

Supplemental Appendix

**Please Take a Minute:
How Prosocial Choices Change with Deliberation**

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APPENDIX A: FIGURES AND TABLES

Appendix A includes an additional decision screen from the experiment as well as secondary results excluded from the main text.

00:53

In this question, your earnings will be the sum of money in Account A and Account B.

Account A has \$6 and Account B has has \$0. You can transfer \$1 from Account A and it becomes \$5 in Account B.

Do not transfer \$1
(and put \$0 in Account B)

Transfer \$1
(and put \$5 in Account B)

Current choice: Transfer

Previous choices: _____

Figure A1. Decision screen for “accounts” questions

Notes: This is how the accounts question with exchange rate of 5 would look if a subject had clicked to transfer within the first 7 seconds of the minute. A typo in the survey code inserted an extra “has” between “Account B” and “\$0” in the first bold sentence. This typo was only caught after all data had been collected.

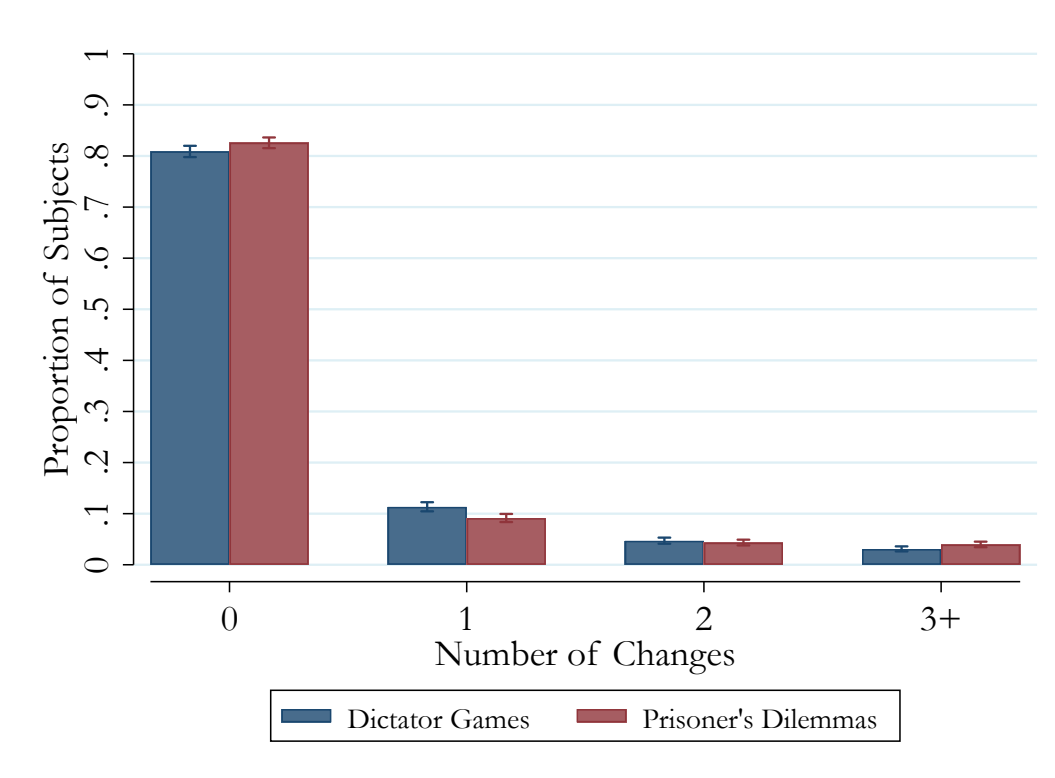
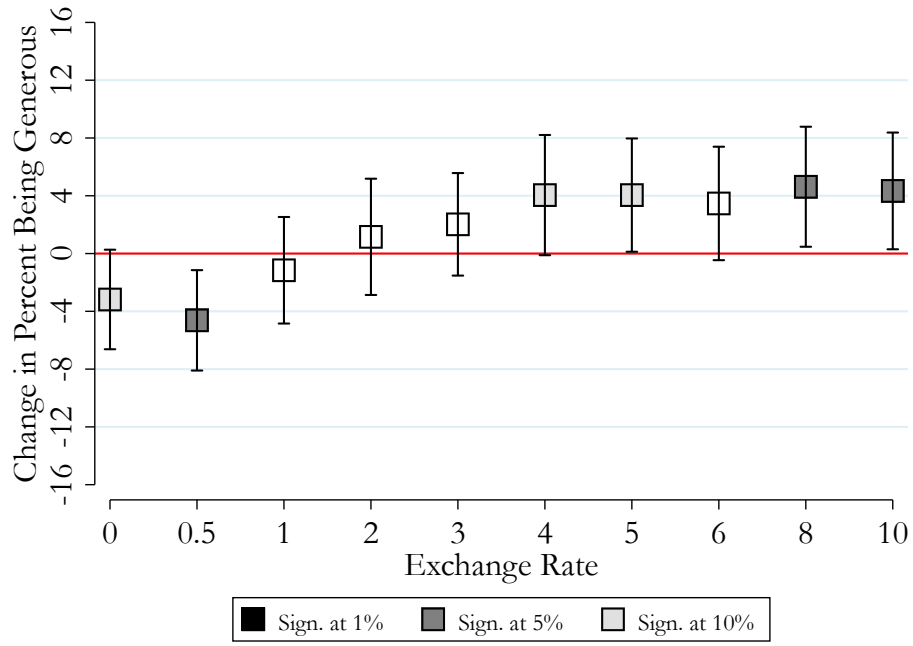
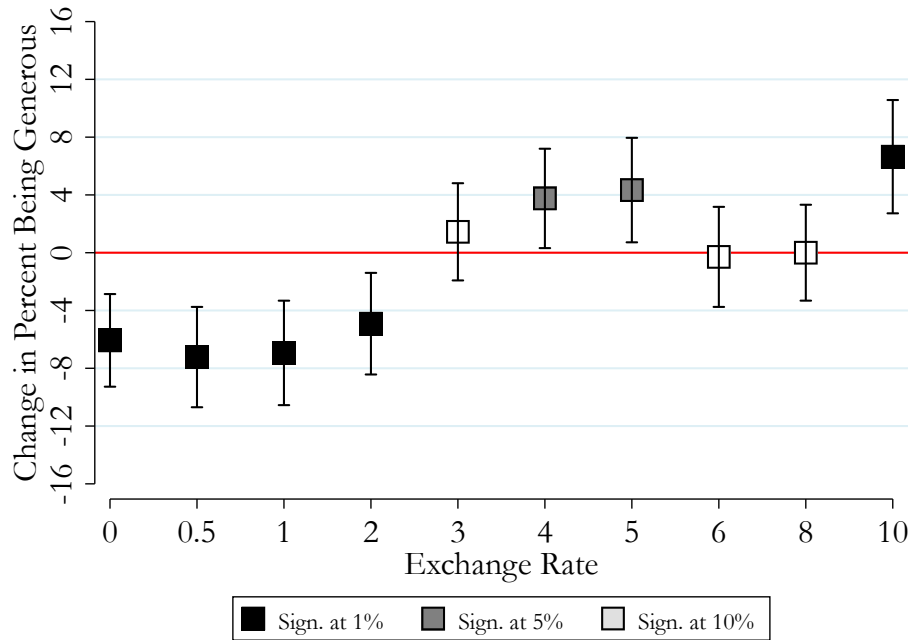


Figure A2. Overall number of times subjects change choices within a question



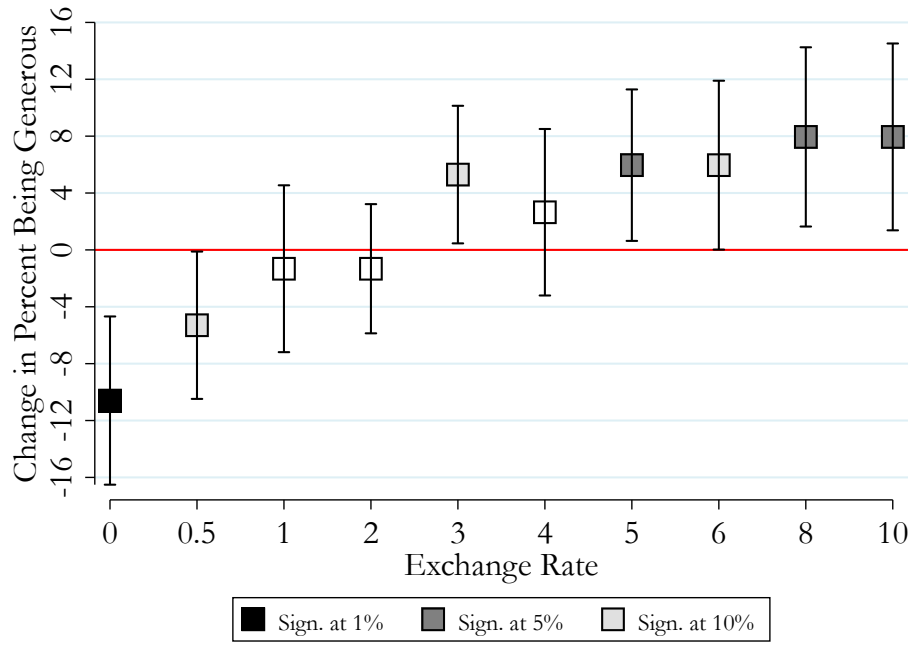
(a) Change in Percent Being Generous in Dictator Games (WBL)



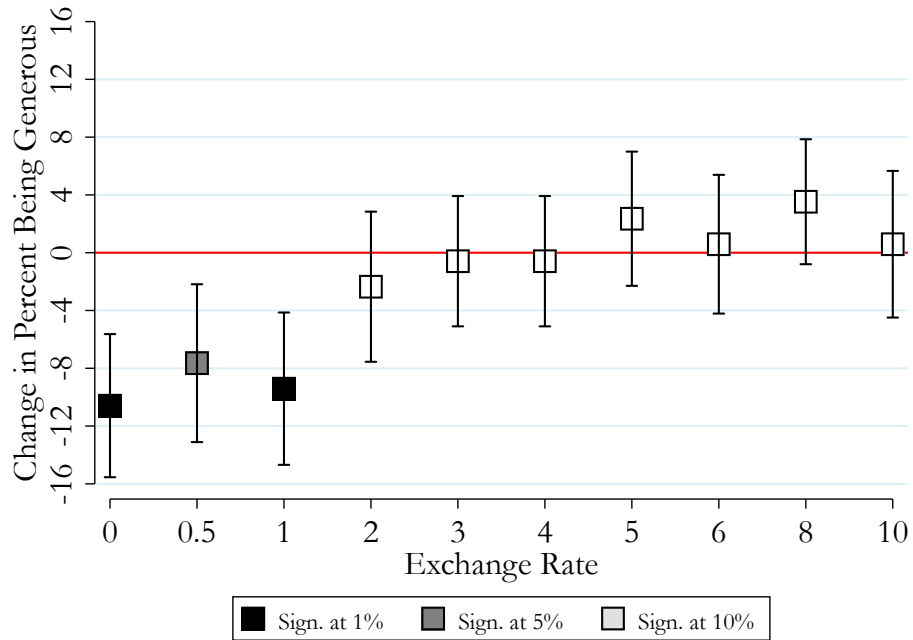
(b) Change in Percent Being Generous in Prisoner's Dilemmas (WBL)

Figure A3. Change in percent being generous between first and last choices

Notes: Includes Wharton Behavioral Lab subjects only. Tests of significance are binomial probability tests. The null hypothesis is that the probability of becoming selfish is equal to the probability of becoming generous across first and last choices. A black square indicates significance at 1%, dark gray at 5%, and light gray at 10%. We include 95% confidence intervals around each mean.



(a) Change in Percent Being Generous in Dictator Games (MTurk)



(b) Change in Percent Being Generous in Prisoner's Dilemmas (MTurk)

Figure A4. Change in percent being generous between first and last choices

Notes: Includes MTurk subjects only. Tests of significance are binomial probability tests. The null hypothesis is that the probability of becoming selfish is equal to the probability of becoming generous across first and last choices. A black square indicates significance at 1%, dark gray at 5%, and light gray at 10%. We include 95% confidence intervals around each mean.

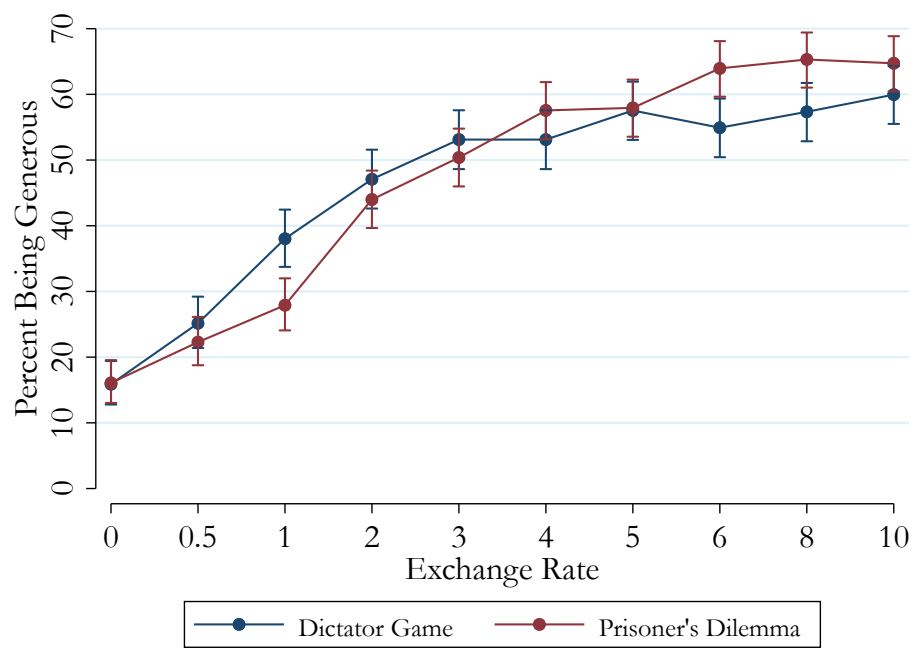
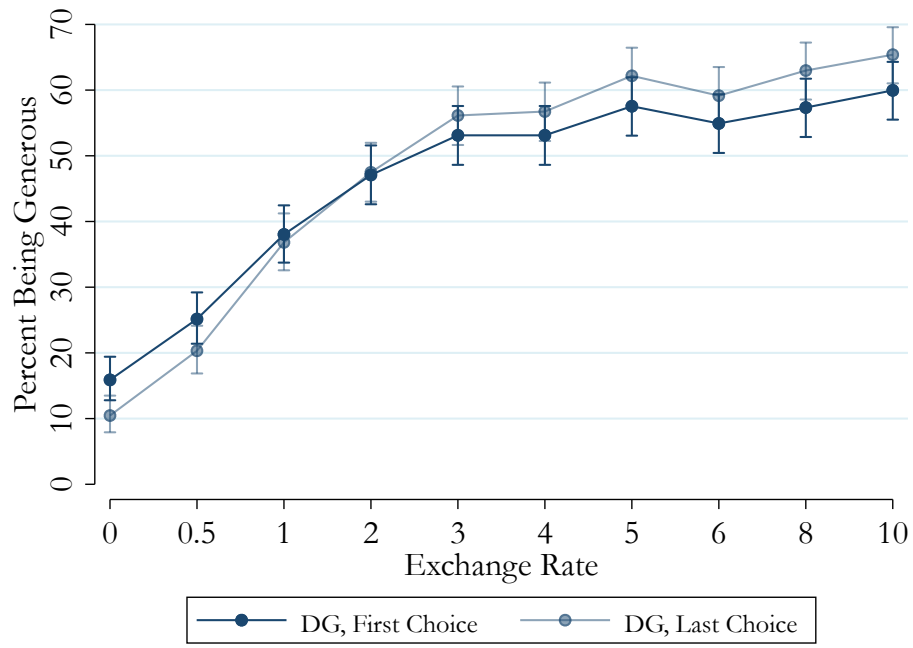
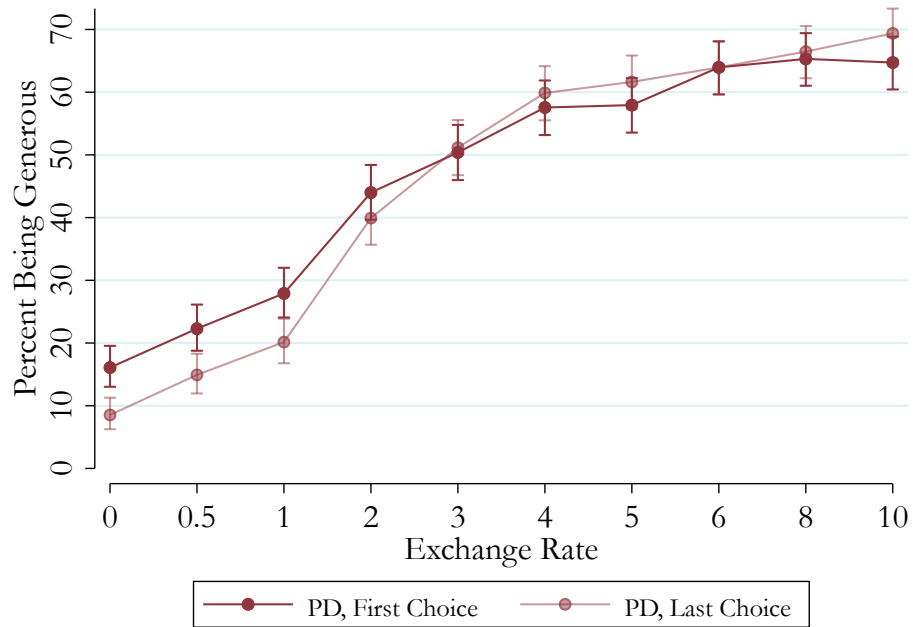


Figure A5. First choice generosity as a function of the exchange rate for 497 subjects who answered the timed DG questions and 516 subjects who answered the timed PD questions. We include 95% confidence intervals around each mean.



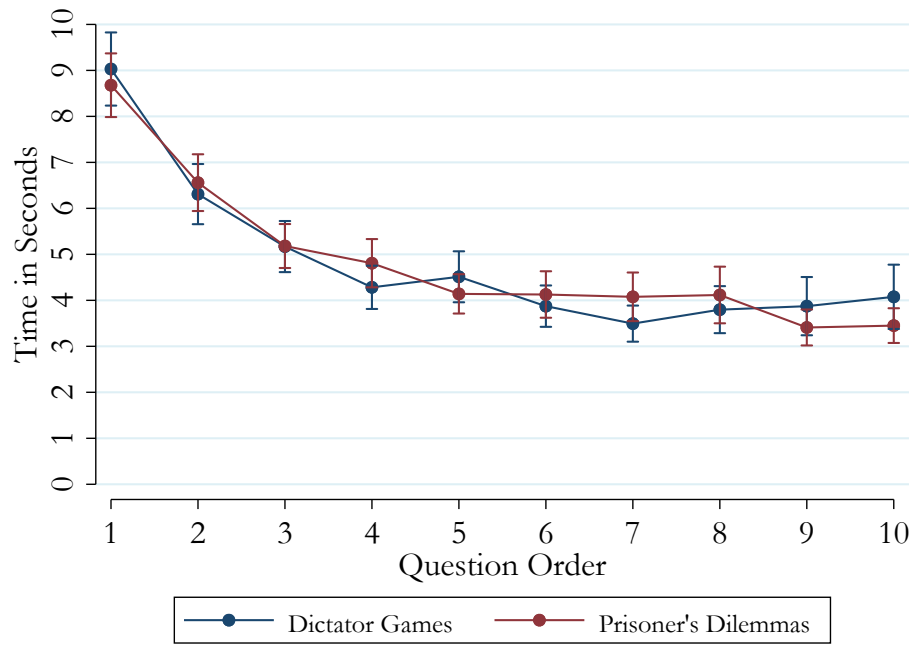
(a) Dictator Games



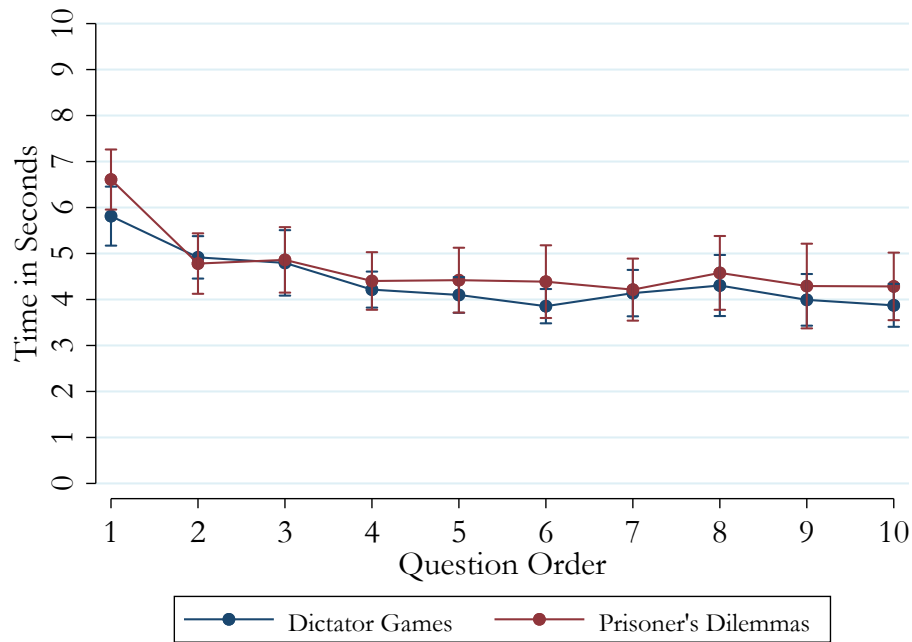
(b) Prisoner's Dilemmas

Figure A6. First and last choice generosity

Notes: We include 95% confidence intervals around each mean.

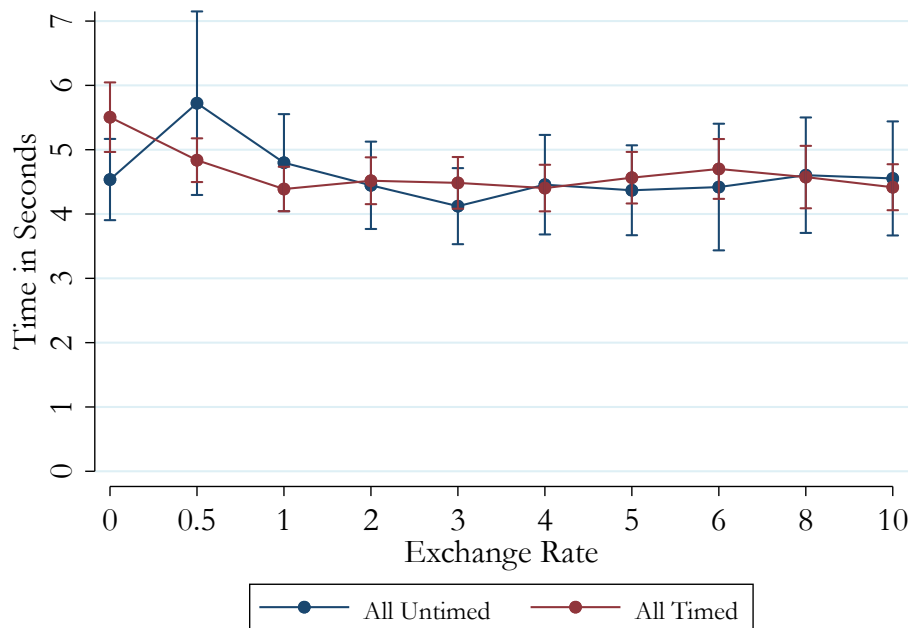


(a) Speed of 1st Choices for 1st Set of 10 Questions

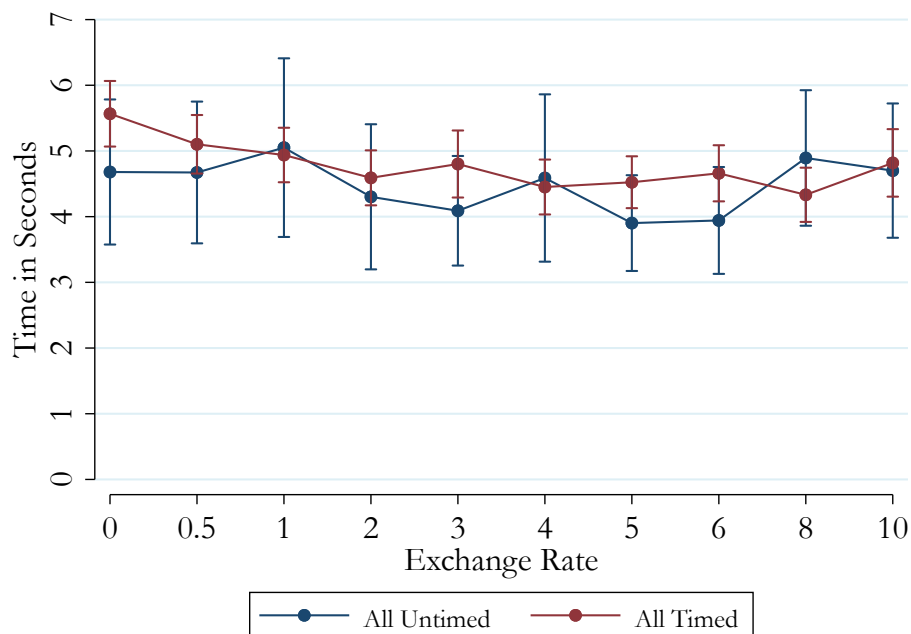


(b) Speed of 1st Choices for 2nd Set of 10 Questions

Figure A7. Average speed of first choices in the timed questions by the order in which the subject saw the question, averaging over exchange rates.



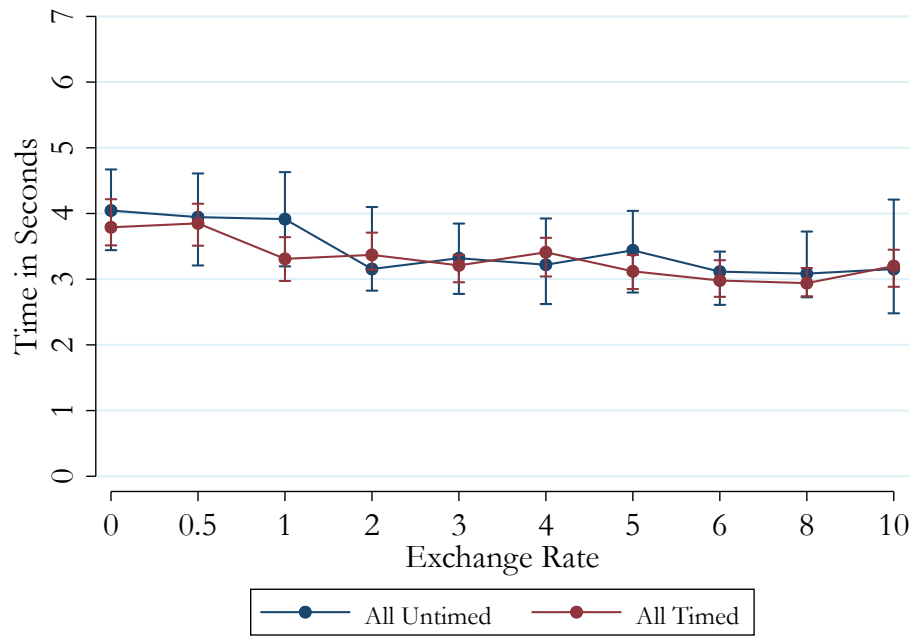
(a) Speed of First Choices in Dictator Games



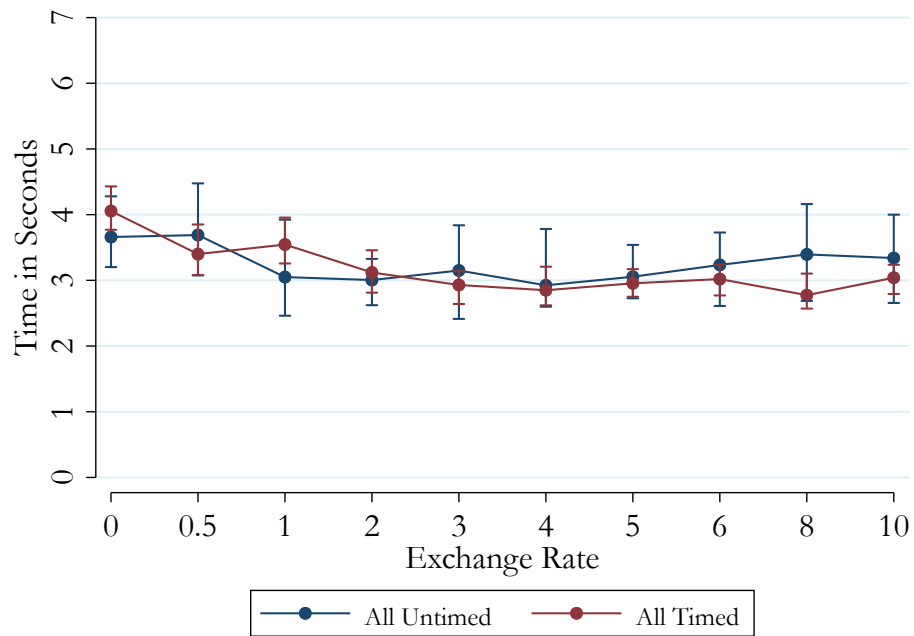
(b) Speed of First Choices in Prisoner's Dilemmas

Figure A8. Average speed of choices in the untimed control treatments compared to the speed of first choices in the timed versions.

Notes: Figure shows the average speed of first choices collapsing across all timed and untimed games. Panel A shows results from dictator games and Panel B shows results from prisoner's dilemmas. We include 95% confidence intervals around each mean.

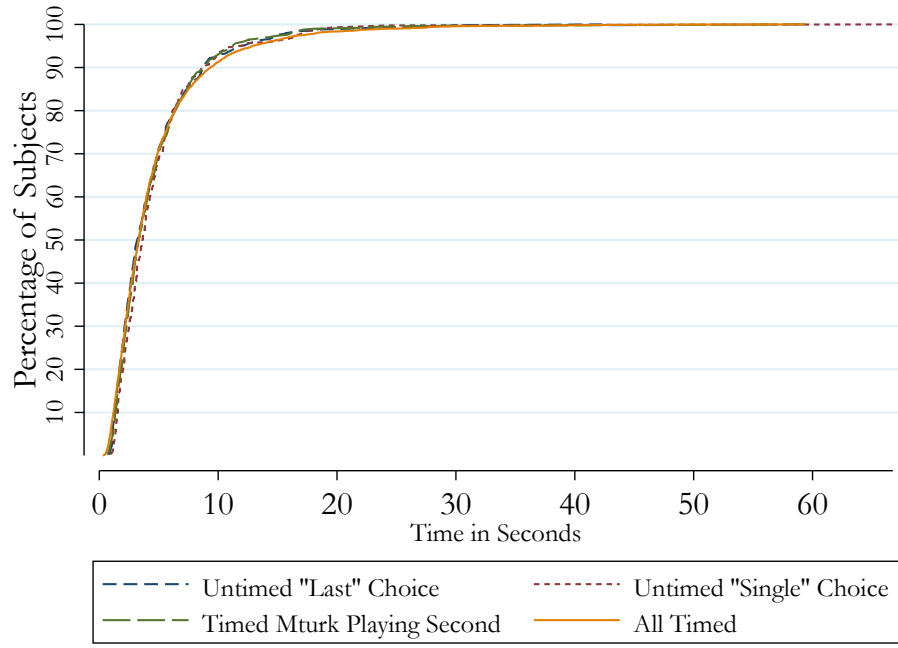


(a) Median Speed of 1st Choices in Dictator Games

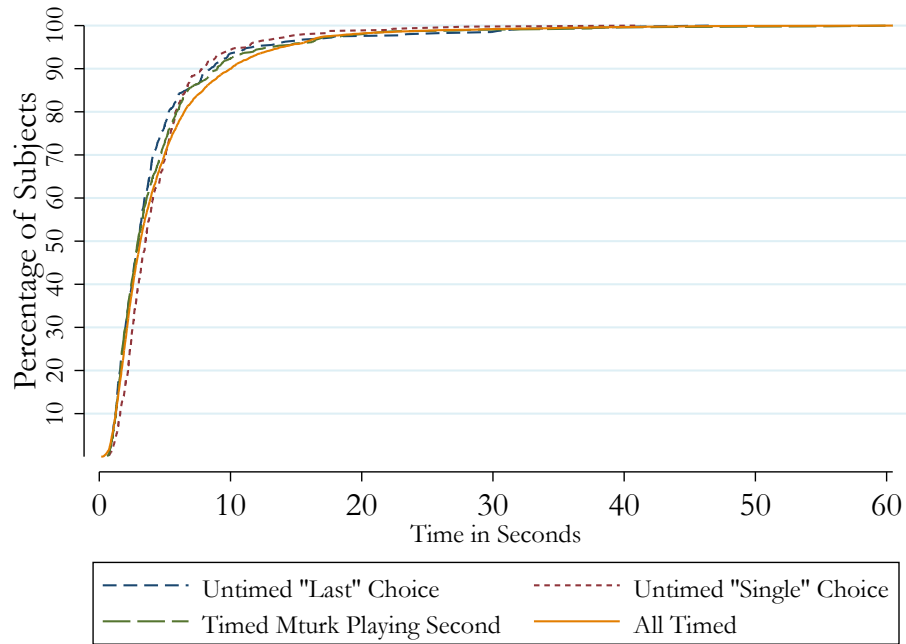


(b) Median Speed of 1st Choices in Prisoner's Dilemmas

Figure A9. Median speed of choices in the untimed control treatments compared to the median speed of first choices in the timed versions. We include 95% confidence intervals for each median.



(a) Dictator Games



(b) Prisoner's Dilemmas

Figure A10. CDFs of decision times of first choices, collapsed across all exchange rates for the dictator games (Panel A) and the prisoner's dilemmas (Panel B).

Table A1—Wharton v. MTurk Subjects

	Speed of 1st Choice (Seconds) (1)	Generosity (DG) (2)	Generosity (PD) (3)	Changed Choice (4)
MTurk	0.165 (0.252)	0.022 (0.033)	0.096 (0.030)	-0.017 (0.018)
Dictator	-0.135 (0.123)			0.016 (0.010)
Constant	5.550 (0.228)	0.152 (0.018)	0.129 (0.018)	0.142 (0.015)
Rate FE	Yes	Yes	Yes	Yes
Observations	10,130	4,970	5,160	10,130
Subjects	556	497	516	556
R^2	0.004	0.083	0.133	0.003

Note: Table compares subjects playing on Amazon’s Mechanical Turk to those playing in the Wharton Behavioral Lab. Regressions include exchange rate fixed effects. Standard errors are clustered by subject.

Table A2—Percent of Subjects Changing Choice for Given Number of Questions

<i>Panel A: First 5 Questions</i>	0	1	2	3	4	5
Dictator Games	44.4	29.1	12.0	5.9	4.8	3.7
Prisoner's Dilemmas	46.2	26.3	12.0	7.9	4.2	3.5
<i>Panel B: Last 5 Questions</i>	0	1	2	3	4	5
Dictator Games	57.1	22.8	9.4	4.8	4.4	1.5
Prisoner's Dilemmas	64.6	18.6	7.7	4.2	3.1	2.0

Table A3—Changes in Generosity and the Exchange Rate (Robustness)

Dep. Variable: <i>Generosity</i>	First Round	First 5 Rounds	Last 5 Rounds	Dropping $X = 0, X = 0.5$
	(1)	(2)	(3)	(4)
Rate $\times$ Last Choice	0.014 (0.007)	0.013 (0.002)	0.011 (0.002)	0.009 (0.002)
Last Choice	-0.126 (0.033)	-0.059 (0.008)	-0.031 (0.008)	-0.026 (0.008)
Rate	0.038 (0.006)	0.041 (0.002)	0.046 (0.003)	0.028 (0.002)
Dictator	-0.114 (0.035)	0.015 (0.015)	-0.002 (0.015)	0.002 (0.015)
Constant	0.412 (0.037)	0.301 (0.016)	0.281 (0.016)	0.395 (0.018)
Observations	1,112	10,130	10,130	16,208
Subjects	556	556	556	556
R^2	0.105	0.091	0.106	0.035
Last Choice at Rate = 10	0.013 $p = 0.776$	0.067 $p = 0.000$	0.074 $p = 0.000$	0.061 $p = 0.000$

Note: Table shows linear probability model estimates of how generosity (transferring one dollar) responds to the exchange rate. *Rate* shows the slope with respect to the first choice. *Rate $\times$ Last Choice* shows how the slope changes when comparing last choices to first choices. *Last Choice* shows the estimated change in generosity for the exchange rate of zero when going from first to last choice. *Last choice at rate = 10* reports *Last Choice + 10(Rate $\times$ Last Choice)*, the estimated change in generosity for the exchange rate of 10 when going from first to last choice, and the p -value that it is equal to 0 from a post-estimation test. Standard errors are clustered by subject.

Table A4—Changes in Generosity and the Exchange Rate (Robustness)

Dep. Variable: <i>Generosity</i>	Dictator Game		Prisoner's Dilemma	
	Low Rate ($X = 0, 0.5$)	High Rate ($X = 3, \dots, 10$)	Low Rate ($X = 0, 0.5, 1, 2$)	High Rate ($X = 4, \dots, 10$)
	(1)	(2)	(3)	(4)
Last Choice	-0.051 (0.011)	0.044 (0.010)	-0.067 (0.008)	0.024 (0.008)
Constant	0.205 (0.015)	0.560 (0.018)	0.276 (0.013)	0.619 (0.018)
Observations	1,988	5,964	4,128	5,160
Subjects	497	497	516	516
R^2	0.004	0.002	0.006	0.001

Note: Table shows linear probability model estimates of how generosity (transferring one dollar) in first choices and last choices differs as a function of the game and whether the exchange rate is low or high. We define low and high based on the direction of the changes in Figure 3 (based on whether the graph shows an increase or decrease from first to last choice) to demonstrate robustness without linear functional form assumptions. Standard errors are clustered by subject.

Table A5—Changes in Generosity and the Exchange Rate (WBL)

Dep. Variable: <i>Generosity</i>	Combined		Dictator Games		Prisoner's Dilemmas	
	(1)	(2)	(3)	(4)	(5)	(6)
Rate $\times$ Last Choice	0.010 (0.002)	0.010 (0.002)	0.008 (0.002)	0.008 (0.002)	0.012 (0.002)	0.012 (0.002)
Last Choice	-0.038 (0.008)	-0.038 (0.008)	-0.019 (0.010)	-0.019 (0.010)	-0.058 (0.010)	-0.058 (0.010)
Rate	0.047 (0.003)	0.047 (0.003)	0.042 (0.003)	0.042 (0.003)	0.053 (0.003)	0.053 (0.003)
Left		0.014 (0.022)		-0.041 (0.031)		0.069 (0.030)
First 10		-0.015 (0.014)		-0.088 (0.030)		0.063 (0.030)
PD First		0.074 (0.027)				
Dictator	0.029 (0.014)	0.028 (0.014)				
Constant	0.246 (0.016)		0.291 (0.016)		0.230 (0.015)	
Controls	No	Yes	No	Yes	No	Yes
Observations	13,840	13,840	6,920	6,920	6,920	6,920
Subjects	346	346	346	346	346	346
R^2	0.112	0.119	0.085	0.096	0.142	0.153
Last Choice at Rate = 10	0.066 $p = 0.000$	0.066 $p = 0.000$	0.066 $p = 0.000$	0.066 $p = 0.000$	0.065 $p = 0.000$	0.065 $p = 0.000$

Note: Table shows linear probability model estimates of how generosity (transferring one dollar) responds to the exchange rate and changes over time for subjects who played in the Wharton Behavioral Lab. *Rate* shows the slope with respect to the first choice. *Rate* $\times$ *Last Choice* shows how the slope changes when comparing last choices to first choices. *Last Choice* shows the estimated change in generosity for the exchange rate of zero when going from first to last choice. *Last choice at rate = 10* reports *Last Choice* + 10(*Rate* $\times$ *Last Choice*), the estimated change in generosity for the exchange rate of 10 when going from first to last choice, and the p -value that it is equal to zero from a post-estimation test. Regressions (2), (4), and (6) additionally control for whether the button to be generous was on the left and whether the game was played in the first set of 10 questions. Controls include an indicator for the number of questions of the same game the subject had already answered, an indicator for the exchange rate they faced in the previous round, and an indicator for the second of the other player that was used in the prisoner's dilemma game. For the combined data, we also report whether the game was a dictator game and, in regression (2), whether the prisoner's dilemma was played first. Standard errors are clustered by subject.

Table A6—Changes in Generosity and the Exchange Rate (MTurk)

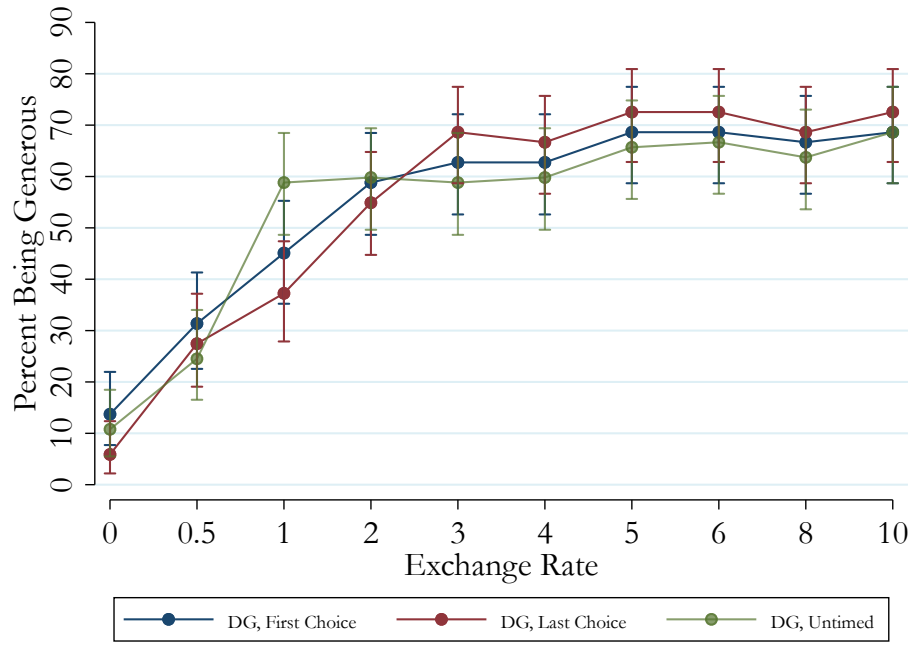
Dep. Variable: <i>Generosity</i>	Combined		Dictator Games		Prisoner's Dilemmas	
	(1)	(2)	(3)	(4)	(5)	(6)
Rate $\times$ Last Choice	0.014 (0.002)	0.014 (0.002)	0.016 (0.004)	0.016 (0.004)	0.012 (0.003)	0.012 (0.003)
Last Choice	-0.061 (0.011)	-0.061 (0.011)	-0.047 (0.015)	-0.047 (0.015)	-0.073 (0.012)	-0.073 (0.012)
Rate	0.035 (0.003)	0.035 (0.003)	0.026 (0.004)	0.026 (0.004)	0.044 (0.004)	0.044 (0.004)
Left		0.034 (0.035)		0.126 (0.052)		-0.046 (0.049)
First 10		-0.007 (0.028)		-0.095 (0.055)		0.081 (0.053)
PD First		0.086 (0.046)				
Dictator	-0.037 (0.026)	-0.010 (0.028)				
Constant	0.385 (0.026)		0.374 (0.029)		0.362 (0.025)	
Controls	No	Yes	No	Yes	No	Yes
Observations	6,420	6,420	3,020	3,020	3,400	3,400
Subjects	210	210	151	151	170	170
R^2	0.075	0.086	0.050	0.082	0.101	0.110
Last Choice at Rate = 10	0.081 $p = 0.000$	0.081 $p = 0.000$	0.115 $p = 0.000$	0.115 $p = 0.000$	0.051 $p = 0.016$	0.051 $p = 0.016$

Note: Table shows linear probability model estimates of how generosity (transferring one dollar) responds to the exchange rate and changes over time for subjects who played on MTurk. *Rate* shows the slope with respect to the first choice. *Rate $\times$ Last Choice* shows how the slope changes when comparing last choices to first choices. *Last Choice* shows the estimated change in generosity for the exchange rate of zero when going from first to last choice. *Last choice at rate = 10* reports *Last Choice + 10(Rate $\times$ Last Choice)*, the estimated change in generosity for the exchange rate of 10 when going from first to last choice, and the p -value that it is equal to zero from a post-estimation test. Regressions (2), (4), and (6) additionally control for whether the button to be generous was on the left and whether the game was played in the first set of 10 questions. Controls include an indicator for the number of questions of the same game the subject had already answered, an indicator for the exchange rate they faced in the previous round, and an indicator for the second of the other player that was used in the prisoner's dilemma game. For the combined data, we also report whether the game was a dictator game and, in regression (2), whether the prisoner's dilemma was played first. Standard errors are clustered by subject.

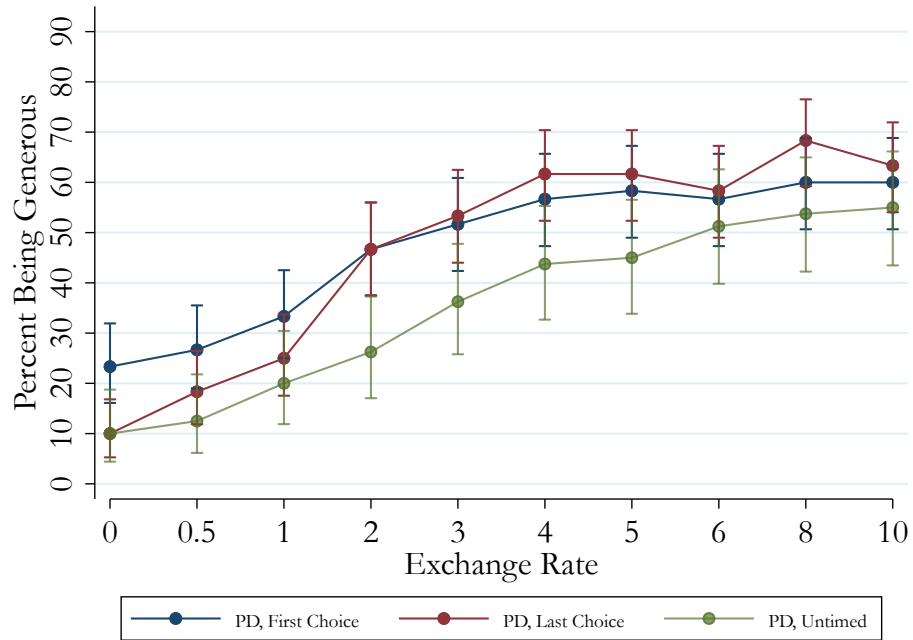
Table A7—Generosity of MTurk Subjects Playing Second (PD)

Dep. Variable: <i>Generosity</i>	(1)	(2)
Timed Games	0.120 (0.057)	0.165 (0.055)
Timed Games $\times$ Rate		-0.011 (0.009)
Rate		0.048 (0.006)
Constant		0.164 (0.030)
Rate FE	Yes	No
Observations	1,400	1,400
Subjects	140	140
R^2	0.107	0.093

Table compares first choice generosity (transferring one dollar) of MTurk subjects playing in their second set of 10 (timed) prisoner's dilemma questions to last choice generosity of MTurk subjects playing in their second set of 10 (untimed) prisoner's dilemma questions. Regression in Column (1) includes exchange rate fixed effects. Standard errors are clustered by subject.



(a) Generosity in Dictator Games



(b) Generosity in Prisoner's Dilemmas

Figure A11. Generosity as a function of the exchange rate by treatment

Notes: Figure shows the percentage of subjects being generous in first, last, and untimed choices, restricting to MTurk subjects playing in their second set of ten questions. Panel A shows results from dictator games and Panel B shows results from prisoner's dilemmas. We include 95% confidence intervals around each mean.

Table A8—Speed of Choices, Dictator Games v. Accounts Treatment (All Subjects)

Dep. Variable: <i>Seconds</i>	1st Choice (1)	Last Choice (2)	Last Choice if Changed (3)
Dictator	0.365 (0.400)	1.810 (0.947)	8.778 (2.012)
Constant	4.477 (0.351)	7.464 (0.826)	12.079 (1.616)
Observations	3,520	3,520	575
Subjects	352	352	225
R^2	0.001	0.004	0.056

Table compares the speed of choices in the accounts treatment to timed dictator games played first for all subjects. *Dictator* is an indicator for the dictator game (rather than the accounts treatment). Analysis in Column (3) compares speed of last choices conditional on the subject changing their choice such that their first and last choices are different. Standard errors are clustered by subject.

Table A9—Log Speed of Choices, Dictator Games v. Accounts Treatment

Dep. Variable: $\log(\text{seconds} + 1)$	All Played First			MTurk Played First		
	1st Choice	Last Choice	Last Choice if Changed	1st Choice	Last Choice	Last Choice if Changed
	(1)	(2)	(3)	(4)	(5)	(6)
Dictator	0.008 (0.053)	0.082 (0.066)	0.518 (0.113)	0.017 (0.063)	0.030 (0.077)	0.385 (0.143)
Constant	1.519 (0.045)	1.780 (0.057)	2.228 (0.094)	1.519 (0.046)	1.780 (0.057)	2.228 (0.094)
Observations	3,520	3,520	575	1,830	1,830	300
Subjects	352	352	225	183	183	115
R^2	0.000	0.002	0.070	0.000	0.000	0.054

Note: Table compares the log speed of choices in the accounts treatment to timed dictator games played first either including all subjects in Columns (1) and (3) or including MTurk subjects in Columns (4) and (6). *Dictator* is an indicator for the dictator game (rather than the accounts treatment). Analysis in Columns (3) and (6) compares speed of last choices conditional on the subject changing their choice such that their first and last choices are different. Standard errors are clustered by subject.

Table A10—Second-Round Generosity and First-Round Exchange Rate (X)

Dep. Variable: <i>Generosity</i>	Dictator Games (1)	Prisoner's Dilemmas (2)
First-Round X	0.002 (0.010)	0.017 (0.009)
Second-Round X FE	Yes	Yes
Observations	269	287

Table reports estimates from linear probability models relating first choice generosity in the second round to the exchange rate faced in the first round. The dependent variable is an indicator for whether the subject transferred \$1 in their first choice of the second round. Column (1) reports results for dictator games and Column (2) for prisoner's dilemmas. All specifications include exchange rate fixed effects for the second round. Robust standard errors are reported in parentheses.

APPENDIX B: WHAT IF SOME TIMED FIRST CHOICES ARE MINDLESS?

This section describes the results of the two types of robustness tests outlined in Section IV.D. The first type of test aims to identify first choices that were made very quickly after the first choice or were made faster than a subject’s reasonable reading speed and replaces them with the subject’s second choice. The second type of test explores what happens if we only analyze data from subjects whose first choices react meaningfully to the exchange rate.¹

Appendix Table B1 presents the results of the robustness tests. In Columns (1) and (2), we rerun our main analysis in Column (1) of Table 4, but replace first choices with second choices when a second choice comes quickly after the first choice: within 2 seconds in column (1) or within 5 seconds in column (2). The median speed of first choices ranges from 2.94 and 3.85 seconds in dictator games and 2.78 and 4.06 seconds in prisoner’s dilemmas, so allowing for corrections within 2 or 5 seconds both generate conservative tests.

By relabeling second choices as first choices when they come within 2 seconds of each other, we adjust first choices for 15% of the dictator games and 22% of the prisoner’s dilemmas in which a subject changes their choice; for 5 seconds we adjust first choices for 38% (DG) and 43% (PD) of the questions in which a subject changes their choice. Notice that by expanding the length of time from 2 to 5 seconds we become more likely to adjust choices of subjects whose changes in behavior are actually changes from early to deliberate choices, so

¹These tests are conservative in nature (we often alter first choices so that they are the same as last choices or drop subjects entirely, leaving us with significantly less data to perform our analyses). Consequently, we combine data from dictator games and prisoner’s dilemmas to recreate the specification in Column (1) from Table 4 for each robustness test below. For completeness, the results are broken down by game type in Appendix Table B2 and Appendix Table B3, respectively. When we analyze the two types of questions separately, we always find that $Rate \times Last\ Choice$ is at least directionally positive for the dictator game and the prisoner’s dilemma separately, and always statistically significant for at least one.

the 5-second specification is more conservative than the 2-second specification. Columns (1) and (2) of Table B1 show that the pattern of behavior described earlier is robust in both specifications: $Rate \times Last\ Choice$ remains positive and significant and the increased responsiveness to the exchange rate is associated with subjects becoming less generous for the lowest exchange rate ($Last\ Choice$ is negative and significant) and more generous for the highest exchange rate ($Last\ Choice\ at\ Rate = 10$ is positive and significant).

In Columns (3) and (4), we take an alternative approach to identifying first choices that one might worry are mindless and changing those choices to later choices. Specifically, we generate a subject-specific “reading speed” variable that is our best guess of the longest number of seconds it takes a subject to read a question and click their preferred answer. We then replace a subject’s first choice with whatever choice the subject had recorded at their subject-specific reading speed. We construct the reading speed variable in two ways, both of which rely on the intuition that the choices that are easiest in our experiment are the decisions with very low exchanges rates of 0 and 0.5. In fact, these games have fewer changes in choices and subjects reach their final answers more quickly than for other exchange rates.

Our first reading speed variable is constructed by looking at subjects who change their choice in the exchange rate 0 question for a given game type and treating as their reading speed the time at which they make their last choice in that game. Subjects who do not change their choice in the exchange rate 0 question are assigned the median reading speed of those who do change their choice (10.9 seconds for DG and 13.1 seconds for PD). Our second reading speed variable is constructed as the maximum time of last choice for subjects who change their choice in either game type at exchange rates 0 and 0.5. Again, subjects who do not change their choice in any of the four questions (exchange

rate 0 and 0.5 in the DG or PD) are assigned the median of this reading speed variable of those who do change in at least one question (13.0 seconds). Results using both reading speed measures are reported in columns (3) and (4) of Table B1. We find that these robustness tests are consistent with the main results: $Rate \times Last\ Choice$ remains positive and significant, and subjects become less generous for the lowest exchange rate and more generous for the highest exchange rate.

Our second type of robustness test does not involve altering first choices. Instead, in Columns (5) and (6), we drop data from subjects whose first choices fail to satisfy certain criteria. First, for each subject and each game type, we regress first choices on the exchange rate and drop any subject who does not have a directionally positive slope of generosity with respect to the exchange rate (38% of our DG subjects and 31% of our PD subjects).² Column (5) of Table B1 shows that this robustness test is consistent with the main results— $Rate \times Last\ Choice$ remains positive and significant and subjects become less generous for the lowest exchange rate and more generous for the highest exchange rate. Second, for each subject and each game type, we ask whether subjects are “monotone” in their first choices. To be monotone in their first choices, a subject who is generous in their first choice for an exchange rate X must be generous in their first choice for any exchange rate larger than X (and similarly if they are selfish in their first choice for any exchange rate X , they must be selfish in their first choice for any exchange rate smaller than X). This drops roughly half of our subjects from each game type. Column (6) of Table B1 shows that this robustness test is consistent with the main results.

²This excludes subjects who always give or never give in their first choice within a game type.

Table B1—Changes in Generosity and the Exchange Rate (Robustness)

Dep. Variable: <i>Generosity</i>	Altering 1st Choices				Dropping Data	
	Replaced with 2nd Choice:		Replaced with Choice at Reading Speed:		Dropped Unless:	
	Within 2 Seconds (1)	Within 5 Seconds (2)	Rate 0 of Game (3)	Max Rate 0 & 0.5 of both (4)	Pos. Slope (5)	Monotone 1st Choices (6)
Rate $\times$ Last Choice	0.009 (0.001)	0.005 (0.001)	0.004 (0.001)	0.003 (0.001)	0.005 (0.001)	0.004 (0.001)
Last Choice	-0.032 (0.005)	-0.016 (0.005)	-0.015 (0.005)	-0.012 (0.004)	-0.030 (0.006)	-0.018 (0.007)
Rate	0.046 (0.002)	0.050 (0.002)	0.051 (0.002)	0.052 (0.002)	0.076 (0.002)	0.056 (0.003)
Dictator	0.004 (0.012)	0.008 (0.013)	0.012 (0.013)	0.012 (0.013)	0.014 (0.015)	0.015 (0.023)
Constant	0.279 (0.014)	0.261 (0.014)	0.258 (0.013)	0.255 (0.013)	0.262 (0.014)	0.239 (0.020)
Observations	20,260	20,260	20,260	20,260	13,260	10,300
Subjects	556	556	556	556	429	374
R^2	0.104	0.111	0.113	0.115	0.252	0.136
% questions adjusted	15% DG, 22% PD	38% DG, 43% PD	39% DG, 43% PD	44% DG, 46% PD		
% data dropped					38% DG, 31% PD	51% DG, 48% PD
% data dropped						
Last Choice at Rate = 10	0.055 $p = 0.000$	0.031 $p = 0.000$	0.024 $p = 0.000$	0.016 $p = 0.011$	0.021 $p = 0.050$	0.025 $p = 0.013$

Note: Table shows linear probability model estimates of how generosity (transferring one dollar) responds to the exchange rate. *Rate* shows the slope with respect to the first choice. *Rate $\times$ Last Choice* shows how the slope changes when comparing last choices to first choices. *Last Choice* shows the estimated change in generosity for the exchange rate of 0 when going from first to last choice. *Last choice at rate = 10* reports *Last Choice + 10(Rate $\times$ Last Choice)*, the estimated change in generosity for the exchange rate of 10 when going from first to last choice, and the p -value that it is equal to 0 from a post-estimation test. *Rate 0 of game* reading speed is defined as time to last choice if the subject changed answers in the exchange rate 0 of the question type or, if the subject did not change, then the median speed to last choice of the subjects who did change (10.9 seconds for dictator game, 13.1 seconds for prisoner's dilemma). *Max rate 0 & 0.5 of both* reading speed is defined as the maximum time to last choice if the subject changed answers in at least one of the exchange rate 0 or 0.5 questions in either question type. If the subject did not change answers to any of those four questions, the median reading speed of those who did (13.0 seconds) is used. Standard errors are clustered by subject.

Table B2—Changes in Generosity and the Exchange Rate (DG)

Dep. Variable: <i>Generosity</i>	Altering 1st Choices				Dropping Data	
	Replaced with 2nd Choice:		Replaced with Choice at Reading Speed:		Dropped Unless:	
	Within 2 Seconds	Within 5 Seconds	Rate 0 of Game	Max Rate 0 & 0.5 of both	Pos. Slope	Monotone 1st Choices
	(1)	(2)	(3)	(4)	(5)	(6)
Rate $\times$ Last Choice	0.008 (0.002)	0.004 (0.001)	0.005 (0.001)	0.003 (0.001)	0.003 (0.002)	0.005 (0.002)
Last Choice	-0.010 (0.008)	0.002 (0.007)	-0.008 (0.007)	-0.003 (0.006)	-0.008 (0.009)	-0.013 (0.010)
Rate	0.040 (0.003)	0.044 (0.003)	0.043 (0.003)	0.045 (0.003)	0.073 (0.002)	0.051 (0.003)
Constant	0.299 (0.014)	0.287 (0.014)	0.297 (0.014)	0.291 (0.014)	0.284 (0.015)	0.272 (0.022)
Observations	9,940	9,940	9,940	9,940	6,160	4,920
Subjects	497	497	497	497	308	246
R^2	0.078	0.085	0.083	0.085	0.222	0.114
% questions adjusted	15%	38%	39%	44%		
% data dropped					38%	51%
Last Choice at Rate = 10	0.068 $p = 0.000$	0.038 $p = 0.000$	0.037 $p = 0.000$	0.027 $p = 0.003$	0.019 $p = 0.197$	0.041 $p = 0.011$

Note: Table shows linear probability model estimates of how generosity (transferring one dollar) responds to the exchange rate in timed dictator games. *Rate* shows the slope with respect to the first choice. *Rate $\times$ Last Choice* shows how the slope changes when comparing last choices to first choices. *Last Choice* shows the estimated change in generosity for the exchange rate of 0 when going from first to last choice. *Last choice at rate = 10* reports *Last Choice + 10(Rate $\times$ Last Choice)*, the estimated change in generosity for the exchange rate of 10 when going from first to last choice, and the p -value that it is equal to 0 from a post-estimation test. *Rate 0 of game* reading speed is defined as time to last choice if the subject changed answers in the exchange rate 0 of the question type or, if the subject did not change, then the median speed to last choice of the subjects who did change (10.9 seconds). *Max rate 0 & 0.5 of both* reading speed is defined as the maximum time to last choice if the subject changed answers in at least one of the exchange rate 0 or 0.5 questions in either question type. If the subject did not change answers to any of those four questions, the median reading speed of those who did (13.0 seconds) is used. Standard errors are clustered by subject.

Table B3—Changes in Generosity and the Exchange Rate (PD)

Dep. Variable: <i>Generosity</i>	Altering 1st Choices				Dropping Data	
	Replaced with 2nd Choice:		Replaced with Choice at Reading Speed:		Dropped Unless:	
	Within 2 Seconds (1)	Within 5 Seconds (2)	Rate 0 of Game (3)	Max Rate 0 & 0.5 of both (4)	Pos. Slope (5)	Monotone 1st Choices (6)
Rate $\times$ Last Choice	0.010 (0.001)	0.006 (0.001)	0.003 (0.001)	0.003 (0.001)	0.007 (0.002)	0.003 (0.002)
Last Choice	-0.053 (0.007)	-0.034 (0.006)	-0.022 (0.006)	-0.021 (0.005)	-0.049 (0.009)	-0.023 (0.009)
Rate	0.053 (0.002)	0.056 (0.002)	0.059 (0.002)	0.060 (0.002)	0.080 (0.002)	0.061 (0.003)
Constant	0.263 (0.013)	0.245 (0.013)	0.232 (0.013)	0.231 (0.013)	0.255 (0.014)	0.223 (0.020)
Observations	10,320	10,320	10,320	10,320	7,100	5,380
Subjects	516	516	516	516	355	269
R^2	0.133	0.141	0.146	0.148	0.280	0.158
% questions adjusted	22%	43%	43%	46%		
% data dropped					31%	48%
Last Choice at Rate = 10	0.042 $p = 0.000$	0.024 $p = 0.015$	0.011 $p = 0.195$	0.005 $p = 0.539$	0.022 $p = 0.105$	0.009 $p = 0.352$

Note: Table shows linear probability model estimates of how generosity (transferring one dollar) responds to the exchange rate in timed prisoner's dilemma games. *Rate* shows the slope with respect to the first choice. *Rate $\times$ Last Choice* shows how the slope changes when comparing last choices to first choices. *Last Choice* shows the estimated change in generosity for the exchange rate of 0 when going from first to last choice. *Last choice at rate = 10* reports *Last Choice + 10(Rate $\times$ Last Choice)*, the estimated change in generosity for the exchange rate of 10 when going from first to last choice, and the p -value that it is equal to 0 from a post-estimation test. *Rate 0 of game* reading speed is defined as time to last choice if the subject changed answers in the exchange rate 0 of the question type or, if the subject did not change, then the median speed to last choice of the subjects who did change (13.1 seconds). *Max rate 0 & 0.5 of both* reading speed is defined as the maximum time to last choice if the subject changed answers in at least one of the exchange rate 0 or 0.5 questions in either question type. If the subject did not change answers to any of those four questions, the median reading speed of those who did (13.0 seconds) is used. Standard errors are clustered by subject.

APPENDIX C: TIMING OF CHOICES AND THE DRIFT DIFFUSION MODEL

C1. Fast Versus Slow Choices

Prior work has explored whether faster choices are more generous or more selfish than slower choices (Rand, Greene and Nowak, 2012). Our data allows us to replicate and extend this analysis. We first report results from the untimed treatments, which are closer to the standard implementation used by Rand, Greene and Nowak (2012). For each game type (DG and PD) and exchange rate, we compute the median speed to answer a question, pooling data from both untimed treatments. We classify an answer as slow if the subject took longer than the median speed for a particular exchange rate of a particular game type and classify it as fast otherwise.

Table C1 tests whether slower choices are more selfish across all of the exchange rates. Columns (1) and (3) show that, if anything, slow choices are *more generous* than fast choices — this is in stark contrast to the findings in Rand, Greene and Nowak 2012, which finds that slow choices were less generous. This effect is directionally consistent for both game types and significant for the prisoner’s dilemmas. In Columns (2) and (4), we repeat this analysis using data from the timed treatments, restricting attention to the first choices subjects make. Consistent with the results from the untimed treatments, we find that slower first choices are also more generous than faster first choices.

The additional parameter in our experiment — the exchange rate — allows us to explore the relationship between decision speed and generosity in greater detail. Tables C2 and C3 test whether the exchange rate mediates the relationship between decision speed and generosity. In particular, Table C2 investigates whether slower choices are more selfish for exchange rates where subjects in our sample become more selfish over time ($X \leq 0.5$ for dictator

Table C1—Generosity, Fast v. Slow Choices

	Dictator Games		Prisoner's Dilemmas	
	Untimed Choice	1st Timed Choice	Untimed Choice	1st Timed Choice
Dep. Variable: <i>Generosity</i>	(1)	(2)	(3)	(4)
Slow Choice	0.043 (0.046)	0.115 (0.020)	0.088 (0.043)	0.056 (0.020)
Rate FE	Yes	Yes	Yes	Yes
Observations	1,020	4,970	800	5,160
Subjects	102	497	80	516
R^2	0.156	0.096	0.133	0.128

Note: Table compares the generosity (transferring one dollar) of choices as a function of speed in the untimed games in Columns (1) and (3) and the first choice in the timed games in Columns (2) and (4). *Slow Choice* is an indicator for whether the time spent making a choice was longer than the median time for that exchange rate in that treatment. We allow exchange rate fixed effects to be different for the two different untimed treatments. Standard errors are clustered by subject.

games and $X \leq 2$ for prisoner's dilemmas). While none of the differences are statistically significant, in the untimed treatments we find conflicting results between the dictator games and prisoner's dilemmas. In the timed treatments, effects are much smaller than when we examine all exchange rates in Table C1, though the effects are generally in the same direction, indicating that slow choices are somewhat more generous. Table C3 investigates whether slower choices are more generous for exchange rates where subjects in our sample become more generous over time ($X \geq 3$ for dictator games and $X \geq 4$ for prisoner's dilemmas). We find that, in the timed games, slow subjects are significantly more generous than fast subjects, a pattern that is directional, but not significant, in the untimed data.

To summarize, we find correlational evidence that slow choices are more generous, particularly for exchange rates in which later, deliberate choices are more generous than early choices. Consequently, there may be some hope that

response time could be predictive of changes in behavior associated with a dual-system model, although the evidence is far from conclusive.

Table C2—Generosity, Fast v. Slow Choices at Low Exchange Rates

Dep. Variable: <i>Generosity</i>	Dictator Games ($X = 0, 0.5$)		Prisoner's Dilemmas ($X = 0, 0.5, 1, 2$)	
	Untimed Choice	1st Timed Choice	Untimed Choice	1st Timed Choice
	(1)	(2)	(3)	(4)
Slow Choice	-0.091 (0.057)	0.017 (0.027)	0.069 (0.042)	0.005 (0.023)
Rate FE	Yes	Yes	Yes	Yes
Observations	204	994	320	2,064
Subjects	102	497	80	516
R^2	0.059	0.014	0.049	0.054

Note: Table compares the generosity (transferring one dollar) of choices as a function of speed in the untimed games in Columns (1) and (3) and the first choice in the timed games in Columns (2) and (4) for exchange rates where subjects become less generous over time. *Slow Choice* is an indicator for whether the time spent making a choice was longer than the median time for that exchange rate in that treatment. We allow exchange rate fixed effects to be different for the two different untimed treatments. Standard errors are clustered by subject.

C2. Drift Diffusion Model

While not the purpose of our design, the structure of our data allows us to provide a test of the drift diffusion model, which predicts that choices should be faster when the utility difference between the options in the choice set is large. In this section, we show that we find substantial support for a key comparative static prediction of the drift diffusion model.

In a basic version of the drift diffusion model, an individual receives signals about the utility associated with each of the options she considers. These signals are modeled with a drift diffusion process. The individual reaches a decision as soon as she is sufficiently certain which option yields a higher utility.

Table C3—Generosity, Fast v. Slow Choices at High Exchange Rates

Dep. Variable: <i>Generosity</i>	Dictator Games ($X = 3, \dots, 10$)		Prisoner's Dilemmas ($X = 4, \dots, 10$)	
	Untimed Choice	1st Timed Choice	Untimed Choice	1st Timed Choice
	(1)	(2)	(3)	(4)
Slow Choice	0.074 (0.058)	0.141 (0.026)	0.085 (0.066)	0.087 (0.026)
Rate FE	Yes	Yes	Yes	Yes
Observations	612	2,982	400	2,580
Subjects	102	497	80	516
R^2	0.031	0.023	0.027	0.013

Note: Table compares the generosity (transferring one dollar) of choices as a function of speed in the untimed games in Columns (1) and (3) and the first choice in the timed games in Columns (2) and (4) for exchange rates where subjects become more generous over time. *Slow Choice* is an indicator for whether the time spent making a choice was longer than the median time for that exchange rate in that treatment. We allow exchange rate fixed effects to be different for the two different untimed treatments. Standard errors are clustered by subject.

In a theoretical analysis where subjects incur costs from gathering information, Fudenberg, Strack and Strzalecki (2018) shows that when the utilities of two options are closer, subjects are more likely to receive conflicting — and weaker — signals of the relative utility, making it harder for the drift diffusion process to pass a (moving) threshold at which the subject is ready to make a decision.³

This turns out to be a key comparative static prediction of the drift diffusion model, which distinguishes it from other models of costly information acquisition. Hébert and Woodford (2023) generalizes a rational inattention model (Sims, 2003, 2010). In the sequential information sampling problem, the information sampled at each stage can be chosen very flexibly given an information cost function. As in Fudenberg, Strack and Strzalecki (2018), the decisions of when

³For overviews of the drift diffusion model in economics, see Clithero (2018), Fehr and Rangel (2011), Krajbich, Oud and Fehr (2014). For more recent theoretical advances, see, e.g., Baldassi et al. (2022), Fisher (2017), Fudenberg et al. (2020).

to stop sampling and what choice to make are optimized given the entire history of information sampled up to that point. While the resulting model of Hébert and Woodford (2023) shares many features with the drift diffusion model, it does not predict that subjects should take longer to make a choice when questions are hard (in the sense that utilities between the options are close).

While our design is not perfectly suited to address the drift diffusion model or the rational inattention model with sequential information sampling, we have several features conducive for a test of the key comparative static prediction that distinguishes these two models. We have subjects make binary choices where the utility of the two options changes with the exchange rate X , and we have explicit costs of delaying choice. To test the comparative static that relies on a measure of the utility difference between options, we restrict attention to the subset of subjects for whom we can reasonably identify the decision problems for which the utility between options is closer. Specifically, we start by considering subjects whose first choices are monotone in the exchange rate X . There are three types of subjects whose first choices are monotone: subjects who always transfer, subjects who never transfer, and subjects who transfer as soon as the exchange rate reaches some “crossover exchange rate” but not for lower exchange rates. We call this last group of subjects “Elastic.” For our evaluation of the drift diffusion model, we focus on Elastic subjects. For these subjects, we can reasonably argue that the utilities of the two choices — transfer or not transfer — are closer when the exchange rate is closer to their crossover exchange rate than when it is farther from it.

A test in the spirit of the drift diffusion model is to assess whether the time of first choices of Elastic subjects is later when the exchange rate is close to, rather than far from, their crossover exchange rate. In our design, the cost of

delaying a choice is to increase the risk of not getting any payment. So, if a subject knew the utilities of the two options were basically identical, she would optimally make a decision immediately instead of gathering costly evidence on which is the slightly better option. While there has been some previous evidence that “hard” choices (i.e., choices where the utilities of the options are closer) take longer than “easy” choices, subjects in these studies generally do not incur direct costs of delaying decisions.

We have 142 subjects who are classified as Elastic in the timed dictator games and 168 in the timed prisoner’s dilemmas. For each Elastic subject, we identify the lowest exchange rate for which the subject chose to transfer and the highest for which the subject decided not to transfer, and we label the question at these two exchange rates as “hard” while questions at other exchange rates are labeled “easy”. Column (1) of Table C4 shows that the time of first choice is almost a second longer (i.e., over 20% longer) when the decision is made for a hard rather than an easy question. This result holds when we look at the first five rounds in Column (2) and the last five rounds in Column (3).

A second prediction of the drift diffusion model (Fudenberg, Strack and Strzalecki, 2018) is that when utilities are similar, individuals do not just take longer to make a choice but they are also more likely to make a wrong choice. One interpretation of this prediction in our experiment would be that subjects are more likely to change their choices for hard questions than for easy questions. Indeed, Column (4) shows that subjects are 12 percentage points more likely to change their choice when the decision is classified as hard than when it is classified as easy (in which case less than 6 percent of subjects change their choices, an increase of over 200%). These results are true both for the first five rounds, as in Column (5), and the last five rounds, as in Column

(6).⁴

These results are robust to a variety of alternative specifications, such as classifying two additional decisions as hard (i.e., exchange rates that neighbor the decisions previously labeled as hard, so subjects have 4 hard and 6 easy questions for the 10 exchange rates), as in Appendix Table C5. We also re-do this analysis, classifying subjects as Elastic and questions as hard or easy based on the last choice subjects make rather than the first choice (see Appendix Table C6). This yields similar results.

Table C4—Time to First Choice and Probability of Changing Choice (Two Hard Questions)

	Speed of 1st Choice (Seconds)			Changed Choice		
	All 10 Rounds	First 5 Rounds	Last 5 Rounds	All 10 Rounds	First 5 Rounds	Last 5 Rounds
	(1)	(2)	(3)	(4)	(5)	(6)
Hard Question	0.951 (0.204)	1.024 (0.278)	0.785 (0.291)	0.120 (0.015)	0.127 (0.025)	0.113 (0.022)
Dictator	-0.087 (0.184)	-0.387 (0.298)	0.208 (0.274)	-0.028 (0.014)	-0.024 (0.022)	-0.032 (0.015)
Mean for Easy	4.676	5.466	3.875	0.056	0.074	0.037
Observations	3,100	1,550	1,550	3,100	1,550	1,550
Subjects	239	239	239	239	239	239
R^2	0.359	0.458	0.393	0.270	0.325	0.354

Note: Table reports how speed of first choice and probability of changing a choice correlates with whether the question is easy or hard. *Hard Question* indicates the lowest exchange rate for which a subject chose to transfer and the highest exchange rate for which a subject decided not to transfer. *Dictator* is an indicator for the game type. All regressions include subject fixed effects, controls for the order in which the questions were answered in the set of 10, and the exchange rate. Standard errors are clustered by subject.

We provide direct evidence that, even when there are explicit costs of making slow choices, subject answers are slower for hard questions (i.e., questions where the utilities of the two options are closer than they are for other questions). Though not the focus of our paper, our findings provide support for a key

⁴These results are in line with Konovalov and Krajbich (2019), which finds that slow choices — a potential indication of hard choices — are more likely to be associated with a preference reversal when subjects are asked to make the same choice for a second time.

Table C5—Time to First Choice and Probability of Changing Choice (Four Hard Questions)

	Speed of 1st Choice (Seconds)			Changed Choice		
	All 10 Rounds	First 5 Rounds	Last 5 Rounds	All 10 Rounds	First 5 Rounds	Last 5 Rounds
	(1)	(2)	(3)	(4)	(5)	(6)
Hard Question	0.852 (0.195)	0.868 (0.290)	0.729 (0.211)	0.107 (0.013)	0.115 (0.023)	0.103 (0.017)
Dictator	-0.079 (0.184)	-0.374 (0.303)	0.217 (0.275)	-0.027 (0.014)	-0.023 (0.021)	-0.031 (0.015)
Mean for Easy	4.532	5.340	3.722	0.043	0.062	0.023
Observations	3,100	1,550	1,550	3,100	1,550	1,550
Subjects	239	239	239	239	239	239
R^2	0.359	0.458	0.394	0.270	0.324	0.356

Note: Table reports how speed of first choice and probability of changing a choice correlates with whether the question is easy or hard where *Hard Question* is defined as two exchange rates above and two exchange rates below a subject's crossover point. *Dictator* is an indicator for the game type. All regressions include subject fixed effects, controls for the order in which the questions were answered in the set of 10, and the exchange rate. Standard errors are clustered by subject.

comparative static prediction that distinguishes the drift diffusion model from a rational inattention model with sequential information sampling.

Table C6—Time to First Choice and Probability of Changing Choice (Two Hard Questions Based on Last Choice)

	Speed of 1st Choice (Seconds)			Changed Choice		
	All 10 Rounds	First 5 Rounds	Last 5 Rounds	All 10 Rounds	First 5 Rounds	Last 5 Rounds
	(1)	(2)	(3)	(4)	(5)	(6)
Hard Question	0.782 (0.160)	0.767 (0.228)	0.785 (0.246)	0.144 (0.016)	0.123 (0.025)	0.157 (0.021)
Dictator	-0.100 (0.146)	-0.517 (0.249)	0.314 (0.201)	0.006 (0.014)	-0.010 (0.022)	0.024 (0.017)
Mean for Easy	4.318	5.115	3.510	0.115	0.142	0.087
Observations	4,490	2,245	2,245	4,490	2,245	2,245
Subjects	310	310	310	310	310	310
R^2	0.380	0.463	0.389	0.305	0.339	0.386

Note: Table reports how speed of first choice and probability of changing a choice correlates with whether the question is easy or hard. *Hard Question* indicates the lowest exchange rate for which a subject chose to transfer and the highest exchange rate for which a subject decided not to transfer in their last choices. *Dictator* is an indicator for the game type. All regressions include subject fixed effects, controls for the order in which the questions were answered in the set of 10, and the exchange rate. Standard errors are clustered by subject.

APPENDIX D: EXPERIMENTAL INSTRUCTIONS

The following screens show the Instructions that were common to all versions of the experiment. Notes about the instructions appear in blue italics.

Consent Form:

Title of the Research Study: Decision Making Study

Protocol Number: 821552

Principal Investigators: Professor Judd Kessler (juddk@wharton.upenn.edu)

You are being asked to take part in a research study. This is not a form of treatment or therapy. It is not supposed to detect a disease or find something wrong. Your participation is voluntary which means you can choose whether or not to participate. If you decide to participate or not to participate there will be no loss of benefits to which you are otherwise entitled. Before you make a decision you will need to know the purpose of the study, the possible risks and benefits of being in the study and what you will have to do if decide to participate. The researcher is available by email to talk with you about the study and give you this consent document to read.

If you do not understand what you are reading, do not sign it. Please ask the researcher to explain anything you do not understand, including any language contained in this form. If you decide to participate, you will be asked to continue with the study after reading this form and your continuation will indicate your consent.

What is the purpose of this research?

The purpose of the study is to better understand how people make decisions.

How long will I take part in this research?

Your participation will take approximately 30 minutes.

What can I expect if I take part in this research?

As a participant, you will be asked to answer a series of questions. Additional information will be provided to you during your study participation.

What are the risks and possible discomforts?

There are no anticipated risks associated with the study.

Will I be compensated for participating in this research?

In addition to your show-up fee, you may earn additional money from participating in the study.

If I take part in this research, how will my privacy be protected? What happens to the information you collect?

The data we collect will not include any personal or sensitive information. In addition, it will not be identified with your name, but only with a participant number. The data will eventually be used for publication in research journals and presentations at scientific conference. At such time, the data will be presented in aggregate, and individual participants will never be discussed.

Who can I call with questions, complaints or if I'm concerned about my rights as a research subject?

If you have questions, concerns or complaints regarding your participation in this research study or if you have any questions about your rights as a research subject, you should speak with the Principal Investigator listed at the top of this form. If a member of the research team cannot be reached or you want to talk to someone other than those working on the study, you may contact the Office of Regulatory Affairs with any question, concerns or complaints at the University of Pennsylvania by calling (215) 898-2614.

By continuing with this study, you are consenting to participate.

Thank you for participating in this study.

In this study you can earn money and you can affect the earnings of other people who participate in this study. Anything you earn in the study will be paid to you as a bonus payment on top of your show-up fee.

Please read the rules of the study carefully so you understand how the study works.

What are the rules of the study?

On each screen in this study, you will face a decision question that may affect your earnings and may affect the earnings of others in the study.

There are two types of questions. Some are in the standard format, where your answer is only recorded when you press submit. Other questions you will see for a fixed amount of time. For these timed questions, the answer you record at each second has the potential to affect your earnings and the earnings of others in the study.

You will be shown each timed question for 60 seconds. In addition to having an initial answer to the question, you may decide you want to change your answer one or more times during the 60 seconds.

Your earnings and the earnings of the other people in the study depend on what your answer is at each moment during the 60 seconds. In particular, for each question we will determine your *official answer* to that question by randomly picking one second out of the 60 seconds. Whatever your answer was during that second of the 60 seconds will be your *official answer* for the question, and this *official answer* will determine your payment.

This means that at each moment during the 60 seconds, you should report whatever is your best answer to the question at that moment in time.

If you had not yet provided an answer at the second that we randomly pick, no additional earnings will be awarded for you or anyone else in the study for that question.

This means that you should record your initial answer as soon as you have one.

How do I answer the question at each moment in time?

For each question, you will report your answer by pressing one of a number of buttons on the screen. Each button has one potential answer to the question.

To select your initial answer, click one of the buttons. To change your answer at any moment in time, click a new button.

Every time you click a button, we will display your choice in a table below the buttons. We will report your most recent choice in the top row of the table.

A timer will appear above the question to let you know how many seconds remain for the question.

What are the types of questions I will answer?

The timed questions you will answer in the study take a variety of forms. On each screen you will see a description of the question for 10 seconds before the buttons appear and the 60 seconds to answer the question begin. A 10-second timer will count down the number of seconds before the buttons appear.

We will show you a sample question on the following screen so you can see how the interface looks and how the boxes and table work.

Sample question

This question does not affect your or anyone's earnings. Please click on the buttons to see how they work.

20-second screen (timer appeared):

Sample question

This question does not affect your or anyone's earnings. Please click on the buttons to see how they work.

Choose which outcome you want for person A and person B.

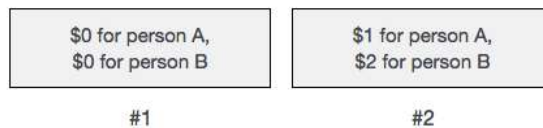
\$0 for person A,
\$0 for person B

\$1 for person A,
\$2 for person B

Current choice: _____

Previous choices:

We will now show you some examples so you can see how your official answer is determined by your choices. To explain this more clearly we label the buttons #1 and #2.



Example 1:

Suppose you chose the button #2 immediately and left it there for the entire 60 seconds. Then for any second we randomly selected your official answer would be "\$1 for person A, \$2 for person B" since that was your choice at every second.

Example 2:

Suppose that you selected nothing for 10 seconds and then selected button #2. Suppose then that at second 15 you switched to button #1. Suppose that then at second 22 you switched to button #2 and left it there for the rest of the time.

In this case your official answer would be:

- If we randomly select a second between 1 and 9 seconds: No answer recorded.
- If we randomly select a second between 10 and 14 seconds: \$1.00 for person A, \$2.00 for person B.
- If we randomly select a second between 15 and 21 seconds: \$0.00 for person A, \$0.00 for person B.
- If we randomly select a second between 22 and 60 seconds: \$1.00 for person A, \$2.00 for person B.

Reminder: if you have no answer recorded at the randomly selected second, then neither you nor anyone else in the study can earn any money from that question.

\$0 for person A, \$0 for person B	\$1 for person A, \$2 for person B
#1	#2

To make sure you understand how choices map into an official answer, please read the example below and answer the two accompanying questions. You will not be able to advance with the study until you answer both questions correctly.

Survey Question 1:

Suppose that you selected nothing for 13 seconds and then selected button #2. Suppose that then at second 20 you switched to button #1. Suppose that then at second 32 you switched to button #2 and left it there for the rest of the time.

Imagine second 25 was randomly chosen to be the one that count. What would be your official answer?

\$0.00 for person A, \$0.00 for person B.
 \$1.00 for person A, \$2.00 for person B.

At which second is \$1.00 for person A, \$2.00 for person B your official answer?

5
 10
 22
 33

How do you determine my extra earnings?

There are 21 questions in this study.

We will randomly pick 1 question to be paid, and pay you (and possibly others in the study) based on your choices.

Note that for the question that gets picked, your official answer will determine your earnings (and possibly the earnings of others in the study).

The following screens show the Instructions in the Timed Dictator Games

For each of the next 10 questions, you will randomly be paired with another person in the study. You will be paired with a different person for each question.

Your choice alone will affect how much money you and that person receive in the study.

You have the opportunity to transfer money to them but they do not have an opportunity to transfer to you.

On the next page, you will see one of the questions. Only click to proceed to the next screen when you are ready.

10-second screen (timer appeared):

In this question you are paired with someone else in the study. Your choice alone affects how much money you and that other person will receive in the study.

1-minute screen (timer appeared), example question:

In this question you are paired with someone else in the study. Your choice alone affects how much money you and that other person will receive in the study.

You have \$3 and the other person has \$0. You can transfer \$1 and it becomes \$2 to the other person

The following screens show the Instructions in the Timed Prisoner's Dilemmas

For each of the next 10 questions, you will randomly be paired with another person in the study. You will be paired with a different person for each question.

Both your choice and that person's choice will affect how much money you and that person earn in the study.

You have the opportunity to transfer money to them and they have the exact same opportunity to transfer to you.

Your earnings will depend on what they choose at second 15.

On the next page, you will see one of the questions. Only click to proceed to the next screen when you are ready.

10-second screen (timer appeared):

In this question you are paired with someone else in the study. Your choice and their choice both affect how much money you and that other person will receive in the study. You have the opportunity to transfer money to them and they have the exact same opportunity to transfer to you. Your earnings will depend on what they choose at second 15.

1-minute screen (timer appeared), example question:

In this question you are paired with someone else in the study. Your choice and their choice both affect how much money you and that other person will receive in the study. You have the opportunity to transfer money to them and they have the exact same opportunity to transfer to you. Your earnings will depend on what they choose at second 15.

You have \$1 and the other person has \$1. You can transfer \$1 and it becomes \$2 to the other person.

The following screens show the Instructions in the Accounts Treatment

For each of the next 10 questions, you will have two accounts. The accounts will be called Account A and Account B. Your earnings from each question will be the sum of the money in the two accounts. For example, if you have \$4 in Account A and \$3 in Account B, you will earn $\$4 + \$3 = \$7$ dollars for the question.

In each of the next 10 questions, you can choose whether or not transfer money from Account A to Account B. The amount of money from Account A may change when it is put into Account B.

For example, suppose Account A has \$5 and Account B has \$0. Suppose you can transfer \$2 from Account A and it becomes \$6 in Account B.

Please answer the comprehension questions about the example above. You must answer all of them correctly to proceed with the study.

If you do not transfer \$2 from Account A: How much money do you have in Account A and in Account B?

- ☐ \$5 in Account A and \$0 in Account B
- ☐ \$3 in Account A and \$6 in Account B
- ☐ \$0 in Account A and \$5 in Account B

If you do not transfer \$2 from Account A: How much money do you earn for this question?

- ☐ \$5
- ☐ \$6
- ☐ \$2

If you transfer \$2 from Account A: How much money do you have in Account A and in Account B?

- ☐ \$5 in Account A and \$0 in Account B
- ☐ \$3 in Account A and \$6 in Account B
- ☐ \$0 in Account A and \$5 in Account B

If you transfer \$2 from Account A: How much money do you earn for this question?

- ☐ \$0
- ☐ \$9
- ☐ \$2

For another example, suppose account A has \$8 and Account B has \$0. Suppose you can transfer \$1 from Account A and it becomes \$7 in Account B.

How much money do you make in this question if you transfer the \$1?

How much money do you make if you do not transfer?

On the next page, you will see one of the questions. Only click to proceed to the next screen when you are ready.

10-second screen (timer appeared):

In this question, your earnings will be the sum of money in Account A and Account B.

1-minute screen (timer appeared), example question:

In this question, your earnings will be the sum of money in Account A and Account B.

Account A has \$3 and Account B has has \$0. You can transfer \$1 from Account A and it becomes \$2 in Account B.

The following screens show the Common Instructions in the “Single Choice” Treatments

The next 10 questions have the single-choice format, where your answer is recorded when you make a choice. After you press a button, your choice will be recorded and you will automatically advance to the next page.

We will show you a sample question on the following screen so you can see how the interface looks and how you are automatically advanced to the next page when you make a choice.

10-second screen (timer appeared):

This is an example question that doesn't affect anyone's payoffs. After you press a button, your choice is recorded and you will automatically advance to the next page.

This is an example question that doesn't affect anyone's payoffs. After you press a button, your choice is recorded and you will automatically advance to the next page.

Choose which outcome you want for person A and person B:

\$0 for person A, \$0 for person B	\$1 for person A, \$2 for person B
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The following screens show the Dictator Game Instructions for the "Single Choice" Treatments

For each of the next 10 questions, you will randomly be paired with another person in the study. You will be paired with a different person for each question.

Your choice alone will affect how much money you and that person receive in the study.

You have the opportunity to transfer money to them but they do not have an opportunity to transfer to you.

On the next page, you will see one of the questions. Only click to proceed to the next screen when you are ready.

10-second screen (timer appeared):

In this question you are paired with someone else in the study. Your choice alone affects how much money you and that other person will receive in the study.

Example question:

In this question you are paired with someone else in the study. Your choice alone affects how much money you and that other person will receive in the study.

You have \$3 and the other person has \$0. You can transfer \$1 and it becomes \$2 to the other person.

The following screens show the Prisoner's Dilemma Instructions for the "Single Choice" Treatments

For each of the next 10 questions, you will randomly be paired with another person in the study. You will be paired with a different person for each question.

Both your choice and that person's choice will affect how much money you and that person earn in the study.

You have the opportunity to transfer money to them and they have the exact same opportunity to transfer to you.

On the next page, you will see one of the questions. Only click to proceed to the next screen when you are ready.

10-second screen (timer appeared):

In this question you are paired with someone else in the study. Your choice and their choice both affect how much money you and that other person will receive in the study. You have the opportunity to transfer money to them and they have the exact same opportunity to transfer to you.

Example question:

In this question you are paired with someone else in the study. Your choice and their choice both affect how much money you and that other person will receive in the study. You have the opportunity to transfer money to them and they have the exact same opportunity to transfer to you.

You have \$1 and the other person has \$1. You can transfer \$1 and it becomes \$2 to the other person.

The following screens show the Dictator Game Instructions for the “Last Choice” Treatments

The next 10 questions have the standard format where your answer is only recorded when you press submit.

For each of the next 10 questions, you will randomly be paired with another person in the study. You will be paired with a different person for each question.

Your choice alone will affect how much money you and that person receive in the study. You have the opportunity to transfer money to them but they do not have an opportunity to transfer to you.

On the next page, you will see one of the questions. Only click to proceed to the next screen when you are ready.

10-second screen (timer appeared):

In this question you are paired with someone else in the study. Your choice alone affects how much money you and that other person will receive in the study.

Example question:

In this question you are paired with someone else in the study. Your choice alone affects how much money you and that other person will receive in the study.

You have \$3 and the other person has \$0. You can transfer \$1 and it becomes \$2 to the other person.

The following screens show the Prisoner’s Dilemma Game Instructions for the “Last Choice” Treatments

The next 10 questions have the standard format where your answer is only recorded when you press submit.

For each of the next 10 questions, you will randomly be paired with another person in the study. You will be paired with a different person for each question.

Both your choice and that person’s choice will affect how much money you and that

person earn in the study.

You have the opportunity to transfer money to them and they have the exact same opportunity to transfer to you.

On the next page, you will see one of the questions. Only click to proceed to the next screen when you are ready.

10-second screen (timer appeared):

In this question you are paired with someone else in the study. Your choice and their choice both affect how much money you and that other person will receive in the study. You have the opportunity to transfer money to them and they have the exact same opportunity to transfer to you.

Example question:

In this question you are paired with someone else in the study. Your choice and their choice both affect how much money you and that other person will receive in the study. You have the opportunity to transfer money to them and they have the exact same opportunity to transfer to you.

You have \$1 and the other person has \$1. You can transfer \$1 and it becomes \$2 to the other person.