02	-0.04	-0.01	0.06
Observations	130	130	130	123	123	123
p-values - Tests:						
$D = HD$	0.781	0.187	0.042	0.687	0.638	0.126
$D \times Pay = HD \times Pay$	0.284	0.848	0.041	0.798	0.614	0.148
$HD_{LI} = HD_{HI}$	0.631	0.849	0.606			
$(HD \times Pay)_{LI} = (HD \times Pay)_{HI}$	0.211	0.394	0.854			

Note: Estimates are obtained via OLS regressions. Robust standard errors in parentheses.*, **, *** denote significance at the 10%, 5% and 1% levels respectively. Outcome variables are expenditure on child investment goods, groceries and luxury goods, expressed in pounds at baseline prices. Higher/lower income group denote the upper/lower 50% of the sample income per adult equivalent distribution. All models control for individual and household characteristics and for order in which the three types of goods appeared in the investment task. Hard indicates participants exposed to hard scenarios. Discount indicates participants who received a 50% discount on child investment goods after being exposed to easy scenarios. Hard Discount indicates participants who received a 50% discount on child investment goods after being exposed to hard scenarios. The p-values with the subscripts LI and HI test the equality of the coefficients from the regression on the lower income group (LI) and the higher income group (HI) estimated from models where each treatment assignment variable and each covariate is interacted with the income group dummy.

their resources ('tunneling') to immediate needs (groceries) over important ones with longer term consequences(child development).

It is striking to note that in the absence of worry triggers (i.e. in the 'Discount' treatment) lower income parents are more responsive to discounts on child investment goods even farther away from payday. They sacrifice fewer resources for their child's development and cut back on luxuries for themselves to buy more groceries. As for higher income parents, we see no evidence whatsoever that their purchase decisions are affected by the time since their last pay check (columns (4) to (6)). This is consistent with fewer worries that come with greater slack in their financial budgets.

The above variations in parents' response to financial incentives *within* the Hard Discount treatment, as a function of the distance from their last payday, provide further evidence for how the *psychological* effects of poverty can reduce poor parents' engagement with their children. Also, while the child investment goods for children were chosen to require not just money but also time input from parents, these results confirm that it is worries associated with a lack of money, rather than a lack of time, that are influencing parents' purchase choices.

4.4 Policy implications

Our findings above offer a *behavioral* explanation for limited parental engagement with children in poor families children. In doing so, they point to one possible reason for the mixed success of early childhood intervention programs: greater focus on supply-side factors (i.e. more information and resources to parents) without greater consideration for what affects parents' investment in their children.[20]

The psychological impacts of poverty highlighted in our results suggest that we need interventions that can refocus parents' attention on their children, when they are challenged by limited mental bandwidth. One nice example of such an approach comes from Bettinger et al. (2021)'s work in Brazil. They find that a simple text reminder intervention to parents asking if they've spoken to their kids about schooling is effective in improving school attendance and test scores. In fact, it is no less effective than providing (more costly) child-specific information on school performance. This suggests that it is the ability to draw parents' attention to their child's schooling that matters.

However, a note of caution here is needed: a follow-up study by the same team in Brazil shows that when parents are plagued with financial worries, they are less likely to be make efficient investments in such reminders despite having experienced its benefits(Madeira et al., 2020). This accords with our findings here, that parents do not respond very well to financial incentives (discounts on child learning products) when faced with hard financial challenges. One possible response may be to use a bundle of behavioral interventions(reminders, goal-setting, and social rewards) rather than a single tool, as in the study by Mayer et al. (2015) in Chicago. Such an ap-

[20]See also Macours et al. (2012), (Gennetian et al., 2017) on this issue.

proach more than doubled the amount of time parents spent reading to their children in six weeks. Overall, the challenge of how to help parents remain engaged and attentive to their children in the midst of chaotic financial lives remains an ongoing one.

5 Conclusions

This paper examines how psychological challenges of poverty may contribute to the inter-generational transmission of poverty. In particular, we hypothesize that pressing financial concerns preoccupying poor parents could reduce their attention available for more important, but less urgent parenting tasks. This could affect how they allocate resources (time, money or attention) across competing household priorities, including their child's development. We investigate this hypothesis by studying purchase decisions of parents with young children in the UK. Parents were exposed to experimental conditions varying in levels of financial challenge and incentives(product price discounts).

We find that, in the absence of (experimentally triggered) financial concerns, both low and higher income parents respond rationally to a discount on child learning products. However, under financial concerns, poorer parents prioritize purchase of immediate household needs (such as groceries) over child learning products and also cut back on luxuries for themselves. In fact, we find that it the parents farthest away from their last payday who drive our results. Our results thus provide evidence that low parental attention to children can be driven by psychological (scarcity) effects of poverty. Such everyday parenting choices correlate with lower skills among children of low-income households, which may perpetuate poverty across generations.

Our results also suggest that these challenges may not be resolved with financial incentives for investment in children. One policy response here may therefore be the use of interventions such as text reminders and tracking goals, to increase poor parents' engagement. Nevertheless, it must be admitted that prioritizing immediate needs may sometimes be the efficient response to financial challenges, to avoid further family hardship. If so, behavioral solutions may not be adequate. Policies to provide adequate social safety nets that make basic family needs less psychologically burdensome may be needed to restore low income parents' mental bandwidth and attention to their children. The design of suitable policy interventions remains an area for further work.

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Appendices

A Appendix A

Table 4: Attrition by treatment status

	Completed the study	
	(1)	(2)
Hard	-0.012	0.026
	(0.046)	(0.033)
Discount	0.0038	-0.011
	(0.044)	(0.038)
Hard Discount	0.054	0.020
	(0.038)	(0.035)
Easy Mean	0.89	0.93
Observations	387	387
Exclude page with technical error on some OS	No	Yes

Note: Estimates are obtained via OLS regressions. Robust standard errors in parentheses.*, **, *** denote significance at the 10%, 5% and 1% levels respectively. The outcome variables is 1 if the participant completed the experiment. Hard indicates participants exposed to hard scenarios. Discount indicates participants who received a 50% discount on child investment goods after being exposed to easy scenarios. Hard Discount indicates participants who received a 50% discount on child investment goods after being exposed to hard scenarios. The constant gives the share of participants completing the experiment. Exclude page with technical error on some OS - indicates a page in the experiment where some participants had technical issues due to incompatibility with their operating systems. The app was tested on major browsers and operating systems, this was communicated to all participants, but in practice we could not screen out participants using other browsers or operating systems.

Table 5: Descriptive statistics and balance checks by income group

	Lower Income					Higher Income				
	Easy	Hard	Discount	Hard Discount	p-value	Easy	Hard	Discount	Hard Discount	p-value
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
Child gender (Male)	0.41	0.53	0.50	0.41	0.54	0.46	0.51	0.38	0.57	0.33
Age in months	22.22	24.00	22.70	22.16	0.83	19.95	21.84	22.98	25.04	0.14
No formal childcare	0.43	0.47	0.48	0.38	0.82	0.51	0.35	0.43	0.49	0.49
Any sibling bellow 4	0.36	0.35	0.34	0.35	1.00	0.33	0.30	0.38	0.33	0.89
Age of parent	31.41	31.37	31.59	30.31	0.75	30.18	32.70	31.90	32.20	0.07
Gender of parent (male)	0.09	0.14	0.18	0.22	0.32	0.10	0.14	0.31	0.24	0.07
Completed higher education	0.47	0.35	0.41	0.32	0.50	0.56	0.57	0.52	0.71	0.26
Student	0.16	0.07	0.07	0.08	0.39	0.08	0.05	0.00	0.02	0.25
Nationality UK	0.84	0.95	0.93	0.95	0.18	0.95	0.95	0.86	0.90	0.43
Country of birth UK	0.86	0.93	0.93	0.92	0.57	0.90	0.92	0.86	0.86	0.78
Language English	0.93	0.95	0.93	0.95	0.96	0.92	0.95	0.95	0.92	0.90
Household size	4.22	3.65	4.20	3.95	0.14	3.62	3.65	3.71	3.69	0.95
Number of children	2.31	1.88	2.25	2.03	0.30	1.59	1.68	1.79	1.78	0.72
Spouse or cohabiting partner	0.83	0.77	0.80	0.84	0.84	0.97	1.00	0.98	0.98	0.83
Yearly income	9.99	9.74	9.71	9.44	0.89	20.65	20.53	20.65	20.04	0.89
Yearly household income	20.33	18.30	19.62	18.64	0.48	39.03	38.80	39.18	38.10	0.93
Material Deprivation	0.07	0.29	0.30	0.15	0.28	-0.18	-0.19	-0.24	-0.19	0.91
Perceived SES (1-10 ladder)	4.66	4.42	4.36	4.41	0.82	5.05	5.16	5.17	5.31	0.86
Parent is employed	0.45	0.51	0.52	0.57	0.71	0.64	0.62	0.76	0.69	0.54
Spouse is employed	0.66	0.60	0.66	0.57	0.80	0.82	0.92	0.86	0.90	0.57
Any payment received in past month	0.55	0.74	0.66	0.59	0.23	0.69	0.68	0.69	0.57	0.57
Any payments received in past month (spouse)	0.52	0.73	0.69	0.58	0.22	0.68	0.81	0.71	0.52	0.04
Days since last payment	11.82	11.08	10.06	9.61	0.81	13.35	12.00	17.09	16.10	0.15
Has a credit card	0.59	0.63	0.59	0.57	0.96	0.82	0.86	0.69	0.78	0.27

Note: Columns (1) - (5) and (6) - (10) show the means across treatment arms. Columns (5) and (11) displays the p-values associated with the F test of join orthogonality across treatment arms. Easy indicates participants exposed to easy scenarios. Hard indicates participants exposed to hard scenarios. Discount indicates participants who received a 50% discount on child investment goods after being exposed to easy scenarios. Hard Discount indicates participants who received a 50% discount on child investment goods after being exposed to hard scenarios. Yearly household income is computed by dividing total yearly household income by the square root of household size. Material Deprivation is computed by averaging the incidence of several income shocks in the previous year (not able to pay bills, rent, to afford heating, skipped meals, took loans from payday lenders, sought financial help from family or friends). The sample used in the analysis are participants with yearly household income below the sample median in Columns (2)-(6) and above the sample median in Columns (7) to (11).

Table 6: Manipulation check - treatment effects on financial worries

	(1) Financial situation	(2) Finding money	(3) Index
Hard	0.427***	0.451***	0.535***
	(0.105)	(0.134)	(0.128)
Lower Income × Hard	-0.187	0.158	-0.0364
	(0.150)	(0.180)	(0.177)
Controls	Yes	Yes	Yes
Adj. R^2	0.126	0.161	0.168
Observations	349	349	349

Note: Estimates are obtained via OLS regressions. Robust standard errors in parentheses.*, **, *** denote significance at the 10%, 5% and 1% levels respectively. The dependent variables are worries about the financial situations: *How worried do you feel about your financial situation?* and worries about finding money in case of need: *How worried do you feel about not being able to find money in case you really need it?*. Both variables are coded as: 0 not worried as all, 1 somewhat worried, 2 very worried and 3 desperately worried. The index variable in the last column is computed the average of the z scores of the previous two dependent variables. The z scores are computed by subtracting the mean of the control group and then dividing by the standard deviation of the control group. Higher/lower income group denote the upper/lower 50% of the sample income per adult equivalent distribution. All models control for individual and household characteristics. Hard indicates participants exposed to hard scenarios.

Table 7: Tobit regressions of treatment effects on demand for investment goods, groceries and luxury goods

	Lower Income			Higher Income		
	(1)	(2)	(3)	(4)	(5)	(6)
	Investment	Groceries	Luxuries	Investment	Groceries	Luxuries
Hard (H)	3.36	0.53	5.42	4.52	-2.40	-10.6**
	(3.73)	(2.48)	(7.54)	(3.26)	(2.79)	(5.34)
Discount (D)	13.5***	-1.84	6.23	4.66	0.85	-3.62
	(4.00)	(2.40)	(7.50)	(3.55)	(2.60)	(5.14)
Hard Discount (HD)	3.09	4.65**	-19.7**	10.3***	-3.61	2.07
	(3.97)	(2.16)	(9.06)	(3.15)	(2.41)	(4.90)
Easy Mean	7.14	20.00	1.95	6.40	20.59	2.13
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.04	0.03	0.12	0.04	0.03	0.14
Observations	182	182	182	167	167	167
p-values - Tests:						
$D = HD$	0.013	0.008	0.014	0.105	0.089	0.190
$H^{LI} = H^{HI}$	0.742	0.430	0.057			
$D^{LI} = D^{HI}$	0.124	0.448	0.264			
$HD^{LI} = HD^{HI}$	0.109	0.011	0.048			

Note: Estimates are obtained via Tobit regressions with left and right censoring. Robust standard errors in parentheses.*, **, *** denote significance at the 10%, 5% and 1% levels respectively. Outcome variables are expenditure on child investment goods, groceries and luxury goods, expressed in pounds at baseline prices. Order effects represent the randomized order in which the three types of goods appeared in the investment task. Higher/lower income group denote the upper/lower 50% of the sample income per adult equivalent distribution. All models control for individual and household characteristics. Hard indicates participants exposed to hard scenarios. Discount indicates parents who received a 50% discount on child investment goods. The first listed p-value is associated to the t-test of equality of the coefficients on the Discount group and the Hard Discount group. The p-values listed with the subscripts LI and HI test the equality of the coefficients from the regression on the lower income group (LI) and the higher income group (HI) estimated from models where each treatment assignment variable and each covariate is interacted with the income group dummy.

Table 8: Treatment effects on demand for investment goods, groceries and luxury goods interacted with income

	Investment		Groceries		Luxuries	
	(1)	(2)	(3)	(4)	(5)	(6)
Hard	-1.38	-0.097	0.83	-1.34	0.51	1.72
	(3.37)	(3.53)	(3.89)	(3.76)	(2.44)	(2.45)
Discount	3.01	7.51*	2.11	-3.07	-0.28	1.57
	(4.05)	(4.44)	(3.63)	(3.69)	(2.56)	(2.61)
Hard Discount	-3.45	-1.22	8.80**	6.20*	-3.80*	-2.75
	(4.57)	(4.41)	(3.50)	(3.43)	(2.09)	(2.12)
Yearly income	0.016	-0.024	0.049	0.047	-0.060	-0.037
	(0.13)	(0.15)	(0.17)	(0.17)	(0.11)	(0.13)
Hard × Yearly income	0.13	0.071	-0.10	0.012	-0.021	-0.11
	(0.22)	(0.23)	(0.25)	(0.24)	(0.14)	(0.14)
Discount × Yearly income	0.11	-0.12	-0.13	0.17	0.080	-0.042
	(0.24)	(0.26)	(0.23)	(0.23)	(0.16)	(0.16)
Hard Discount × Yearly income	0.46	0.37	-0.52**	-0.37	0.29**	0.21
	(0.29)	(0.28)	(0.23)	(0.23)	(0.14)	(0.14)
Controls	No	Yes	No	Yes	No	Yes
Adj. R^2	0.03	0.07	0.01	0.07	-0.00	0.02
Observations	349	349	349	349	349	349

Note: Estimates are obtained via OLS regressions. Robust standard errors in parentheses.*, **, *** denote significance at the 10%, 5% and 1% levels respectively. Outcome variables are expenditure on child investment goods, groceries and luxury goods, expressed in pounds at baseline prices. Order effects represent the randomized order in which the three types of goods appeared in the investment task. Yearly income is divided by the square root of the household size. All models control for individual and household characteristics. Hard indicates participants exposed to hard scenarios. Discount indicates participants who received a 50% discount on child investment goods after being exposed to easy scenarios. Hard Discount indicates participants who received a 50% discount on child investment goods after being exposed to hard scenarios.

Table 9: Sensitivity analysis: heterogeneous treatment effects by days since last payment imputing the number of days since payment to participants reporting having received no payment in the last month

	Lower Income			Higher Income		
	(1)	(2)	(3)	(4)	(5)	(6)
	Investment	Groceries	Luxuries	Investment	Groceries	Luxuries
Value imputed = 25 days since last payment						
Discount × Days since last payment	-0.33	0.42**	-0.19	-0.19	-0.12	0.22
	(0.23)	(0.18)	(0.12)	(0.30)	(0.25)	(0.16)
Hard Discount × Days since last payment	-0.58**	0.39**	-0.037	0.16	-0.19	0.099
	(0.24)	(0.16)	(0.080)	(0.31)	(0.27)	(0.17)
p-value: $D \times Pay = HD \times Pay$	0.385	0.848	0.136	0.362	0.799	0.496
p-value: $(HD \times Pay)_{LI} = (HD \times Pay)_{HI}$	0.060	0.066	0.471			
Value imputed = 30 days since last payment						
Discount × Days since last payment	-0.29	0.37**	-0.15	-0.23	-0.058	0.17
	(0.21)	(0.16)	(0.11)	(0.27)	(0.22)	(0.14)
Hard Discount × Days since last payment	-0.50**	0.34**	-0.036	0.14	-0.21	0.13
	(0.21)	(0.14)	(0.070)	(0.26)	(0.23)	(0.16)
p-value: $D \times Pay = HD \times Pay$	0.427	0.885	0.202	0.261	0.540	0.796
p-value: $(HD \times Pay)_{LI} = (HD \times Pay)_{HI}$	0.056	0.039	0.333			
Value imputed = 35 days since last payment						
Discount × Days since last payment	-0.26	0.31**	-0.12	-0.24	-0.015	0.13
	(0.19)	(0.14)	(0.097)	(0.24)	(0.20)	(0.12)
Hard Discount × Days since last payment	-0.42**	0.30**	-0.032	0.11	-0.20	0.14
	(0.18)	(0.12)	(0.061)	(0.21)	(0.19)	(0.14)
p-value: $D \times Pay = HD \times Pay$	0.463	0.920	0.273	0.201	0.376	0.958
p-value: $(HD \times Pay)_{LI} = (HD \times Pay)_{HI}$	0.058	0.026	0.262			
Value imputed = 40 days since last payment						
Discount × Days since last payment	-0.23	0.27**	-0.095	-0.24	0.013	0.10
	(0.17)	(0.12)	(0.087)	(0.21)	(0.17)	(0.11)
Hard Discount × Days since last payment	-0.36**	0.26**	-0.028	0.086	-0.18	0.13
	(0.16)	(0.11)	(0.054)	(0.18)	(0.16)	(0.12)
p-value: $D \times Pay = HD \times Pay$	0.490	0.954	0.343	0.166	0.275	0.781
p-value: $(HD \times Pay)_{LI} = (HD \times Pay)_{HI}$	0.062	0.020	0.225			
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	182	182	182	167	167	167

Note: Estimates are obtained via OLS regressions. Robust standard errors in parentheses.*, **, *** denote significance at the 10%, 5% and 1% levels respectively. Outcome variables are expenditure on child investment goods, groceries and luxury goods, expressed in pounds at baseline prices. Higher/lower income group denote the upper/lower 50% of the sample income per adult equivalent distribution. All models control for individual and household characteristics and for order in which the three types of goods appeared in the investment task. Hard indicates participants exposed to hard scenarios. Discount indicates participants who received a 50% discount on child investment goods after being exposed to easy scenarios. Hard Discount indicates participants who received a 50% discount on child investment goods after being exposed to hard scenarios. The first listed p-value is associated to the t-test of equality of the coefficients on the Discount group and the Hard Discount group interacted with the number of days since the last paycheck. The p-value with the subscripts LI and HI tests the equality of the coefficients from the regression on the lower income group (LI) and the higher income group (HI) estimated from models where each treatment assignment variable and each covariate is interacted with the income group dummy.

B Appendix B

B.1 Experimental Task

B.1.1 Financial Scenarios

Instructions - In the following section you will be presented 3 scenarios and asked to answer how you would go about dealing with the situations if they were to happen to you. Please take your time answering the questions. Try to have at least 3 sentences in your open question answers.

1. Imagine that an unforeseen event requires of you an immediate (£2000/£100) expense. You need to raise the money in less than a week.
    - Are there ways in which you may be able to come up with that amount of money on a very short notice? (yes/no)
    - How would you go about getting (£2000/£100) on a very short notice? Three sentences should be enough. (open)
    - To what extent do you agree with the following statements? (4 item Likert: strongly disagree - strongly agree)
        (a) "Coming up with (£2000/£100) on a very short notice would cause me longlasting financial hardship."
        (b) "Coming up with (£2000/£100) on a very short notice would require me to make sacrifices that have long-term consequences."
2. Due to a national policy change, there is an increase in the monthly cost of childcare by (£200/£10), which amounts to a total cost increase of (£2400/£120) a year. This increase is not reimbursable by any government funding scheme and it applies to all forms of childcare (nursery, kindergarten, childminder, nanny, au pair etc.).
    - Would it be difficult to afford childcare after the policy change? (yes/no)
    - How would you go about covering the cost of childcare after the policy change? Would you need to make any sacrifices and budget cuts every month? Three sentences should be enough. (open)
    - To what extent do you agree with the following statements? (4 item Likert: strongly disagree - strongly agree)
        (a) "Paying additional (£200/£10) a month for childcare would require difficult budget cuts and sacrifices every month."
        (b) "Paying additional (£200/£10) a month for childcare would be too costly and it would probably require leaving the child in the care of relatives or becoming a stay-at-home parent."

3. Imagine that the economy is going through difficult times. Your household's monthly expenses increase by (£300/£15) due to higher food, energy and housing prices.

    - Please indicate to what extent do you agree with the following statement: "Given my situation, I would be able to maintain roughly the same lifestyle under those new circumstances." (4 item Likert: strongly disagree - strongly agree)
    - In what ways would the (£300/£15) increase in your monthly expenses would impact your leisure, housing or travel plans? What changes would you need to make? Three sentences should be enough. (open)
    - To what extent do you agree with the following statement: "The (£300/£15) increase in our monthly expenses would strongly impact our leisure, housing, or travel plans." (4 item Likert: strongly disagree - strongly agree)

B.1.2 Investment Task

Instructions: In the following task you have to choose what goods to purchase with a budget of £30 .

You will see a list of available goods, with a picture, title and the price displayed for each of them. The price of the goods is the retail price including the discounts offered by the retailer. If you need additional information on the goods, by clicking on the picture a new window will open with further details from the website of the retailer.

Some of the goods have a **discount of 50%** in addition to any discount of the retailer. These goods are the ones with two prices listed - one black and crossed out which is the retail store price and one red which is the price in the task.

By clicking on the **ADD button**, the goods will be added to the shopping cart. You can edit the shopping cart content at any time by clicking on the **Shopping Cart** section in the top-right side of your screen.

A new window will open with the goods already selected. You can modify the quantities of each good or remove them from the shopping cart. You can return to the main window at anytime by clicking on close, or anywhere outside the shopping cart window.

When you are satisfied with your selection, click on **Checkout** in the shopping cart window to proceed to the next page. Try to spend as close to the £30 budget as possible. To proceed to the next page you need to spend a minimum of £28. Any remainder will be added as bonus payment on Prolific.

You can access these instructions at any time by clicking on the **Instructions** section in the top-left side of the page.

1 out of every 100 participants will be selected for payment. If you are selected, the goods will be delivered to a collection location of your choice at a date and time that is

convenient for you. You can pick up your goods with the code we will send you.

Figure 2: Main screen of the investment task

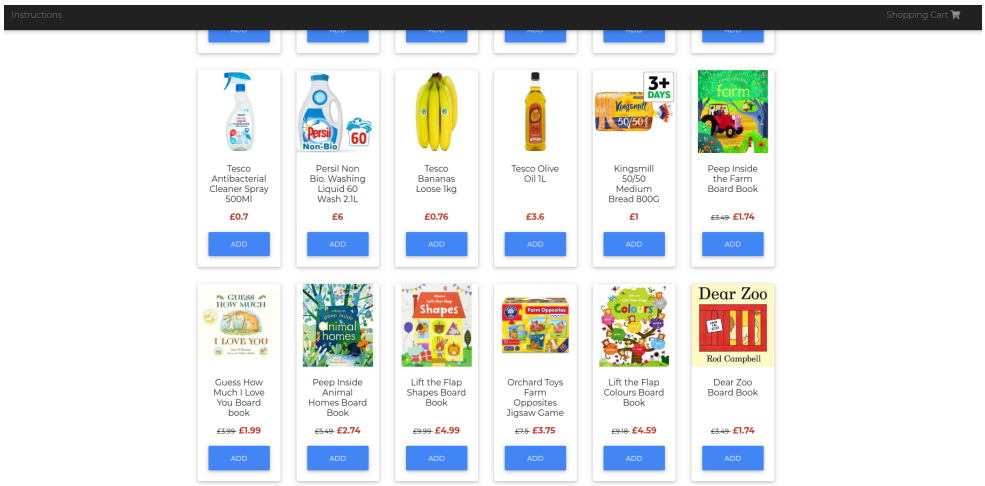

Figure 3: Checkout screen of the investment task