Appendix: EXPERIMENTAL INSTRUCTIONS (Not Intended for Publication)

Risk Elicitation Task Shown only with On-Screen Instructions:

At the beginning of this experiment you will make 5 choices. You are actually choosing the portion of this amount between $5 and $50 that you wish to invest in a risk option. The rest of the money will be accumulated in your total balance.

The risky investment has an equal chance that the investment will fail or succeed. If the investment fails, you lose the amount you invested. If the investment succeeds, you receive 1.25 times the amount invested.

How do we determine if you succeeded? After you have chosen how much you wish to invest, you will toss a coin to determine whether you succeed or fail. If the coin comes up heads, you win 1.25 times the amount you chose to invest. If the coin comes up tails, you lose the amount invested.

<table>
<thead>
<tr>
<th>amount invested</th>
<th>earnings if fails</th>
<th>earnings if heads</th>
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<tr>
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<td>$8.25</td>
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<tr>
<td>$5.00</td>
<td>$8.00</td>
<td>$9.00</td>
</tr>
</tbody>
</table>

Please enter how much you would like to invest in a risk option: $[ ]

You will lose the coin at the end of today's session.

Submit Investment
INSTRUCTIONS *(Individual Auction)*

This is an economic experiment about decision making under uncertainty. Various agencies have provided funds for the experiment. Listening carefully to these instructions will help you to earn a significant amount of money, which you will receive in cash privately at the end of the experiment. You will also take a short quiz at the end of these instructions and will earn $1 for every correct answer.

You are a **potential buyer** in this experiment. The computers take the role of the potential seller. You will choose an amount to bid on an item, **without knowing the exact value of the item**. You can think of the item as a closed envelope that contains dollar banknotes; you don’t know exactly how much money is inside. You will participate in several trading periods where you will bid in an auction, which can be of different types. It could be:

- individual auction,
- low value auction,
- or high value auction.

In each period you bid on a single item. In different periods, the items are different. As we will explain in a moment, random draws will determine the value of the items. These random draws are independent from period to period. You can think about an urn containing balls. A ball is drawn and then put back into the urn. Thus a high value in one period tells you nothing about the likely value in the next period – whether it will be high or low.

You are welcome to ask questions by raising your hand. Please wait for an experimenter to come to your seat before asking your question. While the experiment is in progress, please do not to speak or in any other way communicate with other participants. This is important to the validity of the study.

**I - INDIVIDUAL AUCTION**

In an individual auction, the item will be worth more to you than it is to the current owner. The owner may sell you the item and knows the item's value. You are the only potential buyer and at the time you make a bid you don’t know the exact value of the item.
In each auction period, you enter a bid for an item, using a computer screen like the one below.

The item's value to its current owner will come from a random draw generated by the computer and will always be between 6 and 24 points. All cent values within the range will be equally likely. In other words, any value between 6 and 24 points, such as 6.00, 6.01,..., 23.99, 24.00 will be equally likely.

The item's value to you, should you acquire it, will be 1.5 times as much as the value for its current owner, so it will range between 9 and 36:

\[ \text{Value of the item to you} = 1.5 \times \text{Value to current owner}. \]

For example, if the item is worth 10 points to its current owner, it will be worth 15 to you; if the item is worth 20 to its current owner, it will be worth 30 to you.
Each period has a simple timeline: first you must decide what you wish to bid for the item; then the computer draws a random number; the current owner either sells the item or not; finally, you can see the results.

Everyone should have received a decision sheet. When you place your bid, please also write it down in the decision sheet and circle the appropriate Auction Type, in this case I. For the first four periods I has already been circled for you. After you have entered your bid, there will be a random draw to determine the item's value. The computer takes the role of the current owner. If your bid is greater than or equal to the item's value to its current owner, you will acquire the item because you offered a high enough price. In this case, your gain or loss will be the item's value to you (the buyer), which is 1.5 times the value to its current owner, minus your bid. If your bid is less than the item's value to its current owner, you will not acquire the item because your offer is too low, and will neither gain nor lose anything. Your earnings are zero in periods that you do not acquire the item. You are the only potential buyer.

\[
\text{Value to current owner} = \text{random number between 6 and 24}
\]

1. If \( \text{Bid} \geq (\text{Value to current owner}) \),
   \[
   \text{Earnings} = 1.5 \times (\text{Value to current owner}) \text{ minus (Your Bid)}
   \]

2. If \( \text{Bid} < (\text{Value to current owner}) \),
   \[
   \text{Earnings} = 0
   \]

At the end of the period, please record on the decision sheet the value of the item for you and your earnings in points. There is also a column for the current balance in dollars. You will begin the experiment with a starting balance of $10.00. When you gain money during a period, your current balance will increase by the amount that you gain. When you lose money during a period, your current balance will decrease by the amount you lose. For the individual auction, your earnings in points will be divided by a factor of 4 to obtain your dollar earnings. To calculate the current balance in dollars, take the period earnings in points divided by 4 and add them to the balance in dollars in the previous line.

Some common questions: What does "equally likely" mean? Suppose that there is a roulette wheel with 1801 equally spaced stopping points, which are labeled: 6.00, 6.01, 6.02, ..., 23.99,
24.00. Then a hard spin would make the chance of stopping on any one point exactly the same as the chance of stopping on any other, so all values are "equally likely."

Can I bid 0? Yes, you can bid 0 or any positive amount.

My balance is 18 points. Can I bid 25? Yes, you are permitted to bid in excess of your current balance in any given period.

Are there any questions?

Period 1 will be a practice period for you to familiarize yourself with the rules and has no impact on your earnings (a dry run). Your decisions in period 2, 3, and 4, however, will impact your earnings. We will check to make sure everyone is filling out their record sheet correctly at the end of the first period.

In the quiz you are about to take on your computer you will earn $1 for every correct answer, and you may consult the instructions before answering any question.
<table>
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<tr>
<th>Period</th>
<th>Auction Type</th>
<th>Period</th>
<th>Starting balance</th>
<th>Current Balance in $</th>
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<tbody>
<tr>
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<td>H L I</td>
<td></td>
<td>n/a</td>
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<tr>
<td>2</td>
<td>H L I</td>
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<td>H L I</td>
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<td>4</td>
<td>H L I</td>
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<td>5(dry)</td>
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<tr>
<td>37</td>
<td>H L I</td>
<td></td>
<td></td>
<td>$</td>
</tr>
</tbody>
</table>
Final Payment Sheet

Investment Task Earnings $_______
Quiz Earnings $_______
Paid Auction Earnings $_______

Total Amount Paid (Numbers summed above) $_______
Individual Auction Quiz Questions (computerized on zTree, $1 for each correct answer)

1. You will know the exact value of the item to you before entering your bid (True/False).

Text for incorrect answer: “Your answer is incorrect. The correct answer is False. As stated on page 1 of the instructions, ‘You will choose an amount to bid on an item, without knowing the exact value of the item.’”

2. If the item has a value of 15 to the current owner, how much is it worth to you if you acquire it?

Text for incorrect answer: “Your answer is incorrect. The correct answer is 22.5. As stated at the bottom of page 1 of the instructions, ‘The item's value to you, should you acquire it, will be 1.5 times as much as the value for its current owner’. And so if the value to the current owner is 15, the item’s value to you is 1.5*15=22.5.”

3. What is the lowest possible amount that the item could be worth to you if you acquire it?

Text for incorrect answer: “Your answer is incorrect. The correct answer is 9. As stated on page 1 of the instructions, ‘The item's value to its current owner will come from a random draw generated by the computer and will always be between 6 and 24 points.’ The lowest value to the current owner is 6, and since the value to you is 1.5 times as much as the value to the current owner the lowest value to you is 1.5*6=9.

4. How much do you earn in a period if you do not acquire the item?

Text for incorrect answer: “Your answer is incorrect. The correct answer is 0. As stated on page 2 of the instructions, ‘Your earnings are zero in periods that you do not acquire the item.’

5. If you acquire the item in a period, losing money is impossible. In other words, you cannot have negative period earnings (True/False).

Text for incorrect answer: “Your answer is incorrect. The correct answer is False. As stated on page 2 of the instructions, in periods that you bid high enough to acquire the item your earnings are ‘Earnings = 1.5 x (Value to current owner) minus (Your Bid)’. If (Your Bid) exceeds 1.5 x (Value to current owner) then your earnings would be negative for that period.
L - LOW-VALUE AUCTION

You will take a short quiz at the end of these instructions and will earn $1 for every correct answer.

In the low-value auction, your task is to submit bids for a single item in competition with other buyers. At the beginning, participants in this room will be divided into separate auctions with five bidders each. The value of the item is the same for all buyers in the same auction. At the time you bid, however, the exact value of the item will be unknown to you. Instead, each buyer will receive some information about the value of the item which you should find useful in determining your bid, as explained later.

The value of the item ($V^*$) will be assigned randomly and will lie between 50.00 and 950.00 points. Any value within this interval has an equally likely chance of being drawn. Although you do not know the value of the item $V^*$ prior to bidding, you will receive a private estimate of it which will narrow down the range of possible values.

Private Estimates of $V^*$ consist of random numbers drawn from the interval $V^* - 15$ and $V^* + 15$. Any value within this interval has an equally likely chance of being drawn. Each bidder gets an independent private estimate. You can think about an urn containing balls. A ball is drawn and then put back into the urn before drawing another estimate.

For example, suppose the value of the item is $V^* = 328$ points. Then private estimates will consist of random numbers between 313 (328 - 15) and 343 (328 + 15). Any value in this interval has an equally likely chance of being drawn as your private estimate. The line diagram below shows what’s going on in this example.
The data below provides an example of the private estimates drawn in past auctions with 5 bidders. (Note we’ve ordered these estimates from highest to lowest.)

Value of the item $V^* = 328.00$;  

Private estimates:  
339.45  
337.43  
335.82  
323.89  
315.41

You will note that some private estimates are above the $V^*$ and some are below $V^*$. Over a long series of auctions, the differences between your private estimate and $V^*$ will average out close to zero. For any given auction, however, your private estimate can be above or below the value of the item $V^*$. That’s the nature of the random process generating the private estimates.

In each auction period, you enter a bid for an item, using a computer screen like the one below.
In an auction, the high bidder acquires the item and receives earnings equal to the difference between the value of the item and the amount he/she bid, plus 1 point. That is

\[
\text{Earnings for high bidder} = 1 + (\text{Value of item}) - (\text{Highest Bid}) \\
\text{Earnings for other four bidders} = 1
\]

If you are the high bidder, you may gain or lose money. If you do not make the high bid on the item, you will not acquire the item. In this case, you simply earn 1 point for that period. Any loss you may suffer in some periods will be deducted from the starting balance and from the profits you earn in other periods of today’s experiment. However, should your balance drop to zero (or less) during the session you will be placed in the individual auction until you restore a positive balance. For this reason, there may be less than 5 bidders in any given auction.

In case of ties for the high bid the computer will randomly determine who will acquire the item. Please record your bid and private estimate on the decision sheet under Auction Type L. For the next four periods L has already been circled for you. At the end of each period, you will see the results on your screen. The results include the value of the item V*, the private estimates of all bidders along with their bids, and the period earnings for the high bidder. **For the low-value auction, your earnings in points will be divided by a factor of 4 to obtain your dollar earnings.**

There will be a reserve price of V* - 30 in each auction. If the high bid is below the reserve price the item will not be sold that auction period and the high bidder will earn 1 point.

Some common questions. How can I use my private estimate to place a bid?

A private estimate allows you to compute your lowest and highest limits for the value of the item V*. Notice that V* must always be greater than or equal to your private estimate minus 15. Further, V* must always be less than or equal to your private estimate plus 15. You will find your lowest and highest limits for V* displayed on the screen.
I received a private estimate below 50 points (or above 950). Isn’t that strange? No, it is fine: this value just indicates that $V^*$ is close to 50 (or 950).

Can I bid 0? Yes, you can bid 0 or any positive amount.

My balance is 300 points. Can I bid 525? Yes, you are permitted to bid in excess of your current balance in any given period.

Let’s summarize the main points:

(1) The high bidder earns the item and makes a profit = 1 + value of item ($V^*$) – amount he/she bid. All other bidders earn 1 point. Earnings can be positive or negative.

(2) Prior to bidding, the value of $V^*$ is unknown to you but is always between 50 and 950 points. Any value in this interval has an equally likely chance of becoming $V^*$.

(3) Your private estimate of $V^*$ will be randomly drawn from the interval $V^* - 15$ and $V^* + 15$. Any value in this interval has an equally likely chance of being drawn. Note that $V^*$ can never be more than your private estimate plus 15, or less than your private estimate minus 15.

(4) The values of $V^*$ are determined randomly and independently from period to period. Thus a high $V^*$ in one period tells you nothing about the likely value in the next period.

Are there any questions?

Period 5, like period 1, will be a practice period for you to familiarize yourself with the rules and has no impact on your earnings (a dry run). Your decisions in periods 6, 7, and 8, however, will impact your earnings. You will always be with the same group of bidders for these four periods. We will check to make sure everyone is filling out their record sheet correctly at the end of period 5.

In the quiz you are about to take on your computer you will earn $1 for every correct answer, and you may consult the instructions before answering any question.
**Low Value Auction Quiz Questions (computerized on zTree, $1 for each correct answer)**

1. If the item has a value of 615 points and you acquire it by placing a bid of 611, how much do you earn in points for the period?

Text for incorrect answer: “Your answer is incorrect. The correct answer is 5. As stated on page 3 of the instructions, ‘Earnings for high bidder = 1 + (Value of item) – (Highest Bid)’. If you plug into this equation 615 for the Value of item and 611 for the Highest Bid, the earnings are 1+615-611=5.”

2. What is the lowest possible amount that the item could be worth \((V^*)\) if your private estimate is 456?

Text for incorrect answer: “Your answer is incorrect. The correct answer is 441. As stated on page 4 of the instructions, ‘\(V^*\) must always be greater than or equal to your private estimate minus 15.’ Since in this example your private estimate is 456, the lowest possible value of the item is 456-15=441.

3. How much do you earn in periods that you do not acquire the item?

Text for incorrect answer: “Your answer is incorrect. The correct answer is 1. As stated on page 3 of the instructions, ‘If you do not make the high bid on the item, you will not acquire the item. In this case, you simply earn 1 point for that period.’

4. If you acquire the item in a period, losing money is impossible. In other words, you cannot have negative period earnings (True/False).

Text for incorrect answer: “Your answer is incorrect. The correct answer is False. As stated on page 3 of the instructions, ‘Earnings can be positive or negative.’ In periods that you have the highest bid but your bid is more than 1 point above the Value of the item \(V^*\), the following equation from page 1 of the instructions indicates that your earnings would be less than zero: ‘Earnings for high bidder = 1 + (Value of item) – (Highest Bid)’.

5. If the value of the item \(V^*\) is 120.00, is it possible that my private estimate is 133.52? (True/False).

Text for incorrect answer: “Your answer is incorrect. The correct answer is True. As stated on page 1 of the instructions, ‘Private Estimates of \(V^*\) consist of random numbers drawn from the interval \(V^* - 15\) and \(V^* + 15\)’ and on page 2 ‘For any given auction, however, your private estimate can be above or below the value of the item \(V^*\).’
H - HIGH-VALUE AUCTION

The rules in the high-value auction are the same as for the low-value auction. The only difference concerns the earnings conversion rate between points and dollars and the additional fixed point earnings for auction participants.

YOUR EARNINGS IN POINTS WILL BE DIVIDED BY TWO TO BE CONVERTED INTO DOLLAR EARNINGS.
EVERYONE RECEIVES 0.5 POINTS EACH PERIOD WHEN PARTICIPATING IN THE HIGH VALUE AUCTION
On the record sheet, your decisions will be recorded under Auction Type H.
Are there any questions?
You will be randomly divided into new groups of five bidders each for separate auctions. Period 9, like periods 5 and 1, will be a practice period for you to familiarize yourself with the rules and has no impact on your earnings (a dry run). Your decision in periods 10, 11, and 12 will impact your earnings. You will always be with the same group of bidders for these four periods.
INSTRUCTIONS FOR REMAINING PERIODS *(Random Assignment Treatment)*

IN WHICH AUCTION TYPE WILL YOU BID?

There are going to be 25 additional periods. Your auction type is determined randomly for these remaining periods.

Every five periods you will be assigned or reassigned to one of the auction types. Five participants will be placed in the high-value auction, five participants will be placed in the individual auction, and five participants will be placed in the low-value auction.

However, should your current dollar balance be at zero (or less) during the experiment you will be placed in the individual auction until you restore a positive current balance. A participant with a zero or negative current balance will never be placed in the low-value or high-value auction. Should there be many participants with a zero or negative current balance, there may be 5, 4 or 3 bidders in the low-value or high-value auctions.

Let’s summarize the sources of your current balance in US dollars:

(1) Starting balance of $10.
(2) Auction earnings as explained above. The conversion rate between points and dollars can be 1 to 2 or 1 to 4 depending on the auction type.
(3) In addition, everyone will receive their earnings from the computerized quizzes, including participants with a negative current balance.
(4) Everyone will also receive their payment from their risky investment decision made at the start of the experiment.

Are there any questions?
INSTRUCTIONS FOR REMAINING PERIODS *(Voluntary Entry Treatment)*

IN WHICH AUCTION TYPE WILL YOU BID?

There are going to be 25 additional periods. In the next period, we will ask your preferences about the three types of auctions. Please input 1 for your most favorite type of auction, 2 for your second favorite, and 3 for your least favorite. Whenever possible, you will be placed in your most favorite type of auction. In case there are too many requests for an auction type, you will be placed in your second favorite auction or maybe in your least favorite.

Every five periods we will ask your preference again. You may be in the same auction type or in a different auction type depending on your ranking and upon availability.

Should your current dollar balance be at zero (or less) during the experiment you will be placed in the individual auction until you restore a positive current balance. A participant with a zero or negative current balance will never be placed in the low-value or high-value auction. Should there be many participants with a zero or negative current balance, there may be 5, 4 or 3 bidders in the low-value or high-value auctions.

Let’s summarize the sources of your current balance in US dollars:

2. Auction earnings as explained above. The conversion rate between points and dollars can be 1 to 2 or 1 to 4 depending on the auction type.
3. In addition, everyone will receive their earnings from the computerized quizzes, including participants with a negative current balance.
4. Everyone will also receive their payment from their risky investment decision made at the start of the experiment.

Are there any questions?