Online Appendix: Subject instructions for Learning While Shopping

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A Instructions

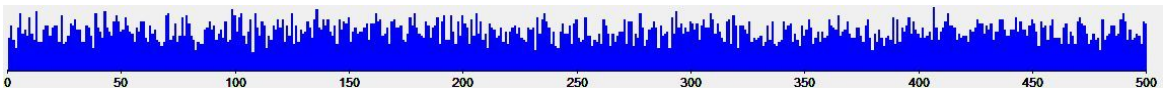
A.1 Learning Last Experimental Instructions

Welcome to our decision making study! Thank you for your participation. Please turn off and put away your cell phones, and please refrain from talking to other participants during the study. You will receive a payment for your time based on the results of the experiment. The experiment should take approximately 1 hour. The average payment will be about $17 but your earnings will depend on your decisions and on elements of chance.

A.1.1 Drawing Values

Imagine you are searching for a product online. When you find what you're looking for, you have the option of taking that deal immediately, or continuing to search. Searching takes time and effort, but there's always the possibility of finding an item that you like more or finding the same item at a lower price. We will be simulating this search process by having you draw values from a random distribution. You will begin by entering a "minimum acceptable value" and making a draw from the distribution. This minimum acceptable value represents the deal with the lowest payoff that is still high enough you would stop searching after finding it. Each draw costs 5 experimental currency units, and if you get a draw above your minimum acceptable value then you will be done with that search spell and your payoff will be the value you drew minus the cost of the draw.

If your draw is below your minimum acceptable value, then you will have two options, you can either accept the highest value you have observed so far at a cost of 5 experimental currency units, or enter a new minimum acceptable value (which can be higher, lower, or equal to your previous minimum acceptable value) and draw a new value. If you put a low minimum acceptable value, then you are likely to get a value above this cutoff in your next draw, but you may end up settling for a very low payoff. If your minimum acceptable value is very high, then you won't stop after drawing a lower value, but it may take a lot of draws to get a value that high.



The distribution you will be drawing from is a "censored normal distribution" with a low end of 0, a high end of 700 and a mean of 350. That means that every number will be between 0 and 700 but numbers closer to 350 are more likely than numbers near the end. For example, if you input a minimum acceptable value of 300, then you will have a 70% probability of drawing a value above that number, but the probability of drawing a value above 400 is 30%. You will be shown a graph with 10,000 random draws from this

distribution and your draws will be displayed on this graph as red dots on the axis. You will be repeating part 1 seven times. The first two times will be for practice and then your payment for this section will be randomly selected from among the payoffs in the other five periods.

A.1.2 Drawing Values With an Unknown Distribution

This task will be similar to the first task, but you will be drawing values from a normal with an unknown mean. The computer will randomly determine a number anywhere between 150 and 550 to be the mean of the distribution at the start of every period, but you will not know what that mean is. Each number between 150 and 550 is equally likely to be chosen for the mean. Once the computer has determined the mean you will choose a minimum acceptable value and draw values just like in the last section. It is still possible to draw every number between 0 and 700, and numbers closer to the mean are still more likely. For example, if the mean is 200, then you will be more likely to draw numbers close to 200 but it is still possible to draw values close to 700.

Once you have finished drawing values, you will be asked to guess the mean of the distribution for that search spell. If your guess is within 100 units of the actual value, then 100 minus the amount by which your guess differs from the actual value will be added to your payoff for that period. This section will be repeated seven times just as before, and the computer will draw a new number for the mean of the distribution at the beginning of each period. The first two periods will be for practice again and then your payment for this section will again be randomly selected from among the payoffs in the other five periods.

A.1.3 Number line task

Once you have finished drawing values, we will ask you to complete a number line task. You will be shown a number line ranging between 0 and 1000 and a sequence of numbers. Your task for this part of the experiment is to use your mouse to drag the diamond as close to where you think each number lies on the line as possible. We will pick one number at random out of the sequence and if the position of the diamond is within 100 units of the number shown, then you will be awarded a number of experimental units equal to 100 minus the amount by which your placement differs from the number.

A.1.4 Lottery Choice

The next part of the experiment will involve choosing between pairs of lotteries. Lottery B on the right side has a probability of giving a much higher payout than lottery A on the left, but also has a possibility of giving a much smaller payout. The lotteries have an increasing probability of giving the high payout, and we will ask you to pick the minimum probability of the high payout at which you would prefer the high variance of lottery B to the low variance of lottery A. Once you choose that minimum probability, the program will automatically select lottery B for all higher probabilities of receiving the high payout. We will be selecting one of your chosen lotteries at random to determine your payment for this part of the experiment.

A.1.5 Survey

The last part of the experiment consists of a few questions and a brief survey assessing how you deal with numeric information. In order to ensure accuracy of this information we ask that you be especially sure not to use any calculators in this part of the experiment. The answers to these questions will not affect your payment.

A.1.6 Calculating Payment

The computer will randomly select your earnings from one of the five repetitions after the practice periods from part 1 and one of the five repetitions after the practice periods from part 2, then add these to your earnings from parts 3 and 4 to determine your total payment. Experimental currency units will be converted to dollars at a rate of 1ECU to 0.014USD.

A.1.7 Questionnaire

Once you have written down your payment the experiment will conclude with a brief questionnaire. After you have completed the questionnaire the experimenter will call out your name and you can collect your payment.

A.1.8 Practice Questions

Please fill in the blanks in the following examples. This is just to get you used to the type of thinking you will be doing in the experiment. Your answers to these questions will not affect your payment or your standing with the experimenter.

Example 1: *You have drawn 3 values from the distribution in part 1*

1. If your current highest value is 180 and you decide to accept this value, then you will get a payout of [ ] for this period.
2. If you decide to draw again with a minimum acceptable value of 250 and you draw 320, then your final payout for this period will be [ ]

Example 2: *You have drawn 7 times from the distribution in part 2*

1. If your current highest value is 120 and you decide to accept this value, then you will get a payout of [ ] for this period.
2. If you decide to draw again with a minimum acceptable value of 400 and you draw 480, then your final payout for this period will be [ ]

A.2 Learning First Instructions

Welcome to our decision making study! Thank you for your participation. Please turn off and put away your cell phones, and please refrain from talking to other participants during the study. You will receive a payment for your time based on the results of the experiment. The experiment should take approximately 1 hour. The average payment will be about $17 but your earnings will depend on your decisions and on elements of chance.

A.2.1 Drawing Values With an Unknown Distribution

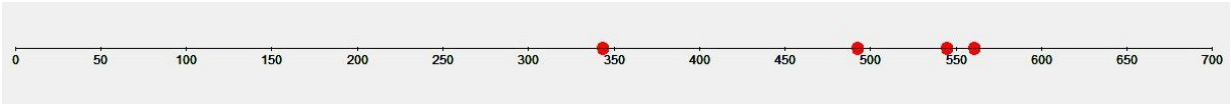
Imagine you are searching for a product online. When you find what you're looking for, you have the option of taking that deal immediately, or continuing to search. Searching takes time and effort, but there's always the possibility of finding an item that you like more or finding the same item at a lower price. We will be simulating this search process by having you draw values from a random distribution. You will begin by entering a "minimum acceptable value" and making a draw from the distribution. This minimum acceptable value represents the deal with the lowest payoff that is still high enough you would stop searching after finding it. Each draw costs 5 experimental currency units, and if you get a draw above your minimum acceptable value then you will be done with that search spell and your payoff will be the value you drew minus the cost of the draw.

If your draw is below your minimum acceptable value, then you will have two options, you can either accept the highest value you have observed so far at a cost of 5 experimental currency units, or enter a new minimum acceptable value (which can be higher, lower, or equal to your previous minimum acceptable value) and draw a new value. If you put a low minimum acceptable value, then you are likely to get a value above this cutoff in your next draw, but you may end up settling for a very low payoff. If your minimum acceptable value is very high, then you won't stop after drawing a lower value, but it may take a lot of draws to get a value that high.

The distribution you will be drawing from is a "censored normal distribution" with a low end of 0, a high end of 700 and an unknown mean. This means that it is possible to draw every number between 0 and 700, but numbers closer to the mean are more likely.

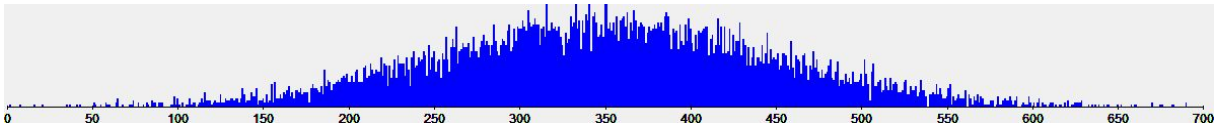
As an illustrative example: If you input a minimum acceptable value of 300 and the mean is 350, then you will have a 70% probability of drawing a value above that number, but the probability of drawing a

value above 400 is 30%. On the other hand, if the mean is 200, then you would only have a 16% probability of drawing a value above 300, but it is still possible to draw values close to 700. The computer will randomly determine a number anywhere between 150 and 550 to be the mean of the distribution at the start of every period, but you will not know what that mean is. Each number between 150 and 550 is equally likely to be chosen for the mean. Once the computer has determined the mean you will choose a minimum acceptable value and begin drawing values. You will be shown the values you draw as red dots on a number line as in the picture below.



Once you have finished drawing values, you will be asked to guess the mean of the distribution for that search spell. If your guess is within 100 units of the actual value, then 100 minus the amount by which your guess differs from the actual value will be added to your payoff for that period. This section will be repeated seven times, and the computer will draw a new number for the mean of the distribution at the beginning of each period. The first two times will be for practice and then your payment for this section will be randomly selected from among the payoffs in the other five periods.

A.2.2 Drawing Values With a Known Distribution



This task will be similar to the first task, but you will be drawing values from a censored normal distribution with a known mean of 350. That means that every number will be between 0 and 700 but numbers closer to 350 are more likely than numbers near the end. You will be shown a graph with 10,000 random draws from this distribution and your draws will be displayed on this graph as red dots on the axis. The picture above shows an example of what this graph will look like. Since you know the distribution in this part of the experiment you will not be asked to guess the mean. You will be repeating this part seven times just as before. The first two periods will again be for practice and then your payment for this section will again be randomly selected from among the payoffs in the other five periods.

A.2.3 Number line task

Once you have finished drawing values, we will ask you to complete a number line task. You will be shown a number line ranging between 0 and 1000 and a sequence of numbers. Your task for this part of the experiment is to use your mouse to drag the diamond as close to where you think each number lies on the line as possible. We will pick one number at random out of the sequence and if the position of the diamond is within 100 units of the number shown, then you will be awarded a number of experimental units equal to 100 minus the amount by which your placement differs from the number.

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The next part of the experiment will involve choosing between pairs of lotteries. Lottery B on the right side has a probability of giving a much higher payout than lottery A on the left, but also has a possibility of giving a much smaller payout. The lotteries have an increasing probability of giving the high payout, and we will ask you to pick the minimum probability of the high payout at which you would prefer the high variance of lottery B to the low variance of lottery A. Once you choose that minimum probability, the program will automatically select lottery B for all higher probabilities of receiving the high payout. We will be selecting one of your chosen lotteries at random to determine your payment for this part of the experiment.

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Example 2: *You have drawn 7 times from the distribution in part 2*

1. If your current highest value is 120 and you decide to accept this value, then you will get a payout of [ ] for this period.
2. If you decide to draw again with a minimum acceptable value of 400 and you draw 480, then your final payout for this period will be [ ]