

# Paying £1 or nothing in dictator games: Unexpected differences

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November 11, 2024

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## Abstract

We conducted an online Dictator Game experiment in which 1,195 participants decided how to split £1 with another participant (63% female, average age 32.2). The goal was to examine whether using real but low stakes, as is standard in online samples, vs. hypothetical money leads to differential outcomes. Participants were randomly assigned to one of three groups: those being paid for real, those with a 1/10 probability of being paid, and those not paid at all (hypothetical condition). We find no significant differences in average giving across treatments. Unexpectedly, donation is less dispersed in the hypothetical treatment, since participants' choices tend to concentrate more around the egalitarian distribution. Finally, the likelihood of making purely selfish decisions does not differ across treatments, whereas hyper-generous choices are more common in monetary schemes than in the hypothetical one. All these findings go in general against expectations.

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**Keywords:** Monetary incentives, egalitarianism, hyper-altruism, selfishness, dictator game.

**JEL class.:** D64, D91

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## 1. INTRODUCTION

The debate on using real or hypothetical money to elicit experimental subjects' truthful responses is not new among economists and psychologists (see Camerer & Hogarth, 1999). Experimental psychologists have a long tradition of not paying subjects (or not linking payments to their choices), under the argument that subjects are intrinsically motivated and engage in tasks with dedication and honesty (Camerer & Hogarth, 1999). Conversely, experimental economists argue that without real incentives, subjects may be influenced by demand effects, social desirability, or lack of interest and attention, as financial rewards create a more realistic environment in the laboratory (Rosenboim and Shavit, 2012; Zizzo, 2010). As a result, non-incentivized choices may be biased or random (Carpenter et al., 2005).

The proliferation of online labor markets such as Amazon Mechanical Turk (MTurk) or Prolific Academic (PA) has introduced a new dimension to this debate, as researchers are increasingly conducting online economic experiments with low-stakes incentives. While these experiments typically involve the use of real money, the stakes are often set at small amounts such as \$1, £1, or even less. This raises the question of whether the use of low stakes in online settings is really incentivizing anything and, moreover, whether it leads to different behavioral outcomes as compared to the use of purely hypothetical rewards.

This paper investigates the case of social preferences: do hypothetical rewards elicit different social behavior than real but small monetary rewards in online experiments? While several scholars have addressed this question previously, most have compared behavior in Dictator Games (DG) with no stakes and traditional stakes (ranging between \$5 and \$10) in laboratory settings. To the best of our knowledge, Amir et al. (2012) is the only study that compares hypothetical and real low stakes in an online setting.

The results of existing studies are somewhat mixed. Some suggest that real payoffs induce selfishness while hypothetical settings promote egalitarian choices (Sefton, 1992; Forsythe et al., 1994; Dana et al., 2007; Amir et al., 2012; Clot et al., 2018), which is consistent with the existence of social desirability concerns or demand effects that are alleviated when giving has a real cost. However, not all have found these results: Ben-Ner and Kramer (2008) found no significant differences in DG between real payments and purely hypothetical scenarios. Bühren and Kundt (2015) found a similar result using three mini-dictator games.<sup>1</sup>

To provide a more definitive answer on the *causal effect of real vs. hypothetical low stakes incentives* on social preferences we ran a well-powered DG online experiment. We recruited 1,195 subjects using PA. Each participant had to decide how to split £1 with another anonymous participant and was randomly assigned to one of three treatments with equal probability (1/3): the Real money treatment (R), where every participant received a payment; the Between-Subjects Random Incentivized System

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<sup>1</sup> There are other papers testing the effect of hypothetical vs. real payoffs on different measurements. For instance, Brañas-Garza et al. (2021a) tested incentives for risk taking in three countries, whereas Brañas-Garza et al. (2023) did similarly for time preferences in three settings: Lab, Field and Online.

or BRIS treatment (B), where 1 out of every 10 subjects received a payment; and the Hypothetical treatment (H), where no payment was provided.

The B treatment was introduced to test whether expected earnings matter (in which case, R and B should differ, as in B the pie is reduced from £1 to £0.1 in expected terms) or it is the mere existence of monetary incentives that causes any shift in behavior with respect to a purely hypothetical condition. Also, probabilistic incentives are very common in lab, field, and online studies, being one-out-of-ten the most used protocol (e.g. Charness et al. 2016, Exadaktylos et al. 2013). According to a recent meta-analysis comparing real and BRIS conditions in previous DG lab experiments with student samples, the two treatments with monetary incentives, R and B, should result in similar behavior (Umer 2023; see Clot et al. 2018 for a direct test). Yet this has not been tested in a DG online experiment with low stakes and non-student participants (although Ahles et al. 2024 find no differences in bidding between a fully incentivized condition and either 1/10 or 1/100 BRIS in willingness-to-pay online experiments).

Based on previous literature, our main predictions were that (i) treatment H results in more disperse, noisier data than B and R, owing to a more erratic or uncaring decision-making; and (ii) treatment H results in more generous donations than B and, especially, R as the cost of socially desirable behavior is zero; and (iii) donations in treatments B and R are rather similar.

To analyze the data, we adopted a conservative and comprehensive approach. In addition to comparing the mean and SD of giving across treatments, as most of the literature has done, we also examined specific patterns of behavior: selfishness (giving = 0%), egalitarianism (giving = 50%), and hyper-altruism (giving = 100%). Furthermore, we introduced different levels of "trembling", i.e., small deviations from these three distribution rules to account for potential errors in decision-making. This approach allows us to gain a more nuanced understanding of participants' behavior across treatments and to better capture any variation in social preferences that might otherwise be masked by small decision-making errors, especially when stakes are low.

Our findings indicate that Prolific Academic participants give similar amounts across the three treatments on average, although the hypothetical condition results in *less* disperse choices than both real and BRIS conditions, which goes against expectations. Also unexpectedly, we do not find significant differences in the proportion of selfish choices across conditions, while participants in the hypothetical treatment are more likely to apply an egalitarian distribution rule and less likely to apply a hyper-altruistic rule than in the two monetarily incentivized conditions. Finally, as predicted, donations in treatments B and R do not differ in any of the measures considered. The analysis of the trembling cases confirms these observations: choices in H are more concentrated around the equal split at the expense, especially, of hyper-altruistic.

The rest of the paper is organized as follows. Section two describes the protocol and the sample. Sections three and four put forward our working hypotheses and the empirical strategy. Section five reports the results and the last concludes.

## 2. MATERIALS AND METHODS

### Protocols and sample

The experiment was conducted using Prolific Academic (PA), a platform to recruit participants for online studies. There are certain advantages of running experiments using PA (and similar sites): it reduces costs and allows researchers to recruit a large and heterogeneous sample (as opposed to standard experimental subjects, see Exadaktylos et al., 2013). However, the downside is the lack of control, as we do not know what subjects are doing when they participate in the experiment, and participants may be professional subjects or "lab rats" (Guillen et al. 2012). Yet, recent evidence suggests that data from online experiments using these platforms are reliable (Horton et al., 2011; Rand, 2012; Arechar et al., 2018) and that the lack of control is not so problematic (Prissé and Jorrat, 2022).

The experiment was published on PA on July 15th at 21:30 CET and ended four hours later, having gathered 1,195 participants. The experiment consisted of three parts: a discounting task to elicit time preferences following the design of Coller and Williams (1999), a task to elicit risk preferences based on Holt and Laury (2002), and a Dictator Game (DG) task<sup>2</sup>. See the experimental instructions in the Appendix B for details.

We only invited UK residents to participate since this is the country with the largest number of potential participants in the platform. Additionally, we pre-screened the subjects based on having available data on education, gender, and different socioeconomic questions to avoid losing observations with respect to the control variables. Table 1 provides summary statistics for these variables and subjects' choices in the experimental tasks preceding the DG.

In the DG, subjects were asked to divide £1 between themselves and another randomly selected anonymous participant, in £0.1 increments. We implemented a dual-role protocol with a known probability of being the recipient or the dictator of 50%.

All the participants received a fixed participation fee of £1.2, which was adjusted to a 10-minute experiment according to PA's recommendations. Those selected for real payments (including those randomly selected in the BRIS treatment) received a bonus payment based on their decision in the DG. Participants were fully informed of their payment scheme.

At the beginning of the experiment, participants were randomly assigned to treatments R, B, or H, each with a probability of 1/3. The resulting sample sizes for each treatment were  $n_R=380$ ,  $n_B=406$ ,  $n_H=409$ . The average age was 32.2 years, 63.1% females. Regarding education, most participants had completed either

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<sup>2</sup> The randomization happened at the beginning of the experiment (time preferences) and treatment assignment remained the same along the entire session. The three tasks appeared in the same order being the DG always the last. More information on the time preferences experiment can be found in Brañas-Garza et al (2023), studies III and IV.

secondary education (40.2%) or had an undergraduate degree (46.1%). Table A1 of the Appendix reveals that the treatments were homogenous in terms of sociodemographic characteristics and subjects' choices in the previous experimental tasks, using Westfall and Young's (1993) *p*-values correction for multiple testing.

**Table 1:** Summary statistics of participants' characteristics.

	<i>Obs</i>	<i>Mean</i>	<i>Std. dev.</i>	<i>Min</i>	<i>Max</i>
<i>female</i>	1,195	0.631	0.483	0	1
<i>age</i>	1,195	32.238	11.924	18	77
<i>education</i>	1,194	2.905	1.514	0	6
<i>SES</i>	1,195	5.147	1.569	1	10
<i>charity</i>	1,195	2.529	1.424	1	7
<i>risky choices</i>	1,195	5.433	2.355	0	10
<i>patient choices</i>	1,195	9.064	6.385	0	20

Note: *Education* is a categorical variable (taking values from 0 to 6 for simplicity, from no formal education to doctorate degree) which refers to the highest education level. *SES* reflects the *Socio-economic status* using the position in the income ladder (scale from 1 to 10). *Charity* refers to a self-reported categorical variable that reflects different amounts of donations (in ascending order) made in the last year. *Risky choices* refers to the number of risky options chosen in the Holt-Laury task (in which participants had to choose between a safer and a riskier lottery), while *patient choices* refers to the number of later-larger allocations in the time discounting task (in which participants had to choose between a sooner smaller amount of money and a later but larger amount).

## Working hypotheses

The hypotheses to be tested arise from previous literature and are related to whether monetary incentives yield different giving behavior as compared to hypothetical incentives when low stakes are at play. First, we expected less noise and therefore less dispersion in the data when money is involved, as people may not take hypothetical scenarios seriously and may randomize their responses. In addition, donations in the treatments involving actual money were expected to be smaller than in the hypothetical condition because being generous (or giving the impression of being generous as a socially desirable behavior) in the former involves a cost while in the latter is free. Finally, we expected similar donations in the two treatments involving actual money because some probability of being paid for real is enough to counteract social desirability incentives or demand effects.

In summary, we test the following three main hypotheses:

**Hypothesis 1:** Monetary incentives (R&B) cause subjects' donation decisions to be less dispersed than using hypothetical incentives (H).

**Hypothesis 2:** Monetary incentives (R&B) lead subjects to donate less money than using hypothetical incentives (H).

**Hypothesis 3:** Donations in the two monetary conditions (R and B) do not differ.

## Empirical strategy

In addition to studying differences in averages and SDs between the three treatments, we focus on specific types of donation behavior. We start by considering the extreme cases:

- selfishness ( $giving = 0$ ),
- egalitarianism ( $giving = 0.5$ ) and,
- hyper-altruism or “saint” ( $giving = 1$ ).

From there, we introduce “trembling hand” cases, allowing first a decision making error of  $t = \pm 0.1$ , and then a larger error of  $2t = \pm 0.2$ . From this, we derive nine measures which are described in Table 2 .

**Table 2:** Types of behavior by trembling

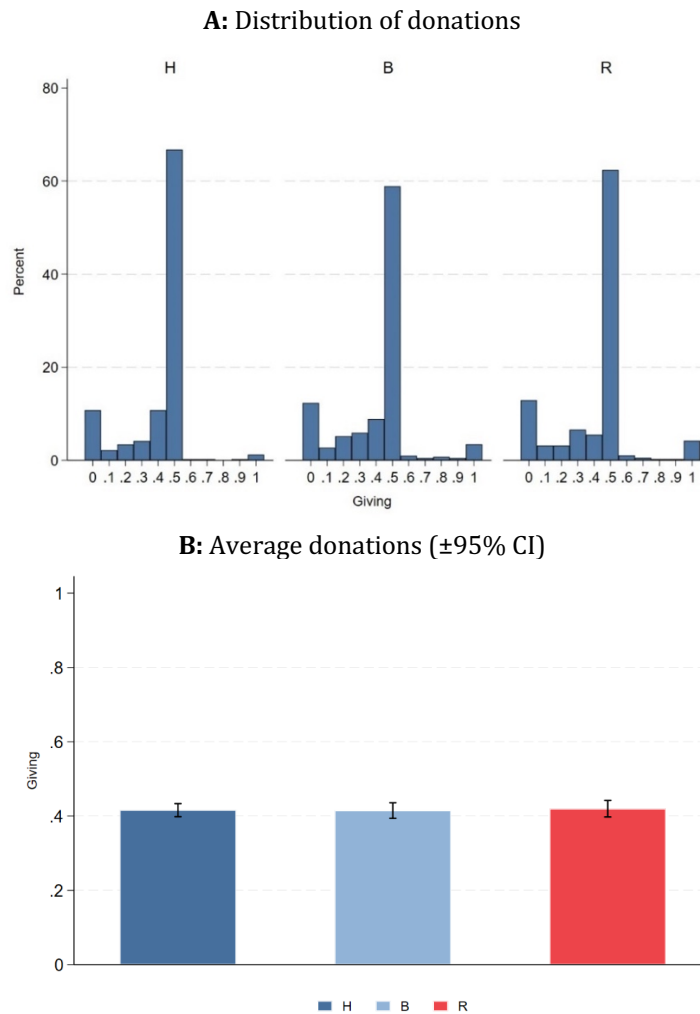
<i>No trembling</i>	<i>Trembling</i>	<i>Large trembling</i>
selfish ( $g = 0$ )	t.selfish ( $g \leq 0.1$ )	2t.selfish ( $g \leq 0.2$ )
egalitarian ( $g = 0.5$ )	t.egalitarian ( $0.4 \leq g \leq 0.6$ )	2t.egalitarian ( $0.3 \leq g \leq 0.7$ )
saint ( $g = 1$ )	t.saint ( $0.9 \leq g \leq 1$ )	2t.saint ( $0.8 \leq g \leq 1$ )

## 3. RESULTS

Before moving on to the main results, it is important to mention some descriptive results from our experiment. Interestingly, the mean donation in our sample is around 42% of the pie, which is comparatively rather high. Note that Engel’s (2011) meta-analysis of lab experiments shows an average donation of 28.3% of the pie, while Brañas-Garza et al. (2018) found an average of 30.8%. Our data show that the fraction of subjects giving half of the pie is substantial (>60%), but even more remarkable is the *very low fraction*, about 10%, of purely selfish choices (compared the 30% found in Brañas-Garza et al., 2018 using MTurk).

### Testing predictions: Dispersion of the data

Panel A of Figure 1 shows the distribution of the variable *giving* for each treatment. While the three distributions are statistically similar (we reject the null hypothesis that the three distributions are equal in a Kolmogorov–Smirnov test,  $p > 0.50$ ), it seems that donations are more concentrated around the equal distribution ( $giving=0.5$ ) in the hypothetical treatment H than in the two monetary treatments R and B. Indeed, when comparing the dispersion of the data between H and R or between H and B, a Levene’s test rejects the null hypothesis of equal variance in both cases, with H displaying lower SD (both  $p < 0.01$ ).



**Figure 1:** Average donations by treatment.

Overall, our data fully contradict Hypothesis 1, as we observe that the dispersion is lower for H than for the treatments involving actual money. The comparison of H vs. R&B (i.e., the two incentivized treatments combined) yields the same conclusion ( $p < 0.01$ ).

**Result 1:** *Hypothetical donations are less dispersed than real and one-out-of-ten BRIS incentivized donations in the DG.*

### Testing predictions: Average donations

Before moving to the regression analysis, Panel B of Figure 1 displays the average donations across treatments. Although we will test this below using regression analysis, average giving looks nearly identical in the three cases. In fact, a t-test confirms this result ( $p > 0.75$ ).

Figure 2 presents the regression results for average giving and the nine behavioral types defined earlier (which will be analyzed in detail in the next subsection). All the regressions control for age, gender, education, risky and patient choices, SES status, and self-reported donations to charity. Each point represents the estimated

coefficient of the dummy variable H ( $\pm 95\%$  CI) denoting the hypothetical treatment. Panels A, B, and C of Figure 2 compare H with R, B, and R and B combined (R&B), respectively. Complete regression results are presented in Tables A2, A3, and A4 in the Appendix. In all cases, we further computed the p-value of the coefficient of H adjusted for multiple testing (hereafter, *adj-p*) using the free step-down resampling method of Westfall and Young (1993), following Jones et al. (2019) procedure.

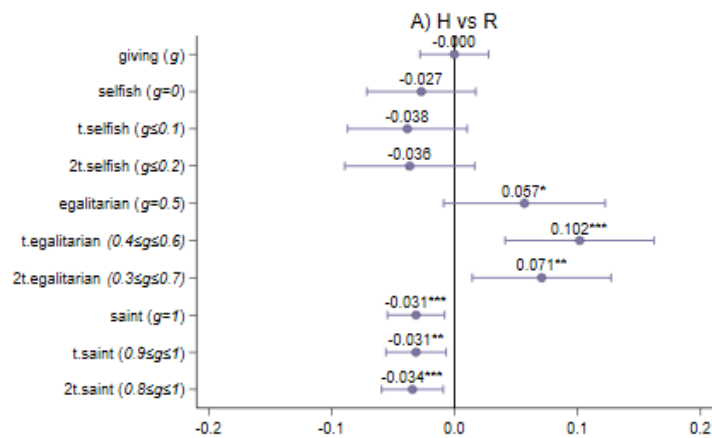
As could be inferred from panel B of Figure 1, the regression analysis summarized in Figure 2 indicates that there are no significant differences between treatments in average donations (all  $p > 0.75$  and *adj-p*  $> 0.80$ ; see Figure 3 and Table A5 for the comparison between R and B). These results therefore do not support Hypothesis 2, which predicts higher donations in the hypothetical treatment:

**Result 2:** *Subjects with monetary incentives do not behave more selfishly than those with hypothetical incentives.*

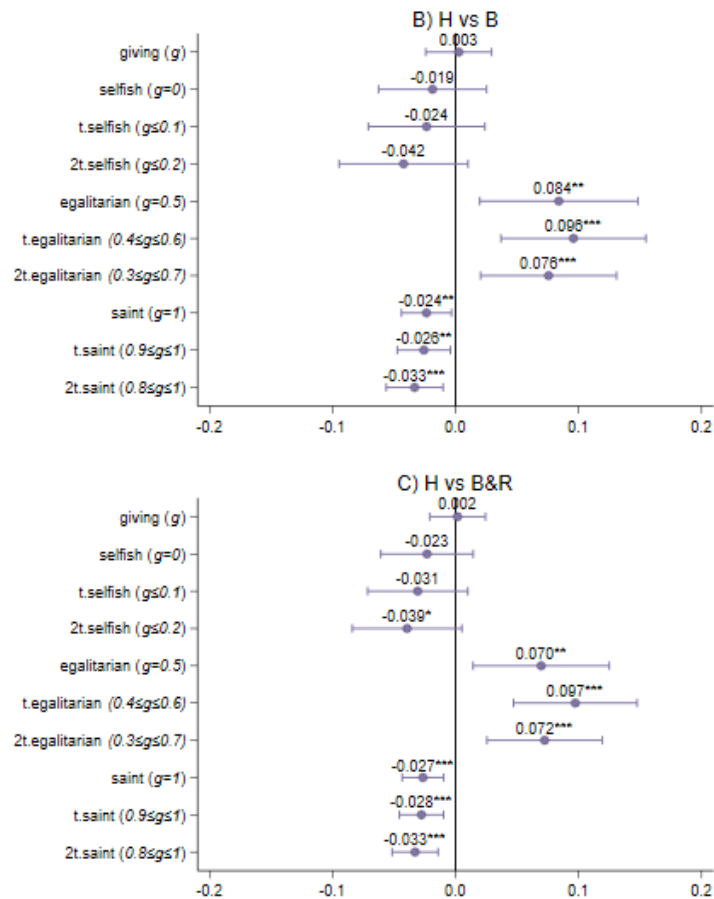
In the following analysis, we want to see if there is more to the distributions beyond the mean, and we focus on the "types." Here we focus on the nine behavioral types arising from the three main categories (selfish, egalitarian, and saint) and their three trembling cases.

As can be seen in Figure 2, the coefficient of H is never significant for the selfish or the trembling selfish types, when compared against either R, B, or R&B (all nine comparisons yield negative effects between 2% and 4%, all  $p > 0.08$  and *adj-p*  $> 0.19$ ).

For the egalitarian case, H is significant in eight out of nine comparisons (all  $p < 0.05$  and *adj-p*  $< 0.06$ ), with positive effects ranging from 6% to 10%. The exception is the non-trembling definition when compared against R, which, although marginally significant at the 10% level ( $p = 0.09$ ), is not significant after adjusting for multiple testing (*adj-p*  $> 0.20$ ). Finally, for the saint category, H is always negative and significant, although the effects are very small (between 2% and 3%, all  $p < 0.05$ ).







**Figure 2:** Regression results. Point estimates denote the coefficient of H. All the regressions control for age, gender, education, risky and patient choices, SES status, and self-reported donations to charity. Asterisks denote significance levels: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

The regressions results suggest that when payments are hypothetical, subjects' choices tend to cluster around the center, i.e. the egalitarian distribution. This result is not new but, in contrast to what others have shown in the past (e.g. Forsythe et al. 1994), the concentration of data around the 50/50 split in the hypothetical condition is not at the expense of selfish responses but of hyper-altruistic behavior ("saints"). Now, we revise previous Result 2.

**Result 2b:** *Hypothetical donations do not yield a different proportion of selfish allocations but yield more egalitarian and less hyper-altruistic allocations than incentivized decisions.*

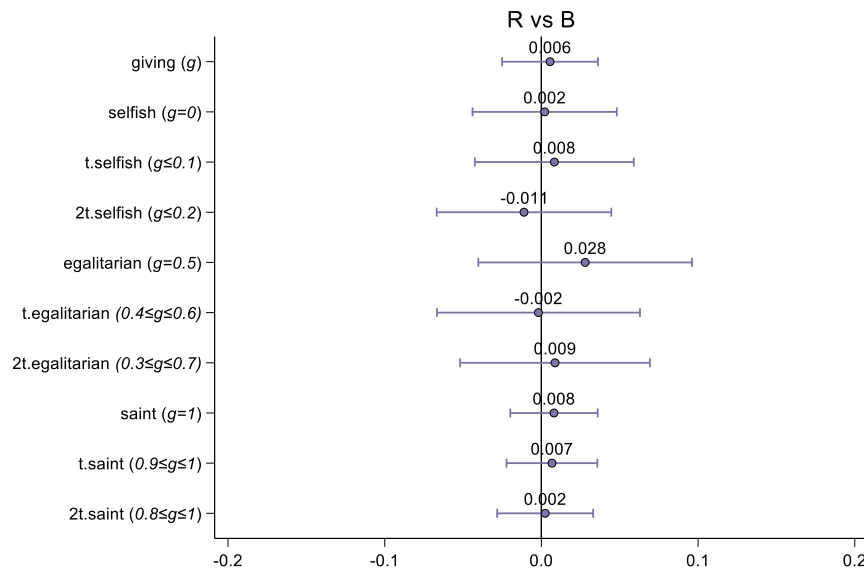
### Testing predictions: Real vs BRIS incentives

Now we analyze Hypothesis 3, which states that there are no differences in behavior when we use real incentives versus probabilistic incentives. After all, if the expected value is positive, we *should* observe the same result.

As we already saw in panel B of Figure 1 both R and B has the same average ( $p > 0.75$ , see also Table A5) and the same dispersion – SDs are similar ( $p = 0.32$ ). Hence, we can conclude that Hypothesis 3 is not rejected.

**Result 3:** *Donations do not differ with real and one-out-of-ten incentives.*

Once again, we aim to study behavior types in depth beyond the mean. To this end, Figure 3, just as Figure 2 did, examines the estimates for the coefficient of R (vs. B). Full estimates can be found in Table A5 in the Appendix.



**Figure 3:** Regression results. All the regressions control for age, female, education, risky and patient choices, SES status and the self-reported donations to charity. Asterisks denote significance levels: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Our results clearly indicate that paying one randomly selected participant out of every ten does not make any difference with respect to paying all participants. All nine comparisons are largely insignificant (all  $p > 0.40$  and  $adj-p > 0.90$ ). Therefore we revise previous Result 3 accordingly.

**Result 3b:** *Real and one-out-of-ten BRIS incentives yield similar proportions of selfish, egalitarian, and hyper-altruistic choices.*

#### 4. DISCUSSION

We conducted an online experiment on Prolific Academic with a large sample ( $N=1,195$ ) and subject-level randomization to test two well-established hypotheses in the discipline.

First, we aimed to test whether donations decisions in a Dictator Game with low stakes, but real monetary incentives are less dispersed than those with the same low stakes but hypothetical payoffs, where participants are not motivated to tell the truth and can respond arbitrarily. Our experiment does not support this hypothesis,

as we found the opposite: hypothetical responses in the DG are less dispersed, since they concentrate closer to the egalitarian distribution. We also found no significant differences in average giving across treatments, as it is found by different papers in the literature (see Ben-Ner and Kramer, 2008; Bühren and Kundt, 2015).

The second hypothesis tested is that low-stakes real incentives lead to more honest decisions, as participants have their own money at stake. In other words, donating money in a dictator game with real incentives is not "cheap talk" but rather a true reflection of the participant's preferences. Thus, we should expect that when incentives have economic consequences, participants will be more selfish, as "appearing as a good person" comes at a cost, even with low stakes. However, our data do not support this hypothesis. We observe that hypothetical donations do not yield a different proportion of selfish allocations. Furthermore, our results suggest that when participants face a hypothetical problem of distributing a small amount of money, they tend to use an egalitarian distribution rule. This finding aligns with previous literature (see Forsythe et al., 1994 and Dana et al., 2007). However, when real or probabilistic incentives are introduced, a small fraction of subjects become more hyper-altruistic —a result that contradicts other studies showing that real payments increase selfish behavior (see Amir et al., 2012; Clot et al., 2018).

Third, we also test whether paying subjects in probability makes any difference with real payments. Our results clearly indicate that paying one randomly selected participant out of every ten does not make any difference with respect to paying all participants.

How can we explain this small difference? At least, there are two possible explanations for these results: demanding effects and stakes. The DG is clearly very sensitive to demanding effects (Zizzo, 2010). If these effects are strong enough it might be the case that subjects feel obliged to donate even with low stakes or without incentives. Supporting this possibility, we observe a higher fraction of egalitarian subjects in the hypothetical treatment, but discouraging it, we also found a lower fraction of hyper-altruistic (saints) subjects. Additionally, it is difficult to believe that someone who completes an experiment online feels obligated to behave in a certain manner.

Clearly stakes might also be behind results since participants played a £1 DG (only). Given the size of the payments (for both the dictator and the recipient) dictators might feel that the paid treatment was almost quasi-hypothetical. In fact, there is evidence that altruism in the DG vanishes with stakes (see Brañas-Garza et al., 2021b and Larney et al., 2019). In other words, if you don't pay enough (Gneezy and Rustichini, 2000) participants might not see the difference between hypothetical and real payments. However, it is unclear whether our participants considered £1 "low" since they accepted to participate for £1.2 (show-up fee). Encouragingly for our study, Enke et al. (2021) show that very high incentives have hardly any effect on bias-proneness in four classical tasks (e.g., base-rate neglect or anchoring).

## **5. CONCLUSION**

Our findings indicate that PA participants give similar amounts across the three treatments on average, although the hypothetical condition results in *less* disperse choices than both real and BRIS conditions, which goes against expectations. Also unexpectedly, we do not find significant differences in the proportion of selfish choices across conditions, while participants in the hypothetical treatment are more likely to apply an egalitarian distribution rule and less likely to apply a hyper-altruistic rule than in the two monetarily incentivized conditions. Finally, as predicted, donations in treatments B and R do not differ in any of the measures considered.

While our results suggest that the differences between hypothetical and incentivized measures (under low stakes) are statistically significant and unexpected, the effect sizes are small. Therefore, we cannot conclude that economic incentives are strictly necessary or unnecessary for eliciting social preferences, and further replication is essential before drawing broader conclusions.

## **ACKNOWLEDGMENTS**

Authors thank participants at seminars in Alicante, Derby, KTI Budapest. Financial support from MINECO-FEDER (PID2021-126892NB-I00) and the European Union's Horizon Europe Research and Innovation Programme under Grant Agreement number 101095175 and the UK Government is gratefully acknowledged.

## **CONFLICTS OF INTEREST**

The authors declare no conflicts of interest.

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## Appendix A: Detailed statistical analyses

**Table A1:** Balance across treatments. Baseline: Hypothetical (H).

	$mean_H$	$p(R-H)^\S$	$p(B-H)^\S$
<i>female</i>	0.621	0.986	0.946
<i>age</i>	31.909	0.946	0.988
<i>education*</i>	2.941	0.808	0.988
<i>SES</i>	5.147	0.946	0.988
<i>risky choices</i>	5.496	0.306	0.988
<i>patient choices</i>	8.628	0.160	0.960
<i>charity</i>	2.535	0.946	0.960

Note:  $^\S$  Inference was made regressing each control variable on H and using Westfall and Young adjusted p-values for multiple testing. *Education* is a categorical variable (taking values from 0 to 6 for simplicity, from no formal education to doctorate degree) which refers to the highest education level. SES reflects the *Socio-economic status* using the position in the income ladder (scale from 1 to 10). *Charity* refers to a self-reported categorical variable that reflects different amounts of donations (in ascending order) made in the last year. *Risky choices* refers to the number of risky options chosen in the Holt-Laury task (in which participants had to choose between a safer and a riskier lottery), while *patient choices* refers to the number of later-larger allocations in the time discounting task (in which participants had to choose between a sooner smaller amount of money and a later but larger amount).

**Table A2:** Regression analysis for the H vs R comparison.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	giving ( $g$ )	selfish ( $g=0$ )	t.selfish ( $g \leq 0.1$ )	2t.selfish ( $g \leq 0.2$ )	egalitarian ( $g=0.5$ )	t.egalitarian ( $0.4 \leq g \leq 0.6$ )	2t.egalitarian ( $0.3 \leq g \leq 0.7$ )	saint ( $g=1$ )	t.saint ( $0.9 \leq g \leq 1$ )	2t.saint ( $0.8 \leq g \leq 1$ )
H	-0.000 (0.014)	-0.027 (0.023)	-0.038 (0.025)	-0.036 (0.027)	0.057* (0.033)	0.102*** (0.031)	0.071** (0.029)	-0.031*** (0.012)	-0.031** (0.012)	-0.034*** (0.013)
Westfall and Young p-value	0.994	0.374	0.262	0.324	0.256	<b>0.008</b>	<b>0.060</b>	<b>0.034</b>	<b>0.050</b>	<b>0.028</b>
age	0.002*** (0.001)	-0.002*** (0.001)	-0.003*** (0.001)	-0.004*** (0.001)	0.006*** (0.001)	0.005*** (0.001)	0.003*** (0.001)	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)
female	0.042*** (0.015)	-0.090*** (0.025)	-0.085*** (0.027)	-0.069** (0.029)	0.070** (0.035)	0.066** (0.032)	0.062** (0.030)	0.006 (0.011)	0.005 (0.012)	0.007 (0.012)
education	-0.007 (0.005)	0.016** (0.008)	0.023*** (0.009)	0.014 (0.009)	-0.011 (0.012)	-0.017 (0.011)	-0.017 (0.010)	0.003 (0.004)	0.003 (0.005)	0.003 (0.005)
SES	-0.018*** (0.005)	0.024*** (0.008)	0.025*** (0.009)	0.035*** (0.009)	-0.040*** (0.011)	-0.043*** (0.010)	-0.031*** (0.010)	-0.004 (0.004)	-0.004 (0.004)	-0.003 (0.004)
risky choices	0.001 (0.003)	-0.003 (0.005)	-0.001 (0.005)	-0.002 (0.006)	-0.000 (0.007)	-0.000 (0.006)	0.002 (0.006)	0.000 (0.003)	-0.001 (0.003)	-0.000 (0.003)
patient choices	0.001 (0.001)	-0.003 (0.002)	-0.003 (0.002)	-0.004 (0.002)	0.006** (0.003)	0.007*** (0.002)	0.005** (0.002)	-0.001* (0.001)	-0.002* (0.001)	-0.002** (0.001)
charity	0.006 (0.006)	0.001 (0.009)	-0.002 (0.010)	-0.010 (0.010)	0.023* (0.012)	0.015 (0.011)	0.009 (0.011)	0.002 (0.005)	0.002 (0.005)	0.001 (0.005)
Constant	0.410*** (0.038)	0.133** (0.066)	0.155** (0.069)	0.205*** (0.072)	0.510*** (0.089)	0.655*** (0.081)	0.739*** (0.076)	0.055* (0.029)	0.063** (0.030)	0.056* (0.031)
Observations	789	789	789	789	789	789	789	789	789	789
R-squared	0.047	0.050	0.050	0.046	0.056	0.066	0.043	0.015	0.015	0.016

Note: Linear regression estimates. Robust standard errors in parentheses. Asterisks denote significance levels: \*\*\* p<0.01,

\*\* p<0.05, \* p<0.1



**Table A3: Regression analysis for the H vs B comparison.**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	giving ( $g$ )	selfish ( $g=0$ )	t.selfish ( $g \leq 0.1$ )	2t.selfish ( $g \leq 0.2$ )	egalitarian ( $g=0.5$ )	t.egalitarian ( $0.4 \leq g \leq 0.6$ )	2t.egalitarian ( $0.3 \leq g \leq 0.7$ )	saint ( $g=1$ )	t.saint ( $0.9 \leq g \leq 1$ )	2t.saint ( $0.8 \leq g \leq 1$ )
H	0.003 (0.014)	-0.019 (0.022)	-0.024 (0.024)	-0.042 (0.027)	0.084** (0.033)	0.096*** (0.030)	0.076*** (0.028)	-0.024** (0.010)	-0.026** (0.011)	-0.033*** (0.012)
Westfall and Young p-value	0.878	0.574	0.532	0.252	<b>0.050</b>	<b>0.016</b>	<b>0.038</b>	<b>0.084</b>	<b>0.084</b>	<b>0.030</b>
age	0.003*** (0.001)	-0.001* (0.001)	-0.003*** (0.001)	-0.003*** (0.001)	0.005*** (0.001)	0.003** (0.001)	0.002 (0.001)	0.001* (0.001)	0.002** (0.001)	0.002** (0.001)
female	0.032** (0.015)	-0.088*** (0.025)	-0.087*** (0.027)	-0.100*** (0.029)	0.110*** (0.035)	0.136*** (0.032)	0.128*** (0.031)	-0.028** (0.013)	-0.028** (0.013)	-0.028** (0.014)
education	-0.008* (0.005)	0.010 (0.008)	0.014 (0.008)	0.011 (0.009)	-0.019 (0.011)	-0.014 (0.011)	-0.010 (0.010)	-0.001 (0.004)	-0.002 (0.004)	-0.001 (0.004)
SES	-0.018*** (0.005)	0.013 (0.008)	0.020** (0.009)	0.031*** (0.009)	-0.045*** (0.011)	-0.040*** (0.010)	-0.026*** (0.010)	-0.006 (0.004)	-0.005 (0.004)	-0.005 (0.004)
risky choices	0.002 (0.003)	0.001 (0.005)	-0.003 (0.005)	-0.006 (0.006)	0.017** (0.007)	0.012* (0.006)	0.009 (0.006)	-0.002 (0.002)	-0.002 (0.003)	-0.003 (0.003)
patient choices	0.001 (0.001)	-0.002 (0.002)	-0.001 (0.002)	-0.003 (0.002)	0.004* (0.003)	0.005** (0.002)	0.005** (0.002)	-0.001 (0.001)	-0.002* (0.001)	-0.002* (0.001)
charity	0.012** (0.005)	-0.013 (0.008)	-0.019** (0.009)	-0.025*** (0.009)	0.044*** (0.012)	0.038*** (0.011)	0.028*** (0.010)	-0.001 (0.005)	-0.002 (0.005)	-0.003 (0.005)
Constant	0.381*** (0.041)	0.178*** (0.066)	0.220*** (0.068)	0.299*** (0.072)	0.420*** (0.088)	0.552*** (0.082)	0.616*** (0.078)	0.080** (0.034)	0.064* (0.038)	0.085** (0.040)
Observations	814	814	814	814	814	814	814	814	814	814
R-squared	0.056	0.029	0.037	0.053	0.073	0.075	0.055	0.026	0.037	0.034

Note: Linear regression estimates. Robust standard errors in parentheses. Asterisk denote significance levels: \*\*\* p<0.01,

\*\* p<0.05, \* p<0.1

**Table A4:** Regression analysis for the H vs R&B comparison.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	giving ( $g$ )	selfish ( $g=0$ )	t.selfish ( $g \leq 0.1$ )	2t.selfish ( $g \leq 0.2$ )	egalitarian ( $g=0.5$ )	t.egalitarian ( $0.4 \leq g \leq 0.6$ )	2t.egalitarian ( $0.3 \leq g \leq 0.7$ )	saint ( $g=1$ )	t.saint ( $0.9 \leq g \leq 1$ )	2t.saint ( $0.8 \leq g \leq 1$ )
H	0.002 (0.012)	-0.023 (0.019)	-0.031 (0.021)	-0.039* (0.023)	0.070** (0.028)	0.097*** (0.026)	0.072*** (0.024)	-0.027*** (0.009)	-0.028*** (0.009)	-0.033*** (0.010)
Westfall and Young p-value	0.902	0.322	0.250	0.192	<b>0.056</b>	<b>0.002</b>	<b>0.010</b>	<b>0.042</b>	<b>0.042</b>	<b>0.010</b>
age	0.002*** (0.000)	-0.002*** (0.001)	-0.003*** (0.001)	-0.004*** (0.001)	0.005*** (0.001)	0.003*** (0.001)	0.002** (0.001)	0.001 (0.000)	0.001** (0.001)	0.001** (0.001)
female	0.040*** (0.013)	-0.095*** (0.021)	-0.093*** (0.022)	-0.091*** (0.024)	0.080*** (0.029)	0.107*** (0.027)	0.099*** (0.025)	-0.011 (0.011)	-0.010 (0.011)	-0.008 (0.011)
education	-0.007* (0.004)	0.011* (0.007)	0.017** (0.007)	0.011 (0.008)	-0.014 (0.010)	-0.015* (0.009)	-0.013 (0.008)	0.001 (0.004)	0.001 (0.004)	0.002 (0.004)
SES	-0.014*** (0.004)	0.013** (0.006)	0.017** (0.007)	0.026*** (0.008)	-0.038*** (0.009)	-0.036*** (0.008)	-0.023*** (0.008)	-0.004 (0.004)	-0.004 (0.004)	-0.003 (0.004)
risky choices	0.002 (0.003)	-0.003 (0.004)	-0.003 (0.005)	-0.003 (0.005)	0.005 (0.006)	0.004 (0.005)	0.004 (0.005)	-0.001 (0.002)	-0.001 (0.002)	-0.001 (0.002)
patient choices	0.001 (0.001)	-0.003 (0.002)	-0.002 (0.002)	-0.003* (0.002)	0.005** (0.002)	0.006*** (0.002)	0.005** (0.002)	-0.001 (0.001)	-0.001* (0.001)	-0.001* (0.001)
charity	0.006 (0.005)	-0.003 (0.007)	-0.006 (0.008)	-0.011 (0.008)	0.033*** (0.010)	0.023** (0.009)	0.015* (0.009)	-0.001 (0.004)	-0.002 (0.004)	-0.003 (0.004)
Constant	0.373*** (0.033)	0.202*** (0.054)	0.225*** (0.057)	0.282*** (0.060)	0.471*** (0.074)	0.603*** (0.069)	0.667*** (0.065)	0.056** (0.028)	0.043 (0.031)	0.052 (0.032)
Observations	1,194	1,194	1,194	1,194	1,194	1,194	1,194	1,194	1,194	1,194
R-squared	0.043	0.034	0.038	0.041	0.052	0.057	0.039	0.012	0.016	0.017

Note: Linear regression estimates. Robust standard errors in parentheses. Asterisk denote significance levels: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table A5: Regression analysis for the R vs B comparison.**

VARIABLES	(1) giving ( $g$ )	(2) selfish ( $g=0$ )	(3) t.selfish ( $g \leq 0.1$ )	(4) 2t.selfish ( $g \leq 0.2$ )	(5) egalitarian ( $g=0.5$ )	(6) t.egalitarian ( $0.4 \leq g \leq 0.6$ )	(7) 2t.egalitarian ( $0.3 \leq g \leq 0.7$ )	(8) saint ( $g=1$ )	(9) t.saint ( $0.9 \leq g \leq 1$ )	(10) 2t.saint ( $0.8 \leq g \leq 1$ )
R	0.006 (0.016)	0.002 (0.023)	0.008 (0.026)	-0.011 (0.028)	0.028 (0.035)	-0.002 (0.033)	0.009 (0.031)	0.008 (0.014)	0.007 (0.015)	0.002 (0.016)
Westfall and Young p-value	0.992	0.998	0.996	0.988	0.912	0.998	0.996	0.974	0.978	0.978
age	0.003*** (0.001)	-0.003*** (0.001)	-0.004*** (0.001)	-0.004*** (0.001)	0.004*** (0.001)	0.003** (0.001)	0.002 (0.001)	0.001* (0.001)	0.002** (0.001)	0.002* (0.001)
female	0.045*** (0.017)	-0.105*** (0.027)	-0.104*** (0.028)	-0.105*** (0.031)	0.064* (0.036)	0.119*** (0.035)	0.108*** (0.033)	-0.011 (0.015)	-0.005 (0.015)	-0.003 (0.016)
education	-0.005 (0.006)	0.006 (0.008)	0.014 (0.009)	0.009 (0.010)	-0.009 (0.012)	-0.015 (0.012)	-0.012 (0.011)	-0.000 (0.005)	0.002 (0.005)	0.003 (0.006)
SES	-0.007 (0.005)	0.003 (0.007)	0.007 (0.008)	0.013 (0.009)	-0.030*** (0.011)	-0.026** (0.011)	-0.013 (0.010)	-0.002 (0.005)	-0.001 (0.005)	0.000 (0.005)
risky choices	0.002 (0.003)	-0.006 (0.005)	-0.004 (0.006)	-0.003 (0.006)	0.001 (0.007)	0.000 (0.007)	0.003 (0.007)	0.000 (0.003)	0.001 (0.003)	0.000 (0.003)
patient choices	0.002 (0.001)	-0.003 (0.002)	-0.003 (0.002)	-0.004 (0.002)	0.005* (0.003)	0.005** (0.003)	0.005* (0.003)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)
charity	-0.001 (0.006)	0.003 (0.009)	0.002 (0.010)	0.000 (0.010)	0.031** (0.012)	0.017 (0.012)	0.007 (0.011)	-0.004 (0.005)	-0.005 (0.005)	-0.007 (0.006)
Constant	0.320*** (0.045)	0.296*** (0.069)	0.300*** (0.074)	0.353*** (0.080)	0.458*** (0.097)	0.599*** (0.093)	0.637*** (0.088)	0.028 (0.042)	-0.003 (0.046)	0.010 (0.049)
Observations	785	785	785	785	785	785	785	785	785	785
R-squared	0.036	0.036	0.035	0.033	0.035	0.035	0.026	0.008	0.012	0.011

Note: Linear regression estimates. Robust standard errors in parentheses. Asterisk denote significance levels: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

## Appendix B: Instructions

### Consent

Please read the following information carefully: You are invited to take part in a short survey study. The following list of items summarises all important things you should know before proceeding with this study.

- You must be over 18 to participate.
- Your participation is voluntary, and you may withdraw from the study at any time.
- Participation will not incur any financial expense by you.
- If you agree to participate in the study, you are expected to fulfill the obligations related to the study. That is, answer any questions posed to you for the duration of the study.
- There are no known physical risks involved in this procedure and the tasks do not require any special physical or psychological attitudes or any specific knowledge of any kind.
- You will not be knowingly deceived in any form.
- No choices will be traced back to any one individual.

Yes, I accept

Next

- No choices will be traced back to any one individual.

**CONFIDENTIALITY:** The information you provide will be treated in full confidence and will be legally protected. It will never be associated with you personally in any form. No person-identifiable information will be reported in any published or unpublished work. No person-identifiable data may be made publicly available. All electronic files will be saved but treated in accordance with the Data Protection Act (1998).

In order to receive Prolifics' participation fee, you need to complete the entire survey. In the last screen, you will automatically be redirected to the prolific link in order to confirm that you complete the survey.

**CONSENT:** If you agree to the terms of this study and wish to continue with this study, then please click on the option "I accept" .

Yes, I accept

Next

Subjects were randomly assigned to one of the three treatments: Real (R), Hypothetical (H) and BRIS (B). The instructions of the time discounting, risk (Holt and Laury), and dictator game tasks were identical across treatments, except for the last sentence, where we introduced the specific payment condition. All participants remained in the assigned treatment across all the three tasks and completed them in the same order (time, risk, DG).

# Real (R)

## Time discounting task

Part 1: Present versus future

In this section, you will be asked to make a series of 20 decisions about whether you prefer to receive an amount of money sooner or later. The task consists of 2 blocks. In each block there are 10 identical decisions, but they differ in the time that you would receive the amount of money involved.

There are no right or wrong answers and the decisions are totally independent of each other, since only one of the 20 decisions will be randomly selected to calculate the payment. This will be done on the date established by the option you have chosen in that decision selected at random.

You will receive **REAL** money for this task.

Next

### \*BLOCK SR

Please choose the option you prefer in each decision. Do you prefer...

Please select at least 10 answers

	Today	In one month
Receive £3 today or £3 in one month?	<input type="radio"/>	<input type="radio"/>
Receive £3 today or £3.2 in one month?	<input type="radio"/>	<input type="radio"/>
Receive £3 today or £3.4 in one month?	<input type="radio"/>	<input type="radio"/>
Receive £3 today or £3.6 in one month?	<input type="radio"/>	<input type="radio"/>
Receive £3 today or £3.8 in one month?	<input type="radio"/>	<input type="radio"/>
Receive £3 today or £4.0 in one month?	<input type="radio"/>	<input type="radio"/>
Receive £3 today or £4.2 in one month?	<input type="radio"/>	<input type="radio"/>
Receive £3 today or £4.4 in one month?	<input type="radio"/>	<input type="radio"/>
Receive £3 today or £4.6 in one month?	<input type="radio"/>	<input type="radio"/>
Receive £3 today or £4.8 in one month?	<input type="radio"/>	<input type="radio"/>

Next

\*BLOCK LR

Please choose the option you prefer in each decision. Do you prefer...

	In one Month	In two months
Receive £3 in one month or receive £3 in two months?	<input type="radio"/>	<input type="radio"/>
Receive £3 in one month or receive £3.2 in two months?	<input type="radio"/>	<input type="radio"/>
Receive £3 in one month or receive £3.4 in two months?	<input type="radio"/>	<input type="radio"/>
Receive £3 in one month or receive £3.6 in two months?	<input type="radio"/>	<input type="radio"/>
Receive £3 in one month or receive £3.8 in two months?	<input type="radio"/>	<input type="radio"/>
Receive £3 in one month or receive £4.0 in two months?	<input type="radio"/>	<input type="radio"/>
Receive £3 in one month or receive £4.2 in two months?	<input type="radio"/>	<input type="radio"/>
Receive £3 in one month or receive £4.4 in two months?	<input type="radio"/>	<input type="radio"/>
Receive £3 in one month or receive £4.6 in two months?	<input type="radio"/>	<input type="radio"/>
Receive £3 in one month or receive £4.8 in two months?	<input type="radio"/>	<input type="radio"/>

Next

### Holt and Laury task

Part II: Decisions under uncertainty

For each of the following decisions, you have to choose the lottery you prefer (A or B). In each lottery you can win one amount with a certain probability  $p$  or a different amount with probability  $(1-p)$ .

In total, you are going to make 11 decisions. Only one of the 11 decisions will be randomly selected to calculate the payment and the prize that you can win will depend on the lottery you choose (A or B) and the result of that lottery.

Remember, you will receive **REAL** money for this task.

Next

Please, select the lottery (A or B) you prefer in each decision.

**Lottery A:** with 0% probability you win £0.5 or with 100% probability you win £0.4

**Lottery B:** with 0% probability you win £1 or with 100% probability you win £0.01

- Lottery A  
 Lottery B

**Lottery A:** with 10% probability you win £0.5 or with 90% probability you win £0.4

**Lottery B:** with 10% probability you win £1 or with 90% probability you win £0.01

- Lottery A  
 Lottery B

**Lottery A:** with 20% probability you win £0.5 or with 80% probability you win £0.4

**Lottery B:** with 20% probability you win £1 or with 80% probability you win £0.01

- Lottery A  
 Lottery B

**Lottery A:** with 30% probability you win £0.5 or with 70% probability you win £0.4

**Lottery B:** with 30% probability you win £1 or with 70% probability you win £0.01

- Lottery A  
 Lottery B

**Lottery A:** with 40% probability you win £0.5 or with 60% probability you win £0.4

**Lottery B:** with 40% probability you win £1 or with 60% probability you win £0.01

- Lottery A  
 Lottery B

**Lottery A:** with 50% probability you win £0.5 or with 50% probability you win £0.4

**Lottery B:** with 50% probability you win £1 or with 50% probability you win £0.01

- Lottery A  
 Lottery B

**Lottery A:** with 60% probability you win £0.5 or with 40% probability you win £0.4

**Lottery B:** with 60% probability you win £1 or with 40% probability you win £0.01

- Lottery A  
 Lottery B

**Lottery A:** with 70% probability you win £0.5 or with 30% probability you win £0.4

**Lottery B:** with 70% probability you win £1 or with 30% probability you win £0.01

- Lottery A  
 Lottery B

**Lottery A:** with 80% probability you win £0.5 or with 20% probability you win £0.4

**Lottery B:** with 80% probability you win £1 or with 20% probability you win £0.01

- Lottery A  
 Lottery B

**Lottery A:** with 90% probability you win £0.5 or with 10% probability you win £0.4

**Lottery B:** with 90% probability you win £1 or with 10% probability you win £0.01

- Lottery A  
 Lottery B

**Lottery A:** with 100% probability you win £0.5 or with 0% probability you win £0.4

**Lottery B:** with 100% probability you win £1 or with 0% probability you win £0.01

- Lottery A  
 Lottery B

Next

## Dictator game

### Part III: Allocations

In this task, you have to divide an amount of money between you and another person. Initially, we give you £1 to split between you and the other person. One of the two (player A) is going to divide the £1 between both of you. The other (player B) will receive the amount that player A sends him/her but he or she does not have to make any decision (player B is passive).

The payment will correspond to the decision you have made about how to divide the money. You can also be the one who receives the money that someone else sends you instead of who makes the division (that is, you can be either player A or player B: 50% chance).

Remember, you will receive **REAL** money for this task.

\*Please mark the percentage of the £1 that you would want to send to the other person.

Choose one of the following answers

- £0
- £0.1
- £0.2
- £0.3
- £0.4
- £0.5
- £0.6
- £0.7
- £0.8
- £0.9
- £1

Submit



## Hypothetical (H)

### *Time discounting task*

Part I: Present versus future

In this section, you will be asked to make a series of 20 decisions about whether you prefer to receive an amount of money sooner or later. The task consists of 2 blocks. In each block, there are 10 identical decisions, but they differ in the time that you would receive the amount of money involved.

There are no right or wrong answers and the decisions are totally independent of each other since only one of the 20 decisions will be randomly selected to calculate the payment. This will be done on the date established by the option you have chosen in that decision selected at random.

Payments in this section are **HYPOTHETICAL**. Please make the decisions as if they were real.

Next

[See the decision screen above – identical across treatments]

### *Holt and Laury task*

Part II: Decisions under uncertainty

For each of the following decisions, you have to choose the lottery you prefer (A or B). In each lottery you can win one amount with a certain probability  $p$  or a different amount with probability  $(1-p)$ .

In total, you are going to make 11 decisions. Only one of the 11 decisions will be randomly selected to calculate the payment and the prize that you can win will depend on the lottery you choose (A or B) and the result of that lottery.

Payments in this section are **HYPOTHETICAL**. Please make the decisions as if they were real.

Next

[See the decision screen above – identical across treatments]

## Dictator game

### Part III: Allocations

In this task, you have to divide an amount of money between you and another person. Initially, we give you £1 to split between you and the other person. One of the two (player A) is going to divide the £1 between both of you. The other (player B) will receive the amount that player A sends him/her but he or she does not have to make any decision (player B is passive).

The payment will correspond to the decision you have made about how to divide the money. You can also be the one who receives the money that someone else sends you instead of who makes the division (that is, you can be either player A or player B; 50% chance).

Payments in this section are **HYPOTHETICAL**. Please make the decisions as if they were real.

\*Please mark the percentage of the £1 that you would want to send to the other person.

Choose one of the following answers

- £0
- £0.1
- £0.2
- £0.3
- £0.4
- £0.5
- £0.6
- £0.7
- £0.8
- £0.9
- £1

Submit

## BRIS (B)

### *Time discounting task*

#### Part I: Present versus future

In this section, you will be asked to make a series of 20 decisions about whether you prefer to receive an amount of money sooner or later. The task consists of 2 blocks. In each block there are 10 identical decisions, but they differ in the time that you would receive the amount of money involved.

There are no right or wrong answers and the decisions are totally independent of each other, since only one of the 20 decisions will be randomly selected to calculate the payment. This will be done on the date established by the option you have chosen in that decision selected at random.

**ONE OUT OF EVERY TEN PARTICIPANTS**, selected at random, will receive real money for this task.

Next

[See the decision screen above – identical across treatments]

### *Holt and Laury task*

#### Part II: Decisions under uncertainty

For each of the following decisions, you have to choose the lottery you prefer (A or B). In each lottery you can win one amount with a certain probability  $p$  or a different amount with probability  $(1-p)$ .

In total, you are going to make 11 decisions. Only one of the 11 decisions will be randomly selected to calculate the payment and the prize that you can win will depend on the lottery you choose (A or B) and the result of that lottery.

**ONE OUT OF EVERY TEN PARTICIPANTS**, selected at random, will receive real money for this task.

Next

[See the decision screen above – identical across treatments]

## Dictator game

### Part III: Allocations

In this task, you have to divide an amount of money between you and another person. Initially, we give you £1 to split between you and the other person. One of the two (player A) is going to divide the £1 between both of you. The other (player B) will receive the amount that player A sends him/her but he or she does not have to make any decision (player B is passive).

The payment will correspond to the decision you have made about how to divide the money. You can also be the one who receives the money that someone else sends you instead of who makes the division (that is, you can be either player A or player B; 50% chance).

**ONE OUT OF EVERY TEN PARTICIPANTS**, selected at random, will receive real money for this task.

\*Please mark the percentage of the £1 that you would want to send to the other person.

Choose one of the following answers

- £0
- £0.1
- £0.2
- £0.3
- £0.4
- £0.5
- £0.6
- £0.7
- £0.8
- £0.9
- £1

Submit