Online Appendix
for
The Buy-In Effect:
When Increasing Initial Effort Encourages Follow-Through

Holly Dykstra, Shibeal O' Flaherty, and Ashley Whillans

Contents

A Additional Tables **2**
A.1 Study 1 . . . 2
A.2 Study 2 . . . 3

B Online Experiment **8**
B.1 Overview . . . 8
B.2 Part 1 . . . 8
B.2.1 Section 1: Consent Form and Information Sheet . . . 8
B.2.2 Section 2: Instructions and Task . . . 9
B.2.3 Section 3: Additional Sign-Up . . . 12
B.2.4 Low Effort vs. High Effort Treatments . . . 13
B.2.5 Social Treatments . . . 14
B.2.6 Paid vs. Volunteer . . . 14
B.2.7 Reminder Treatment . . . 15
B.3 Part 2 . . . 15
B.3.1 Section 1: Consent Form and Information Sheet . . . 15
B.3.2 Section 2: Task . . . 15

C Additional 15-Question Survey for *High Effort* Participants **19**

References **20**

A Additional Tables

A.1 Study 1

Table A1: Estimated Treatment Effects of Effort using Poisson

		Conditional on Sign-Up		ITT	
	(1)	(2)	(3)	(4)	(5)
	Sign-Ups	Trips per Week	Miles per Week	Trips per Week	Miles per Week
High Effort	-0.299***	1.280***	1.253***	0.982***	0.954***
	(0.057)	(0.154)	(0.171)	(0.164)	(0.180)
Constant	-2.980***	-0.404***	1.630***	-3.384***	-1.350***
	(0.037)	(0.094)	(0.127)	(0.101)	(0.132)
Observations	27,227	1,205	1,205	27,227	27,227

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses. Each column presents the results of fitting a poisson regression model with an indicator for being in the *High Effort* condition as the independent variable. Column 1 estimates the effect on an indicator for having signed up to the carpool platform. Columns 2 and 3 estimate the treatment effects on the number of trips taken per week on the platform and the miles driven per week, conditional on having signed up. Columns 4 and 5 estimate the treatment effect on trips per week and miles per week on the entire sample.

Table A2: Estimate of Treatment Effect on Usage (Winsorized)

	99th		95th		90th	
	(1)	(2)	(3)	(4)	(5)	(6)
	Trips per Week	Miles per Week	Trips per Week	Miles per Week	Trips per Week	Miles per Week
High Effort	0.040***	0.338***	0.032***	0.186***	0.025***	0.121***
	(0.007)	(0.070)	(0.005)	(0.037)	(0.004)	(0.023)
Constant	0.034***	0.256***	0.030***	0.201***	0.027***	0.155***
	(0.003)	(0.033)	(0.003)	(0.020)	(0.002)	(0.013)
Observations	27227	27227	27227	27227	27227	27227

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses. Each column presents the results of a bivariate regression model with an indicator for being in the *High Effort* condition as the independent variable. The outcome variables are trips per week and miles per week. Each outcome variable was winsorized at the 99th, 95th, and 90th percentiles.

A.2 Study 2

Table A3: Boundary Exercise: Estimated Treatment Effect for the Most Motivated - Conditional on Sign-Up

	Main Sample		Modified Sample	
	(1)	(2)	(3)	(4)
	Num. Entered	Num. Correct	Num. Entered	Num. Correct
High Effort	18.89***	16.93***	16.81***	15.49***
	(4.887)	(4.619)	(4.965)	(4.700)
Constant	39.92***	27.71***	42.00***	29.16***
	(3.386)	(3.017)	(3.498)	(3.139)
Observations	391	391	381	381

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses. Each column presents the results of a bivariate OLS model with an indicator for being in the *High Effort* condition as the independent variable, conditional on having signed up. Columns 1 and 2 estimate the effect using the main sample, whereas Columns 3 and 4 estimate the effect on a modified sample that removes the 5% of participants in the *Low Effort* condition with the lowest number of letters entered and letters correct, respectively.

Table A4: Estimated Treatment Effects of Effort using Poisson

		Conditional on Sign-Up		ITT	
	(1)	(2)	(3)	(4)	(5)
	Sign-Ups	Num. Entered	Num. Correct	Num. Entered	Num. Correct
High Effort	0.317***	0.337***	0.426***	0.337***	0.426***
	(0.105)	(0.114)	(0.142)	(0.114)	(0.142)
Constant	-1.011***	3.474***	3.109***	3.474***	3.109***
	(0.084)	(0.090)	(0.113)	(0.090)	(0.113)
Observations	496	496	496	496	496

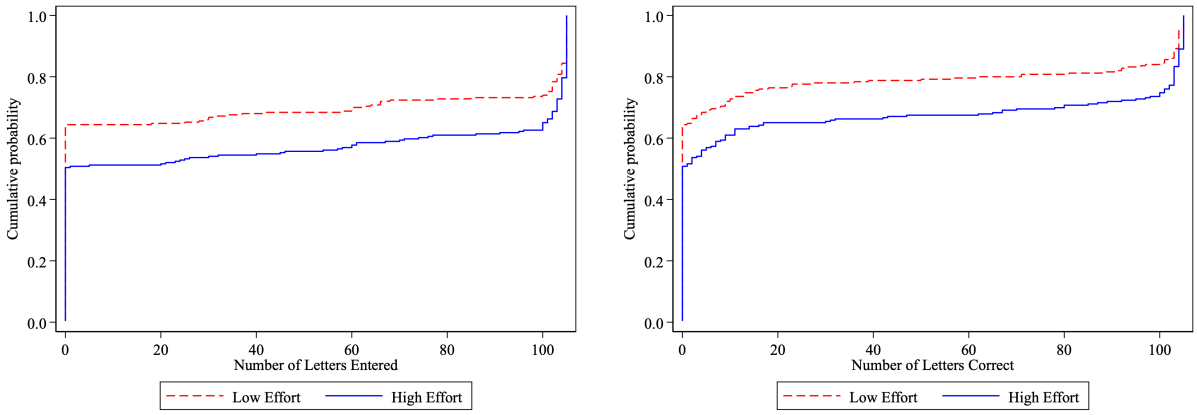
Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses. Each column presents the results of fitting a poisson regression model with an indicator for being in the *High Effort* condition as the independent variable. Column 1 estimates the effect on an indicator for having signed up to the return opportunity. Columns 2 and 3 estimate the treatment effects on the number of letters transcribed and the number of letters correct, conditional on having signed up. Columns 4 and 5 estimate the treatment effects on the entire sample.

Table A5: Estimate of Treatment Effect on Usage (Winsorized)

	99th		95th		90th	
	(1)	(2)	(3)	(4)	(5)	(6)
	Num. Entered	Num. Correct	Num. Entered	Num. Correct	Num. Entered	Num. Correct
High Effort	12.927***	11.909***	12.927***	11.909***	12.927***	11.847***
	(4.278)	(3.882)	(4.278)	(3.882)	(4.278)	(3.870)
Constant	32.256***	22.392***	32.256***	22.392***	32.256***	22.344***
	(2.910)	(2.532)	(2.910)	(2.532)	(2.910)	(2.526)
Observations	496	496	496	496	496	496

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses. Each column presents the results of a bivariate regression model with an indicator for being in the *High Effort* condition as the independent variable. The outcome variables are number of letters transcribed and number of letters correct. Each outcome variable was winsorized at the 99th, 95th, and 90th percentiles.

Figure 1: Cumulative Distribution Functions by Effort



Note: $n = 496$. These figures plot the CDFs of number of letters entered and number of letters correct. Formal Kolmogorov-Smirnov tests of the equality of treatment and control distributions reject the null for each ($p < 0.05$).

Table A6: Heterogeneity by Baseline Number Entered

	ITT				Decomposition		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Returns	Returns	Num. Correct	Num. Correct	Signed Up	Returns Cond. Sign-Up	Num. Correct Cond. Sign-Up
High Effort	0.136***	0.128	11.584***	5.353	-0.047	0.158	5.106
	(0.044)	(0.145)	(3.739)	(7.019)	(0.106)	(0.158)	(8.635)
Baseline Entered	0.000	0.000	0.421***	0.386***	-0.002**	0.001	0.512***
	(0.001)	(0.001)	(0.047)	(0.051)	(0.001)	(0.001)	(0.062)
High Effort × Baseline Entered		0.000		0.070	0.000	0.000	0.130
		(0.002)		(0.095)	(0.001)	(0.002)	(0.115)
Constant	0.333***	0.337***	-14.951***	-11.868***	0.955***	0.342***	-16.856***
	(0.075)	(0.098)	(3.668)	(2.465)	(0.072)	(0.108)	(3.141)
Observations	496	496	496	496	496	391	391

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses. Columns 1–4 present intent-to-treat estimates from multivariate regression models on the full sample with an indicator for being in the *High Effort* condition and the number of letters entered in the first HIT as independent variables. Columns 5–7 decompose the effect into sign-up (Column 5, full sample) and engagement conditional on sign-up (Columns 6–7).

Table A7: Heterogeneity by Baseline Accuracy

	ITT				Decomposition		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Returns	Returns	Num. Correct	Num. Correct	Signed Up	Returns Cond. Sign-Up	Num. Correct Cond. Sign-Up
High Effort	0.133***	0.087	11.285***	3.330	-0.055	0.172**	6.507*
	(0.043)	(0.063)	(3.256)	(2.656)	(0.063)	(0.081)	(3.698)
Baseline Correct	0.003***	0.002***	0.526***	0.446***	0.002***	0.002**	0.460***
	(0.000)	(0.001)	(0.039)	(0.054)	(0.001)	(0.001)	(0.058)
High Effort × Baseline Correct		0.001		0.158**	0.000	0.000	0.161*
		(0.001)		(0.077)	(0.001)	(0.001)	(0.082)
Constant	0.221***	0.243***	-3.782**	0.160	0.685***	0.361***	1.993
	(0.037)	(0.043)	(1.914)	(1.496)	(0.043)	(0.055)	(1.987)
Observations	496	496	496	496	496	391	391

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses. Columns 1–4 present intent-to-treat estimates from multivariate regression models on the full sample with an indicator for being in the *High Effort* condition and the number of letters correctly transcribed in the first HIT as independent variables. Columns 5–7 decompose the effect into sign-up (Column 5, full sample) and engagement conditional on sign-up (Columns 6–7).

B Online Experiment

B.1 Overview

500 participants were recruited for the study on March 12, 2025 on Amazon Mechanical Turk (MTurk). Two participants took Part 1 twice, reducing our sample size to 496. Of the resulting 496 participants, 79% (n=391) of the sample signed up to return for Part 2, and 43% (n=214) of the sample actually followed through with returning for Part 2 the following day. Part 1 is described in Appendix B.2, and Part 2 is described in Appendix B.3.

Participants are assigned to one of two main treatments: (i) the *Low Effort* treatment (n=250), or (ii) the *High Effort* treatment (n=246), described in Appendix B.2.4.

Additionally, participants are cross-randomized into a set of other treatments designed to examine mechanisms behind the effect: (i) a *Social* treatment with three variations: *No Social* (n=169), *Social: Quantitative* (n=162), or *Social: Qualitative* (n=165), described further in Appendix B.2.5, (ii) a *Paid* (n=253) or *Volunteer* (n=243) treatment, described further in Appendix B.2.6, and (iii) a *No Reminder* (n=195) or *Reminder* (n=196) treatment, described further in Appendix B.2.7.

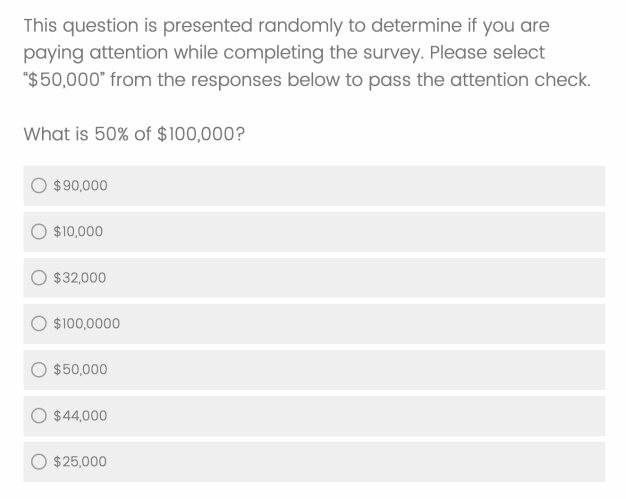
B.2 Part 1

B.2.1 Section 1: Consent Form and Information Sheet

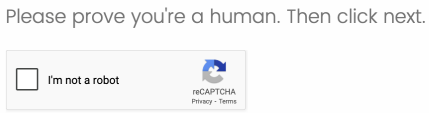
First, participants are prompted to enter their MTurk ID. Then, they are presented with an attention check, where they are asked to select a particular response, as well as a bot detection check (see Figure 2).[1] Next, they are presented with the consent form, which provides the study instructions and compensation information. Each participant is told that they will be asked to complete a set of digitization tasks. They are informed that they will be compensated $2 for completing the study, and in addition, they are informed that they can receive a total bonus payment up to $1.50, depending on their performance in the tasks (see Figure 3).

[1] We do not remove people who did not pass the attention check. However, all our analyses are robust to controlling for passing the attention check.

Figure 2: Attention and CAPTCHA Checks



(a) Attention Check



(b) CAPTCHA/Bot Detector

Figure 3: Compensation Information

Compensation - For completing the survey, you are guaranteed to earn $2.00, which will be paid within 24 hours after completion. In addition, you may earn a bonus payment depending on your accuracy in the digitization tasks. You can earn a maximum bonus of $1.50, which will be paid within two weeks.

B.2.2 Section 2: Instructions and Task

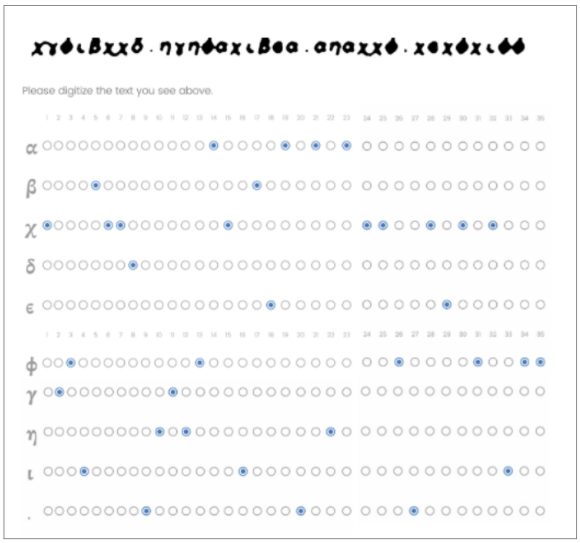
On the next screen, participants are presented with the main task instructions (see Figure 4), as well as the bonus instructions (see Figure 5). After reading through these instructions, participants are prompted to complete three task comprehension questions before they can proceed to the task on the next page (these questions, along with the correctly selected options for each, are included in Figure 6). If they answer any of the three task comprehension questions incorrectly, they are presented with the message "You answered one or more questions incorrectly. Please try again.". They are allowed to re-enter answers repeatedly until they select the correct answers.

Figure 4: Task Instructions

Task Instructions

You will be presented with 3 digitization tasks. In each task, you will be asked to digitize letters from a Greek text. For each letter, you will need to find and select the corresponding letter below.

An example of a correctly digitized Greek text is below.



You do not need to complete each digitization fully. But the more you complete, the more likely you are to receive a bonus.

Figure 5: Bonus Instructions

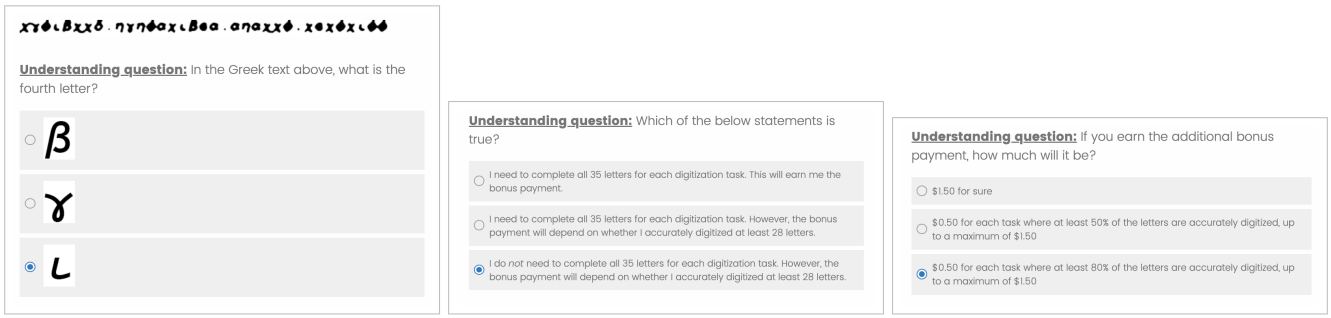
Bonus Instructions

You will receive $0.50 for each of the 3 tasks you complete with at least 80% accuracy. This means you can receive a maximum bonus of **$1.50** (in addition to the guaranteed payment of $2.00).

Accuracy is measured by the number of correct letters.

There are 35 letters in each Greek text. Thus, to receive a bonus payment for a particular Greek text, you need to have at least 28 letters correctly digitized.

Figure 6: Understanding Questions 1, 2, and 3



(a) Understanding Question 1 (b) Understanding Question 2 (c) Understanding Question 3

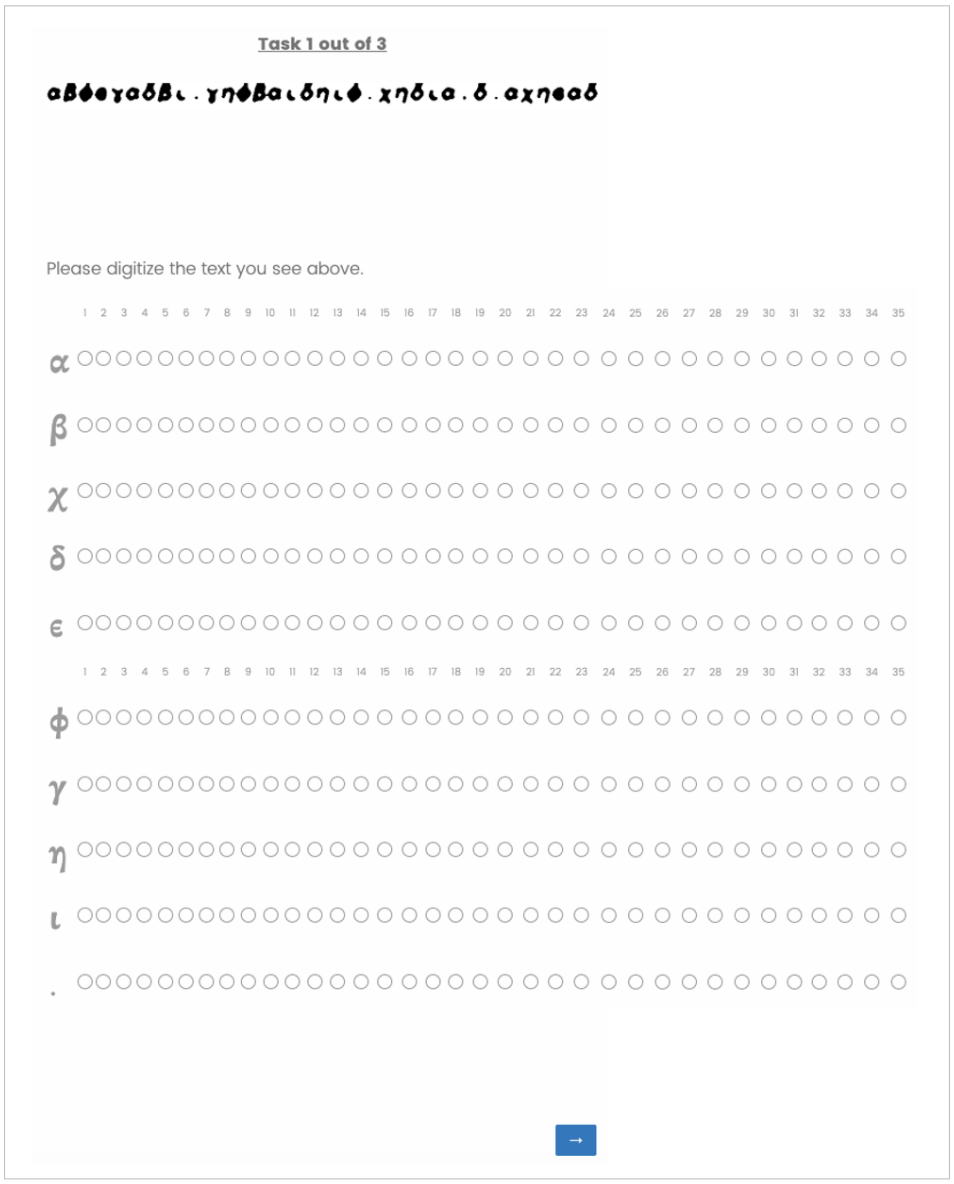
On the next screen, participants are presented with the 'Task' part of the study. This section comprises a set of three transcription tasks, and involves transcribing three separate 35-digit strings of fuzzy Greek letters. This effortful task is adapted from Augenblick, Niederle and Sprenger (2015) and Augenblick and Rabin (2019)'s meaningless Greek letters task. Participants are presented with a row of 35 blurry Greek letters and must choose the correct corresponding Greek letter. We downloaded the full transcription task materials from the lead author's website.[2] We use the exact 35-digit strings and Greek letter images made available by the authors, but adjust how participants select the correct letter.[3] We used the first 50 of the 1000 tasks available from the authors' materials and uploaded these to Qualtrics; each participant was randomly presented with three tasks from the batch of 50.

The three tasks are each presented on separate screens (i.e., they submit their answers for the first task, then click next to move on to the second task, and then the third task). An example of how the task is shown to participants is provided in Figure 7. In this example, the Greek letter α is the correct corresponding letter for the first digit in the string, so they should select α for item 1; the Greek letter β is the correct choice for item 2, and so on.

[2]The materials were downloaded from https://faculty.haas.berkeley.edu/ned/

[3]In the original experiments, participants pressed corresponding letters in their keyboards to transcribe the strings; in our study, we adapted it for use in Qualtrics so that participants had to select the correct corresponding Greek letter for each digit in the string manually. This also required slightly more effort than how the task was used in the original experiments; participants needed to scroll across repeatedly in our study to see all 35 digits.

Figure 7: Task Example

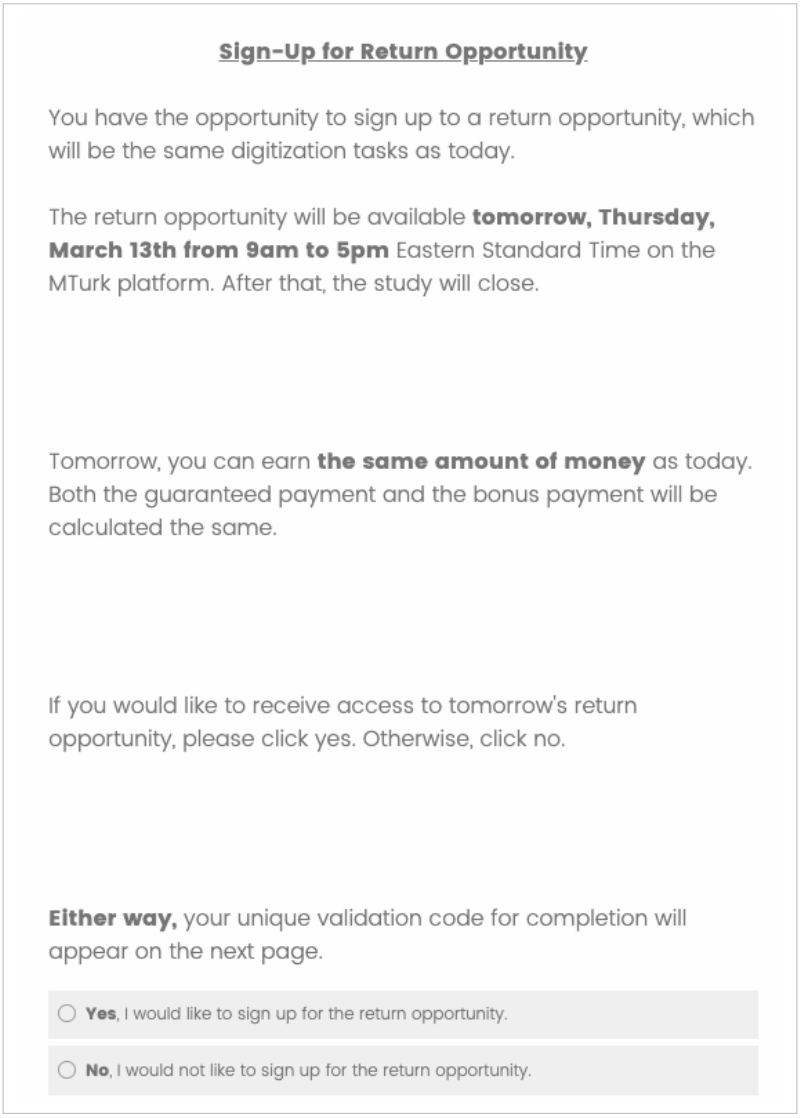


B.2.3 Section 3: Additional Sign-Up

After completion of the task part of the experiment, participants are brought to the sign-up section of the experiment. On this screen, all participants are presented with the same initial message congratulating them on completing Part 1. The other information presented on the screen differs depending on which treatment they have been randomized to.[4] As an example, the full screen presented to participants in the *Low Effort* x *Paid* x *No Social* treatment is included in Figure 8.

[4]The randomization and presentation of information depending on treatment was set up in Qualtrics using Survey Logic and Display Logic.

Figure 8: Sign-Up Information: Low Effort x Paid x No Social



Sign-Up for Return Opportunity

You have the opportunity to sign up to a return opportunity, which will be the same digitization tasks as today.

The return opportunity will be available **tomorrow, Thursday, March 13th from 9am to 5pm** Eastern Standard Time on the MTurk platform. After that, the study will close.

Tomorrow, you can earn **the same amount of money** as today. Both the guaranteed payment and the bonus payment will be calculated the same.

If you would like to receive access to tomorrow's return opportunity, please click yes. Otherwise, click no.

Either way, your unique validation code for completion will appear on the next page.

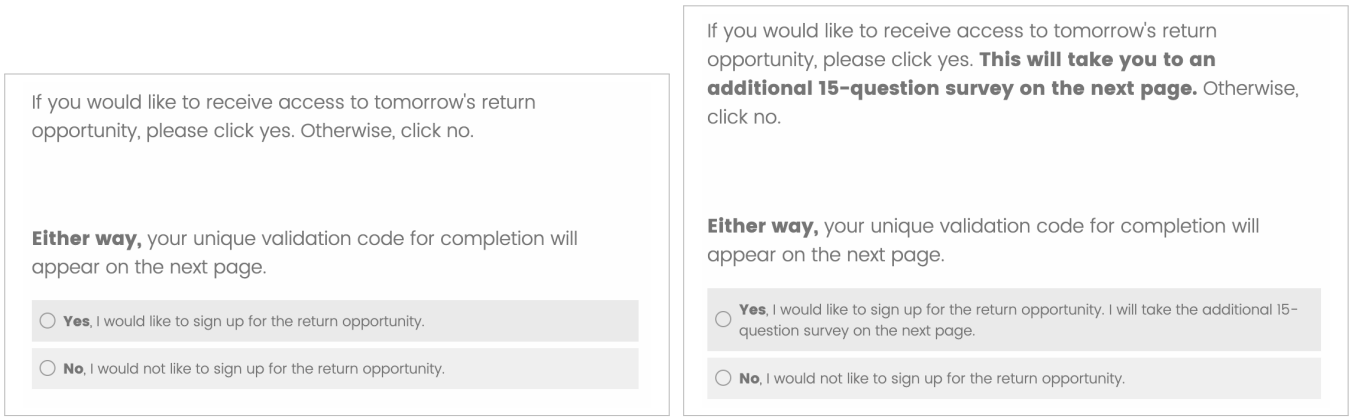
- **Yes**, I would like to sign up for the return opportunity.
- **No**, I would not like to sign up for the return opportunity.

The variations of how this screen looks to other participants depending on the treatment they have been assigned to is described further below.

B.2.4 Low Effort vs. High Effort Treatments

For the sign-up message, participants see either the *Low Effort* or *High Effort* version (see Figure 9). In the *Low Effort* version, they are told that they simply have to click the *"Yes, I would like to sign up..."* option in order to complete their sign-up for Part 2. In the *High Effort* version, they are told that they must answer a 15-question survey in order to complete their sign-up for Part 2. Once they indicate that they would like to sign up for Part 2, they are brought to the next screen where they are presented with the 15-question survey (see Appendix C for list of questions). Participants have the option to change their mind and not complete the questions, via a question at the end of the page.

Figure 9: Low Effort vs. High Effort Information

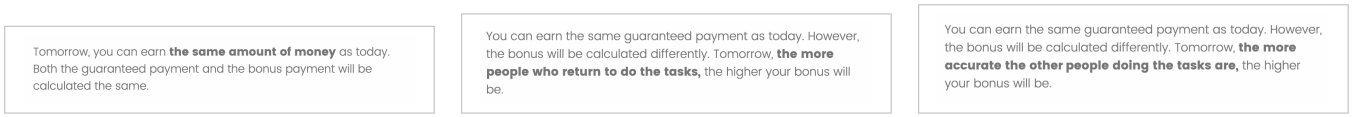


(a) Low Effort (b) High Effort

B.2.5 Social Treatments

Participants are randomized to either a *No Social*, *Social: Quantity*, or *Social: Quality* treatment (see Figure 10). In the *No Social* treatment, participants are told that their bonus payment will be calculated the same as in Part 1. In the *Social: Quantity* treatment, participants are informed that if they choose to return, their bonus payment in Part 2 will depend on either how many other people return for Part 2. In the *Social: Quality* treatment, participants are informed that if they choose to return, their bonus rate in Part 2 will depend on how well other people do on the tasks (i.e., their accuracy) at Part 2.

Figure 10: Social Information: No Social, Social: Quantitative, Social: Qualitative



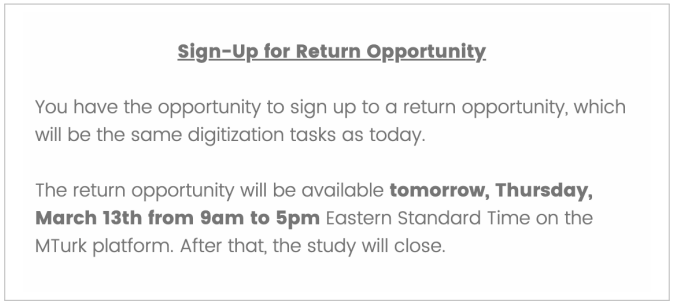
(a) No Social (b) Social: Quantitative (c) Social: Qualitative

B.2.6 Paid vs. Volunteer

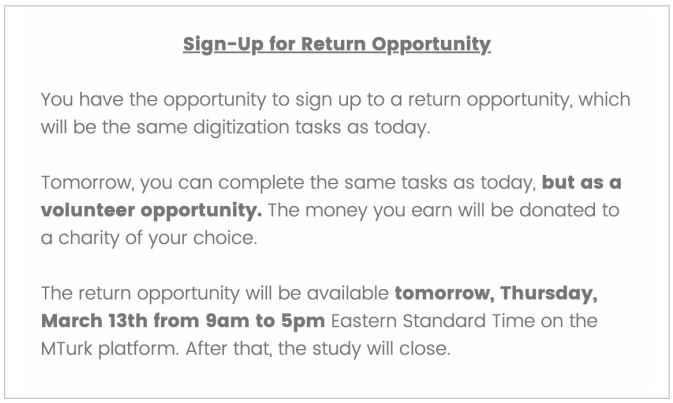
Participants are either randomized to a *Paid* or *Volunteer* treatment (see Figure 11). Participants randomized to the *Paid* treatment are told that the payment structure will be exactly as in Part 1. Participants randomized to the *Volunteer* treatment are informed that if they choose to return for Part 2, their earnings for Part 2 will be donated to a charity of their choice.[5].

[5] At Part 2, They are presented with a list of charities to choose from

Figure 11: Paid vs. Volunteer Information



(a) Paid Information



(b) Volunteer Information

B.2.7 Reminder Treatment

Participants who are randomized to the *Reminder* treatment and who sign up for Part 2 receive an additional email reminder through MTurk that the second part is available for them to complete the following day at 9am EST. The reminder email text states:

Reminder Email

Thank you for signing up to participate in today's return opportunity. A reminder that the HIT is now live. You have until 5:00 pm Eastern Time to complete the study. You can find the study by logging into your MTurk account.

B.3 Part 2

Part 2 was made available on MTurk to participants who signed up the prior day during Part 1. It was made available between 9am-5pm Eastern Standard Time (EST). The experimental set-up was the same as in Part 1, but with different bonus instructions depending on which treatment they were cross-randomized to at Part 1.

B.3.1 Section 1: Consent Form and Information Sheet

Participants complete the same consent form as in Part 1. The compensation information varies depending on which treatment the participant is randomized to at Part 1 (e.g., participants randomized to the *Volunteer* treatment are told that their earnings are donated to a charity of their choice, whereas those randomized to the *Paid* treatment are told that they will receive their earnings themselves).

B.3.2 Section 2: Task

Next, participants proceed to the task part of the study. As in Part 1, participants are presented with task instructions, followed by the task on the following pages, where the three tasks

are presented on separate pages. The bonus instructions are different depending on which treatment participants were randomized to at Part 1, and there are six variations of the instructions, listed below.

(a) Paid × No Social - Bonus Instructions You will earn $0.50 for each of the 3 you complete with at least 80% accuracy. This means you can earn a maximum bonus of **$1.50** (in addition to the guaranteed payment of $2.00).

Accuracy is measured by the number of correct letters.

There are 35 letters in each Greek text. Thus, to earn a bonus payment for a particular Greek text, you need to have at least 28 letters correctly digitized.

(b) Paid × Social: Quantitative - Bonus Instructions Recall that your bonus payment today depends on **how many other people return** to complete today's tasks.

This will be based on the percent of people who return. For example, if 100% of people who signed up yesterday return for today's return opportunity, you will earn the maximum bonus of $1.50. Otherwise, you will earn the corresponding percent of people who return. Thus, if 50% return, you would earn $0.75.

In this way, **your bonus does not depend on you completing the digitization tasks**.

(c) Paid × Social: Qualitative - Bonus Instructions Recall that your bonus payment today depends on **how accurate other people are** at completing today's digitization tasks.

This will be based on the percent accuracy of the people who complete today's tasks. For example, if everyone gets 100% of the tasks correct, you will earn the maximum bonus of $1.50. Otherwise, you will earn the corresponding total percent accuracy. Thus, if total accuracy is only 50%, you would earn $0.75.

In this way, **your bonus only partly depends on your own accuracy in the digitization tasks**.

(d) Volunteer × No Social - Bonus Instructions Recall that what you earn will be **donated to a charity** of your choice.

You will earn $0.50 for each of the 3 you complete with at least 80% accuracy. This means **you can earn a maximum bonus of $1.50** (in addition to the guaranteed payment of $2.00).

Accuracy is measured by the number of correct letters.

There are 35 letters in each Greek text. Thus, to earn a bonus payment for a particular Greek text, you need to have at least 28 letters correctly digitized.

(e) Volunteer × Social: Quantitative - Bonus Instructions Recall that what you earn will be **donated to a charity** of your choice.

Recall also that your bonus payment today depends on **how many other people return** to complete today's tasks.

This will be based on the percent of people who return. For example, if 100% of people who signed up yesterday return for today's return opportunity, you will earn the maximum bonus of $1.50. Otherwise, you will earn the corresponding percent of people who return. Thus, if 50% return, you would earn $0.75.

In this way, **your bonus does not depend on you completing the digitization tasks**.

(f) Volunteer × Social: Qualitative - Bonus Instructions Recall that what you earn will be **donated to a charity** of your choice.

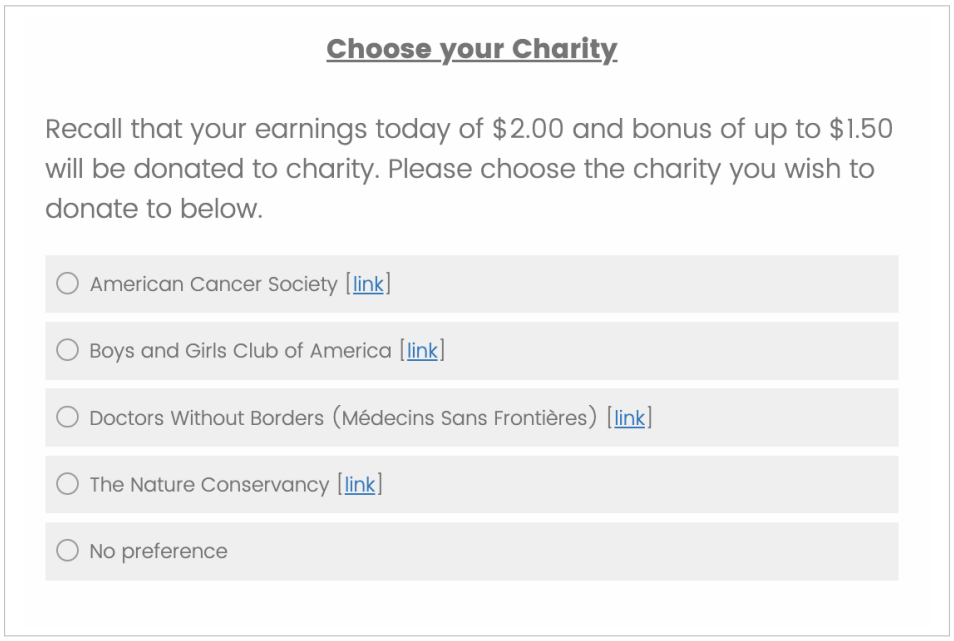
Recall that your bonus payment today depends on **how accurate other people are** at completing today's digitization tasks.

This will be based on the percent accuracy of the people who complete today's tasks. For example, if everyone gets 100% of the tasks correct, you will earn the maximum bonus of $1.50. Otherwise, you will earn the corresponding total percent accuracy. Thus, if total accuracy is only 50%, you would earn $0.75.

In this way, **your bonus only partly depends on your own accuracy in the digitization tasks**.

Finally, participants randomized to the *Volunteer* condition are also provided with a list of charities to chose from to donate their earnings to, depicted in Figure 12.

Figure 12: Volunteer Condition: List of Charities



After completing the task, participants are brought to the end of the study.

C Additional 15-Question Survey for *High Effort* Participants

For the *High Effort* participants, they were required to complete an additional 15-question survey in order to complete their sign-up for Part 2. Below we list the questions that they were presented with. Each had a yes/no answer, and participants could still choose to skip the questions and not sign up at the end of the page.

1. Have you digitized letters in the past?
2. Are you familiar with the Greek alphabet?
3. Were the instructions or guidance provided sufficient to complete the digitization tasks successfully?
4. I can copy and move files and folders.
5. I can find information about goods or services online.
6. I can seek health-related information online.
7. I have an MTurk account.
8. I send and receive emails.
9. I participate in social networks.
10. I telephone or video call over the internet.
11. I transfer files between computers or other devices.
12. I install software and applications (apps).
13. I use online learning resources.
14. I have used word processing software.
15. I have used spreadsheet software.

References

Augenblick, Ned, and Matthew Rabin. 2019. "An Experiment on Time Preference and Misprediction in Unpleasant Tasks." *The Review of Economic Studies*, 86(3): 941–975.

Augenblick, Ned, Muriel Niederle, and Charles Sprenger. 2015. "Working Over Time: Dynamic Inconsistency in Real Effort Tasks." *The Quarterly Journal of Economics*, 130(3): 1067–1115.