

# Supplementary Appendix to Not Worth the Effort: Cognitive Load and Suboptimal Behavior

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August 8, 2017

## 1 Introduction

This appendix provides additional information about the experiment software. The experiment data and experimental software is available upon request from the author.

## 2 Experimental Instructions and Screenshots

This section presents instruction and decision screens viewed by subjects during the course of the experiment. Unless otherwise noted, subjects in all treatments viewed each of the following screens in the experiment. Screenshots of the decision screens give an example of what the typical subject viewed during an experiment. It is important to remember that the memorization numbers were of either 2 or 7 digits in length depending on the round. Likewise, the reward was either \$0.75 or \$1.50 per correct digit depending on the round.

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<sup>0</sup>Any mentions of suggestions or bidding would only be present in the price of effort experiments. It would be absent in the performance without suggestions experiments.

Instructions  
Please read the instructions carefully.

- Welcome and thank you for participating in this experiment.
- You will be paid for this experiment in the following ways:
  1. You will be paid a \$7 show up fee.
  2. You will be paid for choices you make.
- Turn off your cell phone.
- You will not be allowed paper or pencil during this experiment.
- The experiment will take place on the computer terminals.
- Do not speak to any of the other participants during the experiment.
- When you have finished reading this page of instructions, please press the "Continue" button in the bottom right. Pressing the button will take you to the next page of instructions. You will not be able to return to the previous section.

Continue

Figure 1: Experimental Instructions

Instructions  
Main Multiplication Task

- In this experiment you will play a multiplication game.
- You will be given two numbers to multiply together.
- For EACH CORRECT DIGIT in your answer, you will be given \$0.75 or 1.50 depending on the round.
- Both numbers will be two digits long.
- You will have 60 seconds for each multiplication task.

Continue

Figure 2: Experimental Instructions (cont.)

Instructions  
Memorization Task

- Before your addition task, you will be asked to remember either a 2 digit or 7 digit number. We call this the memory number.  
- After the multiplication task, you will be asked to reproduce that memory number.  
- If you fail to correctly reproduce the memory number, then you will receive \$0 for the round.  
- If you successfully reproduce the memory number, then you will keep the money you earned in the multiplication task.

Continue

Figure 3: Experimental Instructions (cont.)

- Instructions  
Sequence of Events

- This experiment will be played in rounds. The order of events in a round are as follows:
  1. You will be given a memory number to memorize, as described in the memorization task instructions.
  2. You will be given an multiplication problem to solve, as described in the multiplication task instructions.
  3. You will be asked to recall the memory number you were asked to remember prior to the multiplication task.
  4. The results of the round will be displayed.
- The time you are given to complete each part of the round will be displayed by a timer in the top right corner of the computer screen.
- When the timer hits 0, you will be moved to the next screen.
- Clicking the "Submit" button on a screen, will not advance you to the next screen, but will submit your answer to the task on the screen.
- **You must click "submit" to submit an answer.**
- **You must click "OK" on the pop-up window to fully submit your answer.**
- The last answer you submit will be the one counted for that screen.

Continue

Figure 4: Experimental Instructions (cont.)

Instructions  
Main Multiplication Task with Suggestion Bidding

- The main multiplication task and memorization task remain unchanged EXCEPT that before the main multiplication task you will now place a bid to win a suggestion.
- The suggestion will be a number that is the correct solution to the multiplication task, except that some number of digits have a 50% chance of being incorrect.
- The number of digits that may be incorrect will be displayed before the memorization task every round.
- The digits that are chosen to be incorrect will be determined randomly, and these digits will have 1 added or subtracted from them in the suggestion.
- If the number of incorrect digits that may be wrong is zero, then the program is guaranteed to give the correct solution.
- The suggestion will be shown to you while you complete the multiplication task.
- The bid is made as the percentage of the money you will return to the computer from the winnings in the multiplication task.
- If the bid is unsuccessful no money will be returned to the computer upon completion of the main multiplication task.
- The bid is also the probability of successfully winning the suggestion.
- Therefore, the bid will be a number between 0 and 100, which represent percentages.
- A bid of 0 means that you have a 0% chance to use the computer generated suggestion.
- A bid of 100 means that you have a 100% chance to win the computer generated suggestion.
- If your bid is unsuccessful, you will carry out the main multiplication task as usual.

Continue

Figure 5: Experimental Instructions for Price of Effort Experiment (cont.)

Instructions  
Main Multiplication Task with Bidding for Suggestion

- Let us walk through a brief second example of how bidding for the suggestion would work.
- Suppose that the number of possible incorrect digits was 3.
- This means that the computer will flip 3 coins. The number of coins that come up heads will be the number of incorrect digits in the suggestion, though you will not be told how many come up heads.
- Suppose the two numbers you are told to multiply together are 64 and 25 and that the number of heads flipped by the computer is 2.
- The correct solution to this addition problem is 1,600. Since the computer flipped 2 heads, that means that two digits in the suggestion will be moved up or down by one.
- Suppose the digits that will be changed are 3 and 4. Suppose also that the fourth digit is moved up by one and the 3rd digit is moved down by one. This means that suggestion will be 2,500.
- Suppose you were to enter '25' for your bid amount, which means you have a 25% of winning the program and also that you will return 25% of the money you earn in the multiplication task back to the computer.
- Suppose also that your bid of 25 was successful.
- Thus, if you won \$3 from the addition task (2 of the 5 digits were incorrect), then 25% (\$0.75) would be returned to the computer, leaving you with 75% of the \$3, which is \$2.25.

Continue

Figure 6: Experimental Instructions for Price of Effort Experiment (cont.)

Instructions  
Final Instructions

- This experiment will contain 16 rounds and will be followed by a short questionnaire.  
- Of these 16 rounds, one \$0.75 round and one \$1.50 round will be chosen at random for payment.  
- If you have any questions about how the addition task, the memory task, or how the suggestion works, please raise your hand and wait for the experimenter to come over and answer.

Continue

Figure 7: Experimental Instructions (cont.)



Round

1 of 16

Remaining time (sec): 15

In the next 8 rounds you will receive \$0.75 for each digit that is correct in your solution.

Continue

Figure 8: Decision Screens: Reward Notification

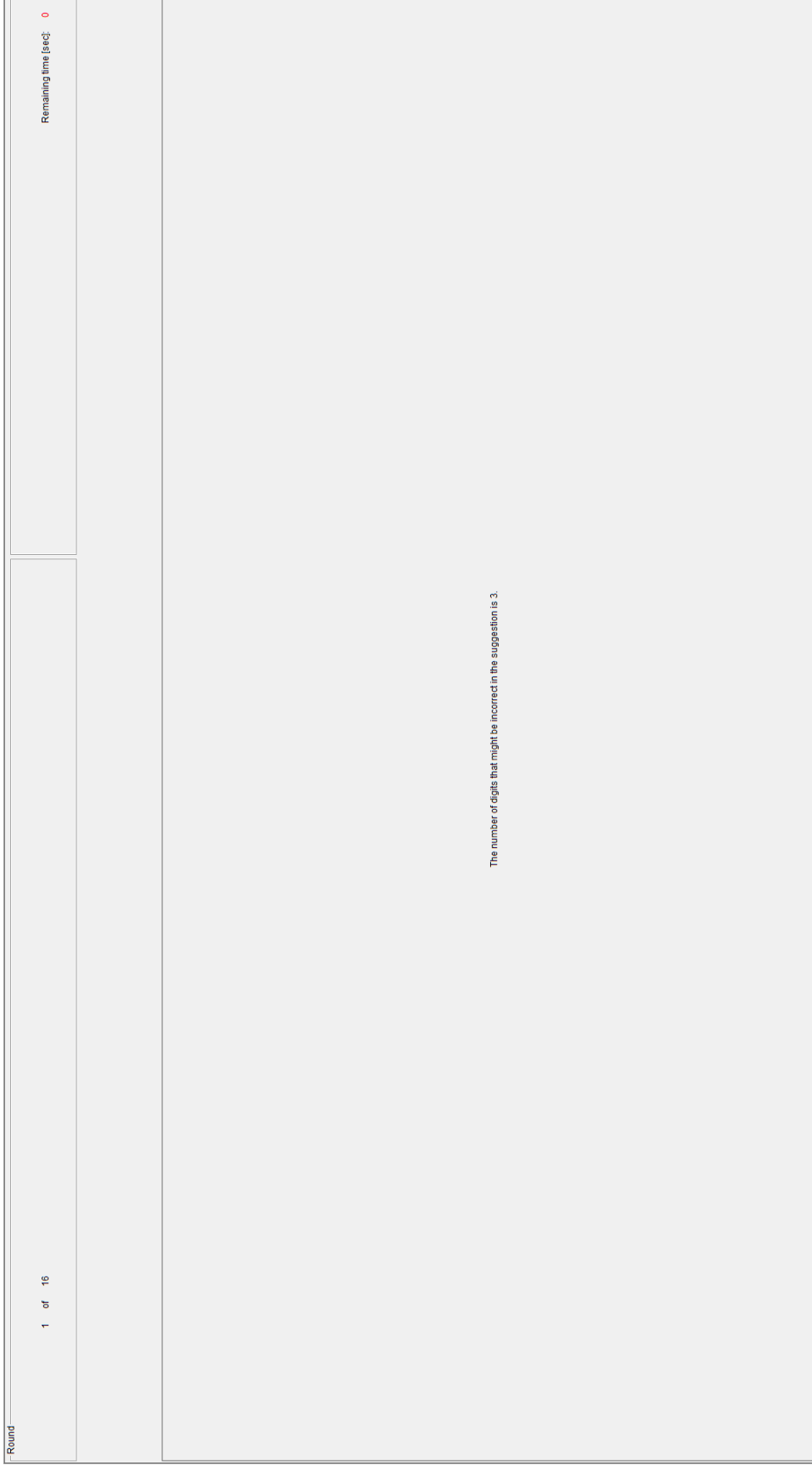


Figure 9: Decision Screens: Precision of Suggestion Notification

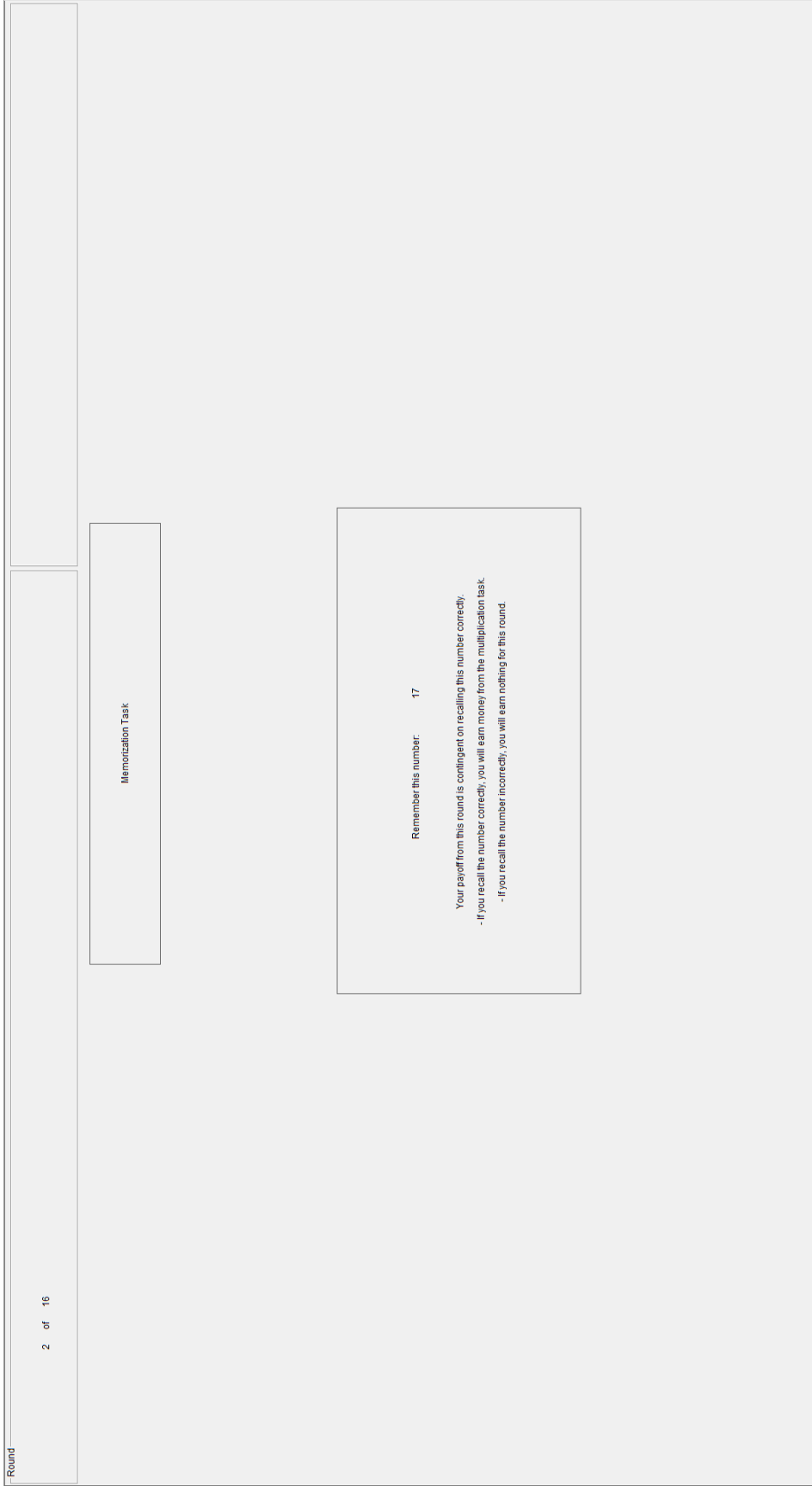


Figure 10: Decision Screens: Memorization Number Introduction

Round
2 of 16
Remaining time (sec): 10

Bidding For Suggestion

Bidding For Suggestion

Your bid: 100

2

- The number of digits that might be incorrect in the suggestion in the next round will be  
 - Bid a number between 0 and 100 for the suggestion.  
 - Bids must be made in increments of 1.

Bidding For Suggestion

Bidding For Suggestion

Hundreds Place

Tens Place

Ones Place

Figure 11: Decision Screens: Suggestion Bidding (For Price of Effort Experiment Only)

Round
2 of 16
Remaining time (sec): 51

Main Multiplication Task

Your bid for a suggestion was successful.

86
x 62
= 0

The suggestion is 5332

The number of digits that might be incorrect in the suggestion above is 2

Thousands Place	<input type="radio"/>	0	<input type="radio"/>	1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>	8	<input type="radio"/>	9
Hundreds Place	<input type="radio"/>	0	<input type="radio"/>	1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>	8	<input type="radio"/>	9
Tens Place	<input type="radio"/>	0	<input type="radio"/>	1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>	8	<input type="radio"/>	9
Ones Place	<input type="radio"/>	0	<input type="radio"/>	1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>	8	<input type="radio"/>	9

Submit Answer

Figure 12: Decision Screens: Multiplication Task<sup>1</sup>

Round

2 of 16

Remaining time (sec): 11

Memorization Task

Your bid was successful.  
Enter the number you were asked to recall:

Submit

Figure 13: Decision Screens: Memorization number recall<sup>2</sup>

Round	2 of 16	Remaining time (sec): 12
<p>- Your bid for the suggestion was successful.</p> <ul style="list-style-type: none"> <li>- The solution to <math>86 \times 62</math> is 5332.</li> <li>- The number you entered was 5332.</li> </ul> <p>- The number of digits that correctly matched the true answer in the multiplication task was 4.</p> <ul style="list-style-type: none"> <li>- The percentage you bid for the suggestion was 100.</li> </ul> <p>- This many digits correct corresponds to a payoff of \$0.00, after factoring in your bid amount.</p> <ul style="list-style-type: none"> <li>- The number you were asked to recall was 17.</li> <li>- The number you reported was 17.</li> <li>- You recalled correctly.</li> </ul> <p>- Your payoff for the round is \$0.00.</p>		

Figure 14: Decision Screens: Summary Screen<sup>3</sup>