SOFTWARE DOCUMENTATION:

Gender, Confidence, and the Mismeasure of Intelligence, Competitiveness and Literacy

by

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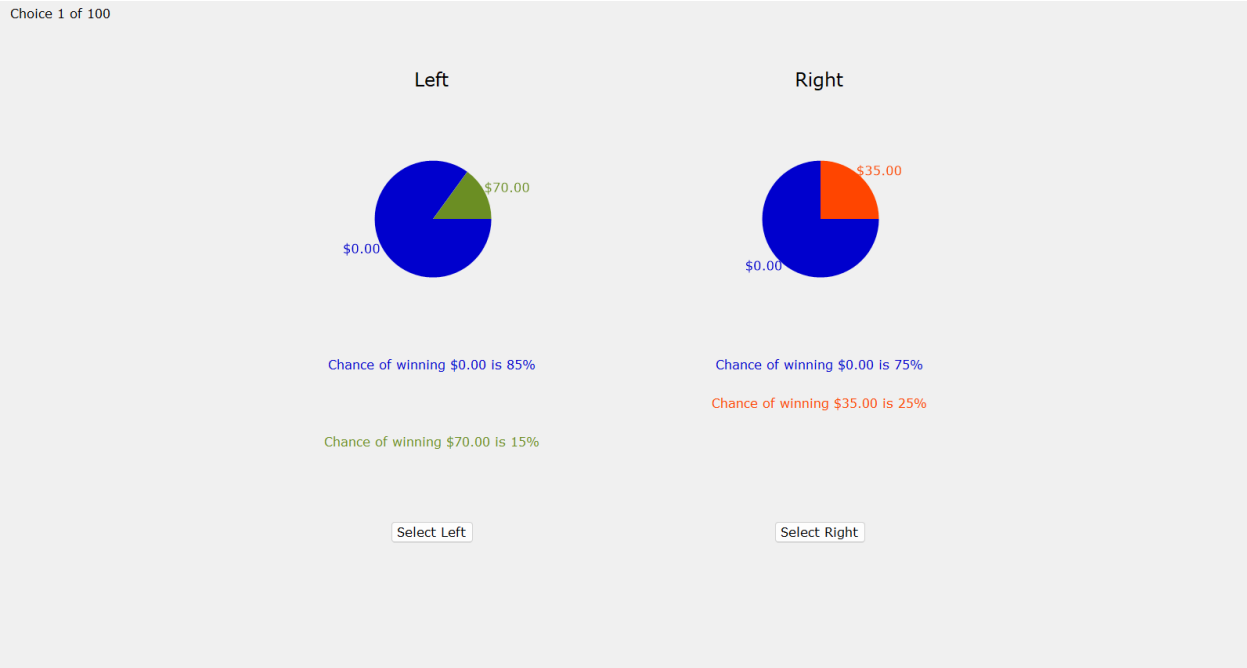
The laboratory software we employed to conduct this experiment was written in the VB.NET programming language and the Raven Progressive Matrices (RPM) are embedded in the code. Since Pearson PLC owns the RPM and offers RPM products for purchase, we will share the full source code only after first confirming that the requestor has an appropriate purchase from Pearson. Alternatively, we will share with anyone, upon request, the modified source code wherein all RPM images are replaced by the single Raven-like question shown in Figure 1 of the paper.

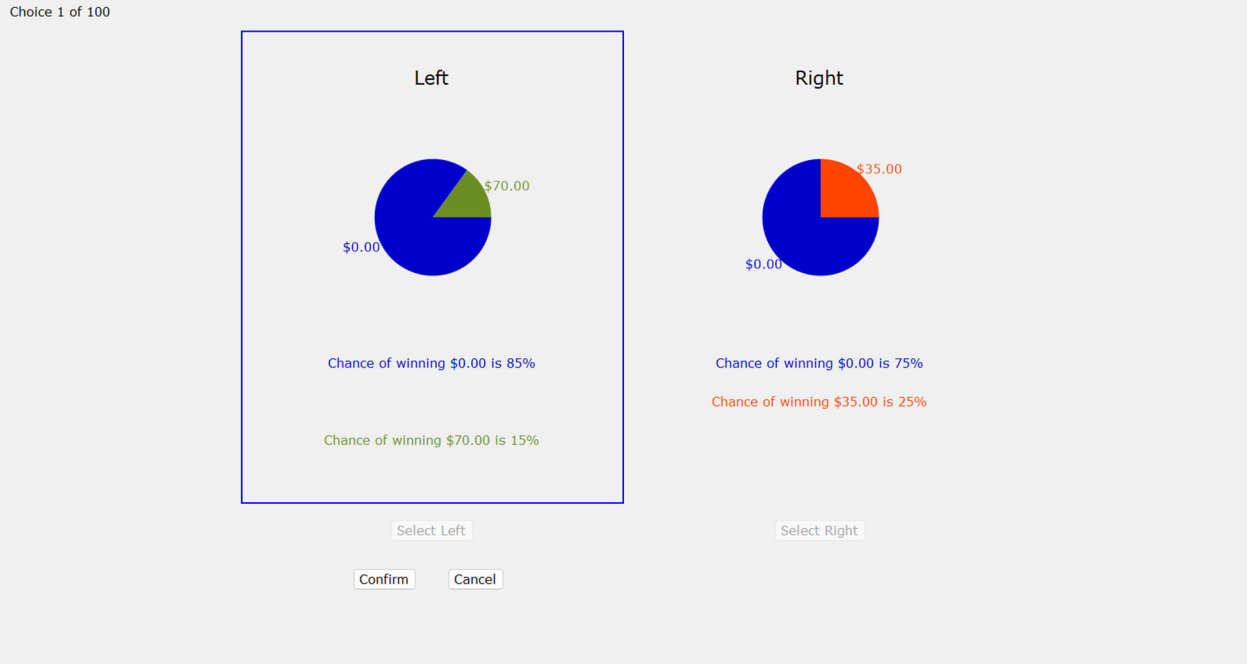
The remainder of this document provides screenshots of every type of screen presented to subjects. Every subject participated in two types of tasks during a laboratory session: the risk elicitation task and the RPM task. The risk task was the same in all treatments, while the RPM task was either non-tournament or tournament.

Risk task

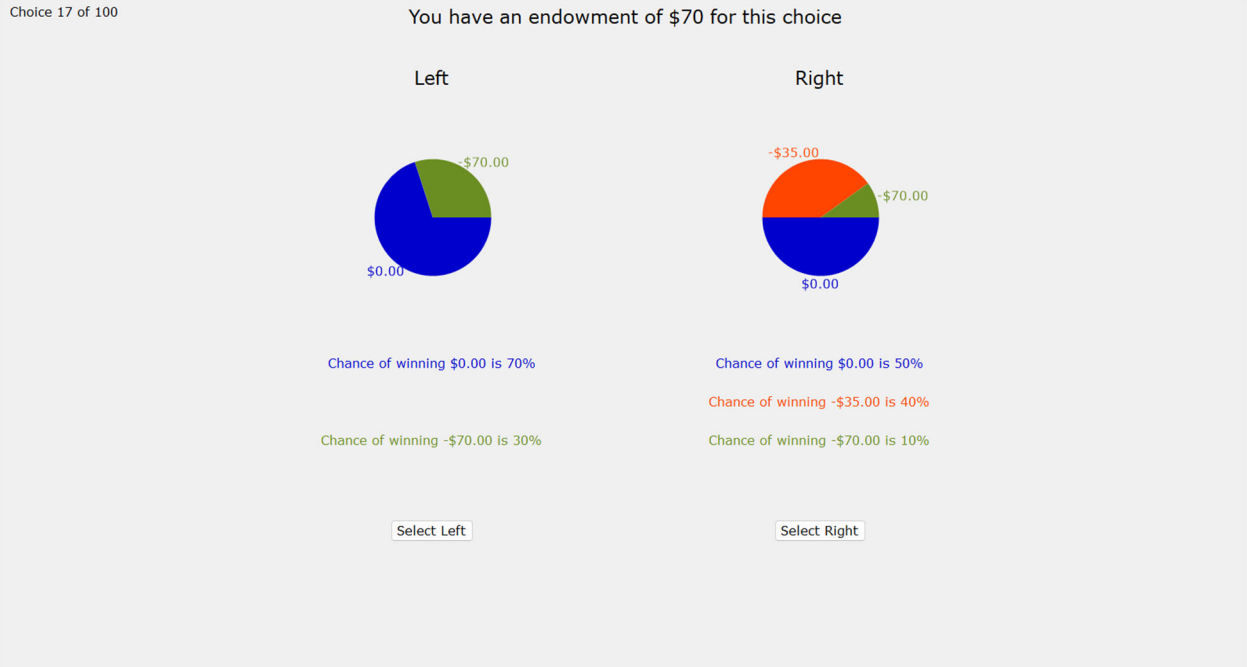
Each participant was presented with a series of 30 or 100 pairs of lotteries. Below you see an arbitrary example.

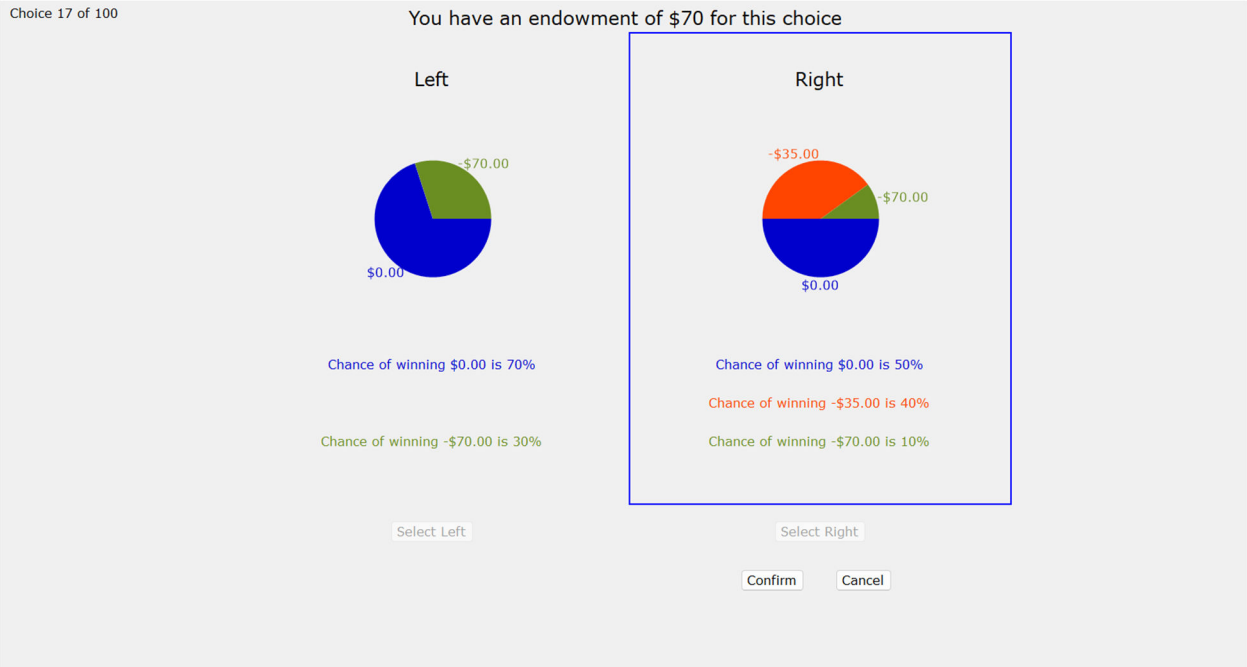


On each decision screen the participant first selected their preferred lottery and then confirmed their selection.



Here is another example, this one with an endowment.

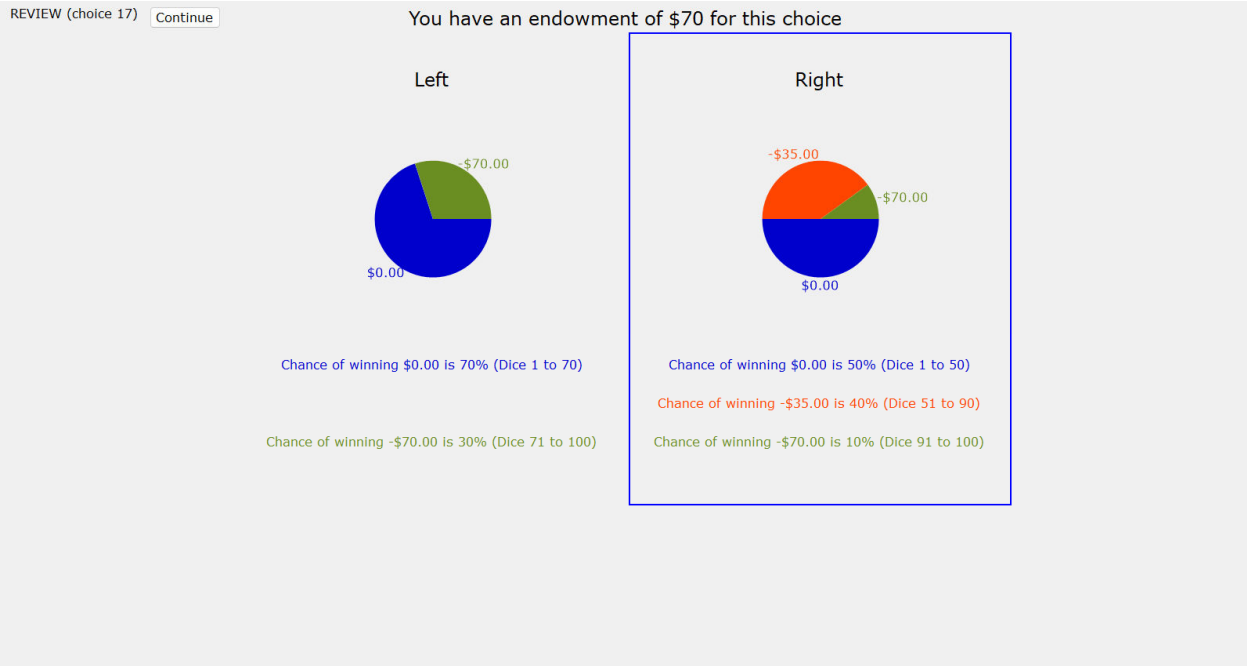




After a participant completed all 100 choices in the risk task conducted in 2019, a lab assistant came to the participant with physical dice to determine payoff from the task.

First, the participant rolled two ten-sided dice to determine which previous choice will be played. The following screen assumes 1 was rolled. The lottery chosen by the participant is highlighted. Next, the participant rolls the dice a second time to determine earnings from this task. Note the mapping from dice to earnings shown on the screen.

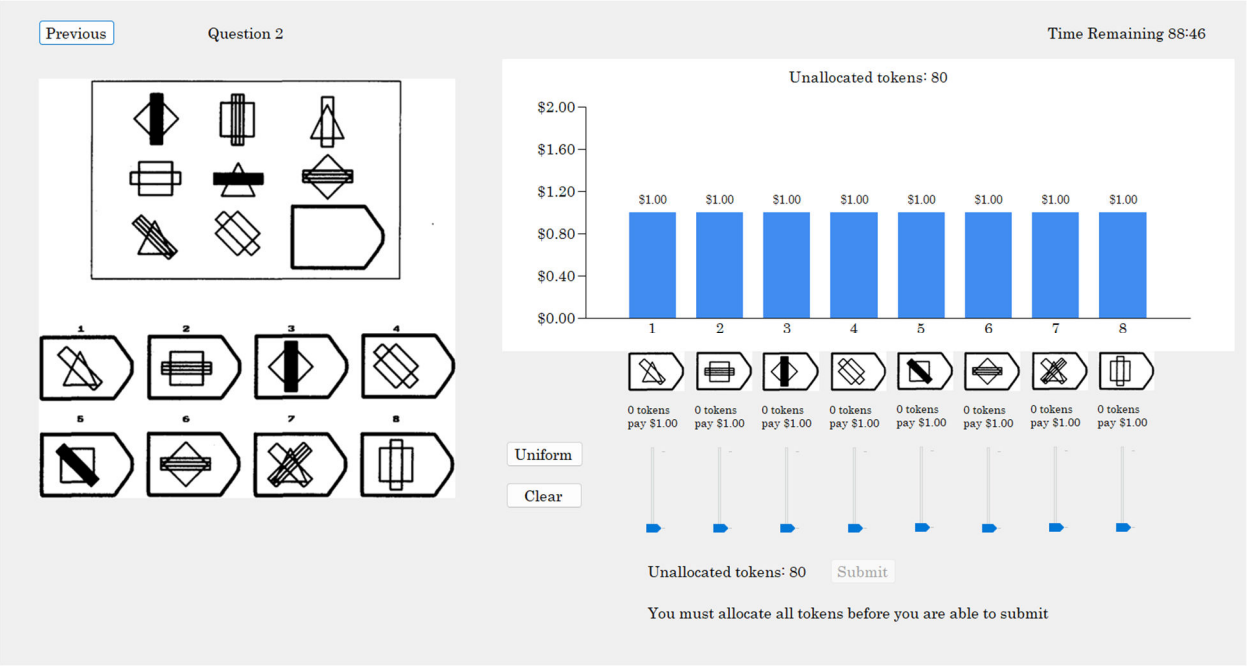
Here is another example assuming seventeen was rolled on the first roll. Note the display of endowment information for this lottery.



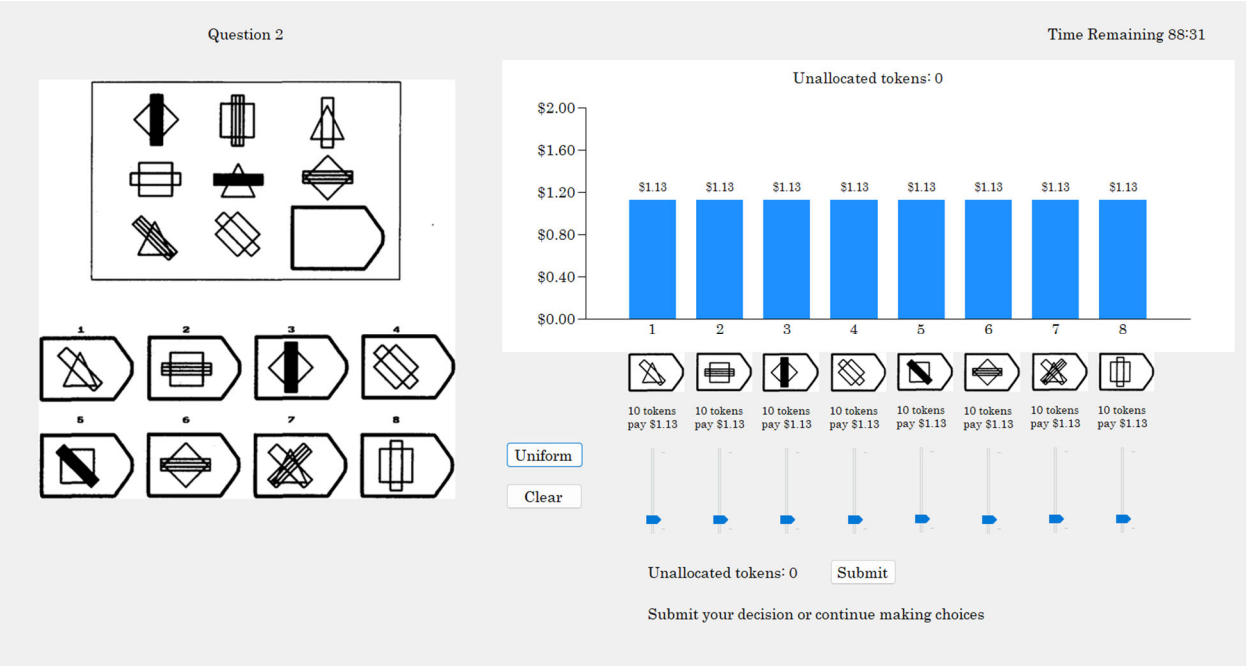
In the experiments conducted in 2019 the randomizations were undertaken by the software, as explained in the written and video instruction (with visual detail only on the video instructions).

Raven task (non-tournament)

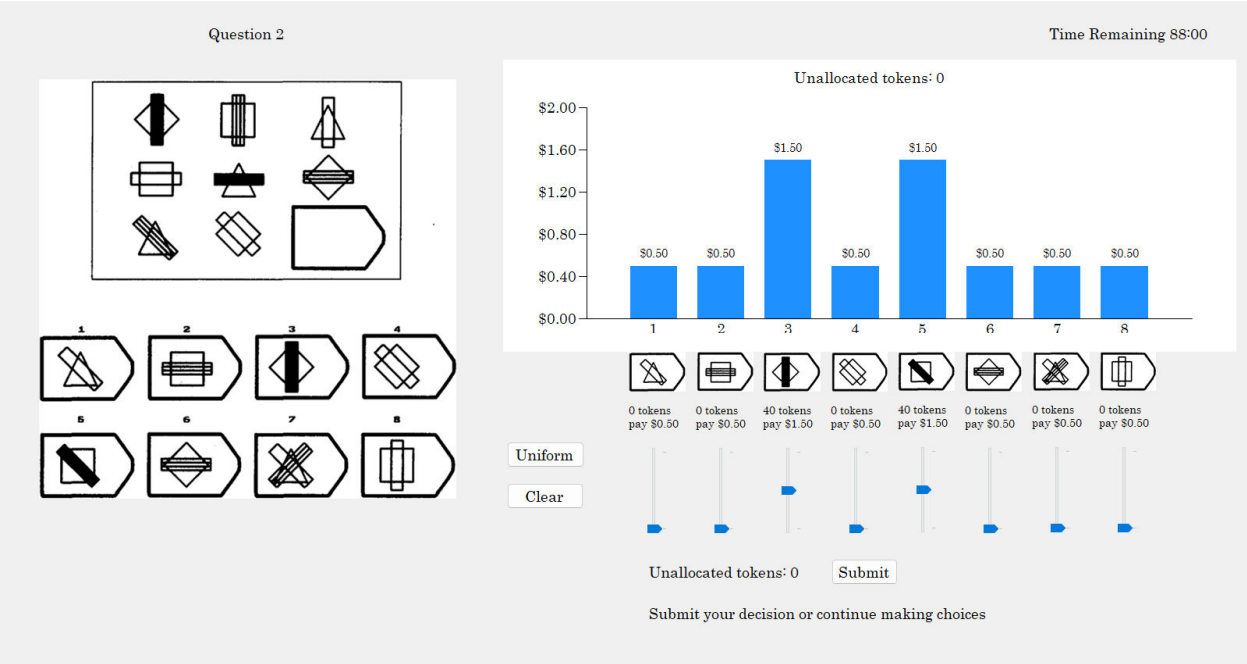
The non-tournament Raven treatments consisted of a series of thirty-six RPM questions analogous to the image below. Note that before a participant began allocating tokens for a given question, she could navigate through and optionally update past decisions.



The image below shows the screen after the 'uniform' button was clicked. Once the token allocation process for a given question had begun, the navigation buttons became invisible.



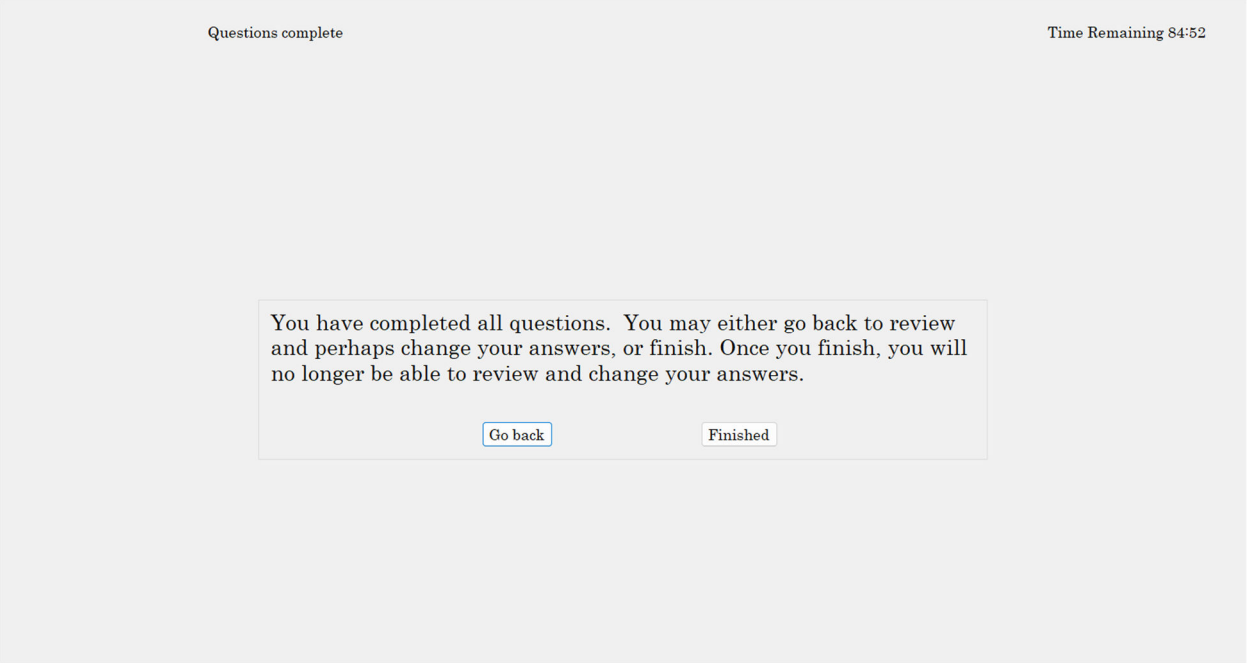
The image below shows another allocation of tokens, this time with equal weight placed on only options three and five.



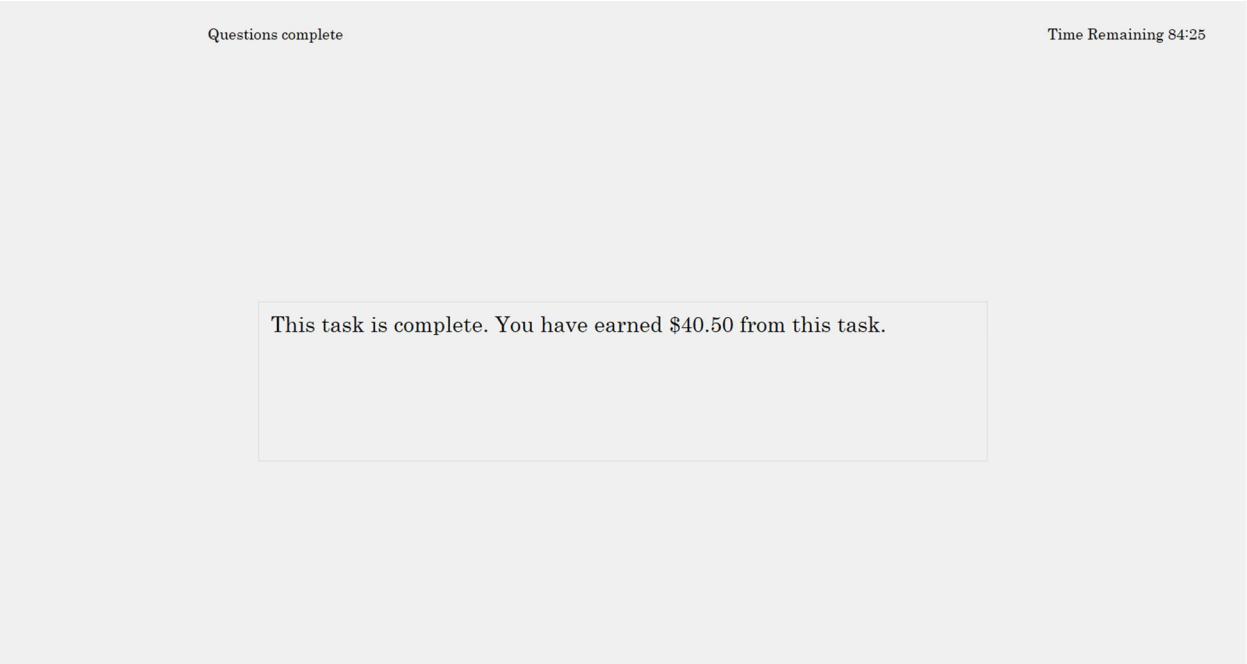
And one more image showing full weight placed on the correct response.

A critical feature of this software is that conditional earnings are dynamically updated in real-time as a participant allocates tokens for a given question.

Once a participant had completed all thirty-six questions, the following screen was displayed.

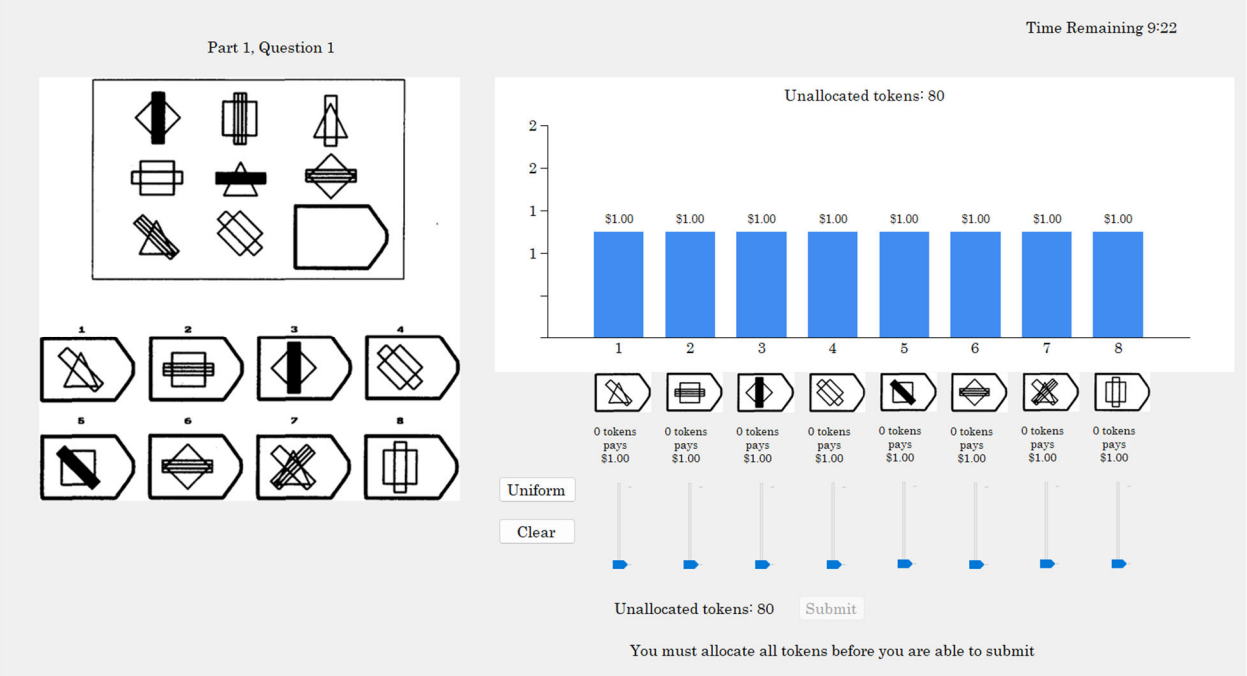


After a participant confirmed that they were finished answering the RPM questions, accrued cash earnings for the task are reported in aggregate.

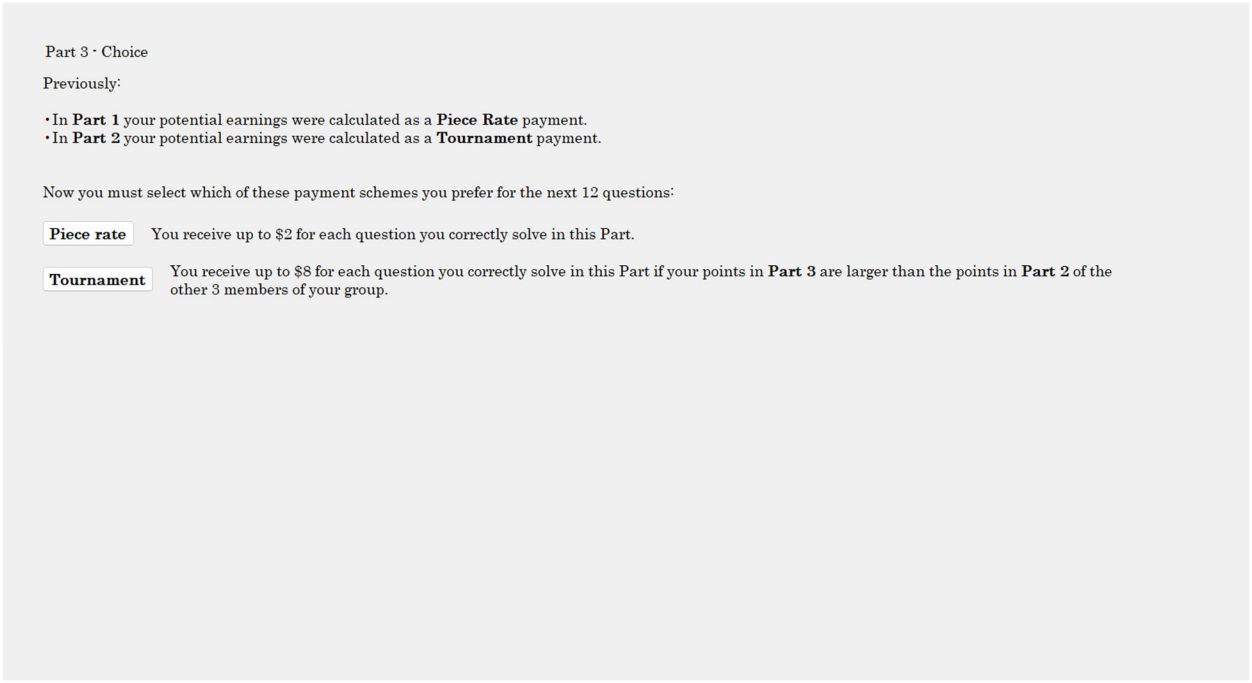


Raven task (tournament)

The tournament Raven treatments consisted of six parts. The same thirty-six RPM questions from the non-tournament treatments were partitioned into three sets of twelve questions, with twelve RPM questions presented in each of the first three parts. The parts differed in payout regime, as described in the instructions presented before each part. The RPM questions were presented essentially identically as in the non-tournament treatments, except the current part number prefixed the question number, as seen below.



At the beginning of Part 3, each participant was presented with the choice screen below, and then completed their final twelve RPM questions.



Part 3 - Choice

Previously:

- In **Part 1** your potential earnings were calculated as a **Piece Rate** payment.
- In **Part 2** your potential earnings were calculated as a **Tournament** payment.

Now you must select which of these payment schemes you prefer for the next 12 questions:

Piece rate You receive up to $2 for each question you correctly solve in this Part.

Tournament You receive up to $8 for each question you correctly solve in this Part if your points in **Part 3** are larger than the points in **Part 2** of the other 3 members of your group.

Part 4 consisted of only the following choice.

Part 4

Previously:

• In **Part 1** your potential earnings were calculated as a **Piece Rate** payment.

If **Part 4** is selected for payment, you will be paid according to your **Part 1** performance.

Now you must select which payment scheme you prefer for **Part 4**:

Piece rate You receive up to $2 for each question you correctly solve in **Part 1**.

Tournament You receive up to $8 for each question you correctly solve in **Part 1** if your points in **Part 1** are larger than the points in **Part 1** of the other 3 members of your group.

Part 5 consisted of only the following choice.

Part 5

In **Part 1** - **Piece Rate**, how did your points compare to the points of the other 3 participants in your group?

0 tokens pays $15.00 | 0 tokens pays $15.00 | 0 tokens pays $15.00 | 0 tokens pays $15.00

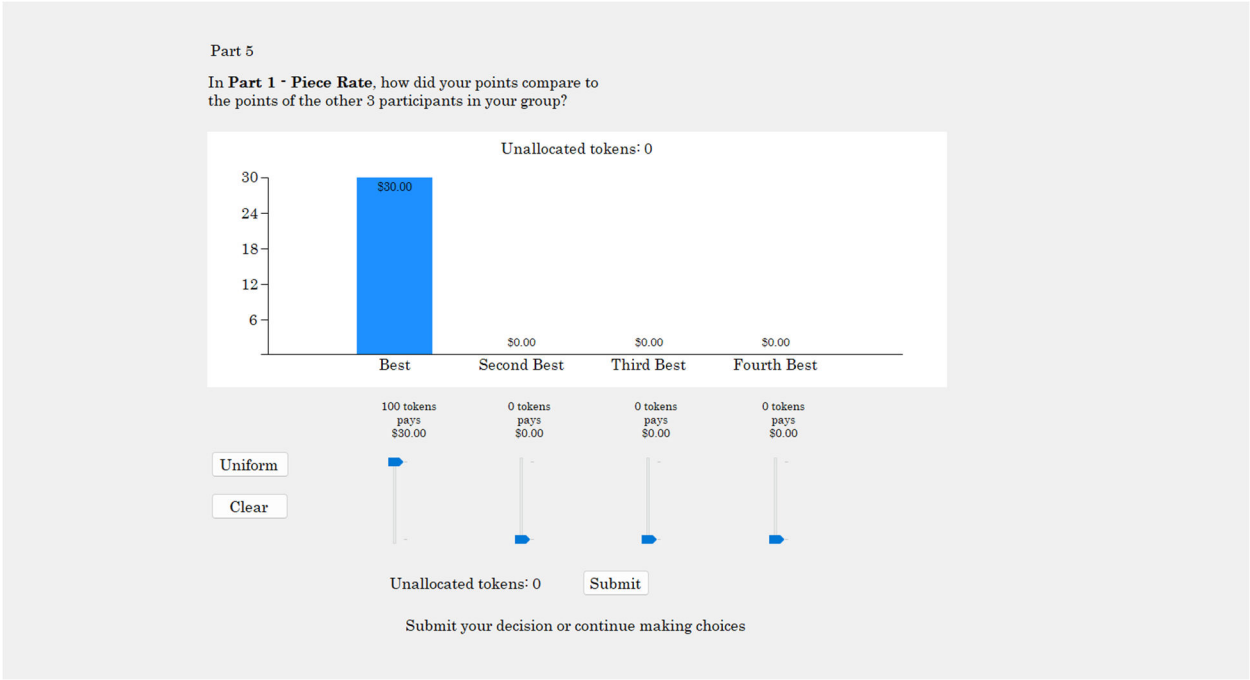
Uniform

Clear

Unallocated tokens: 100 Submit

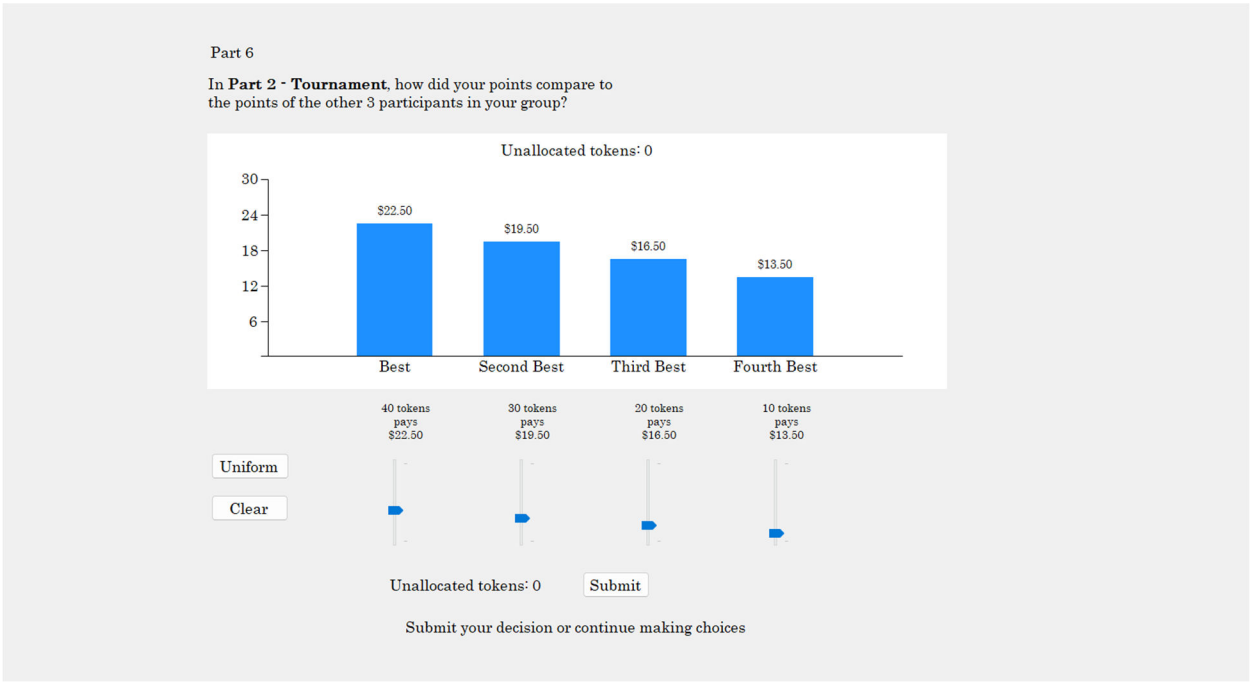
You must allocate all tokens before you are able to submit

As with the RPM questions, participants were free to allocate tokens in any desired distribution. Below is a degenerate distribution with full weight on being the best in Part 1.

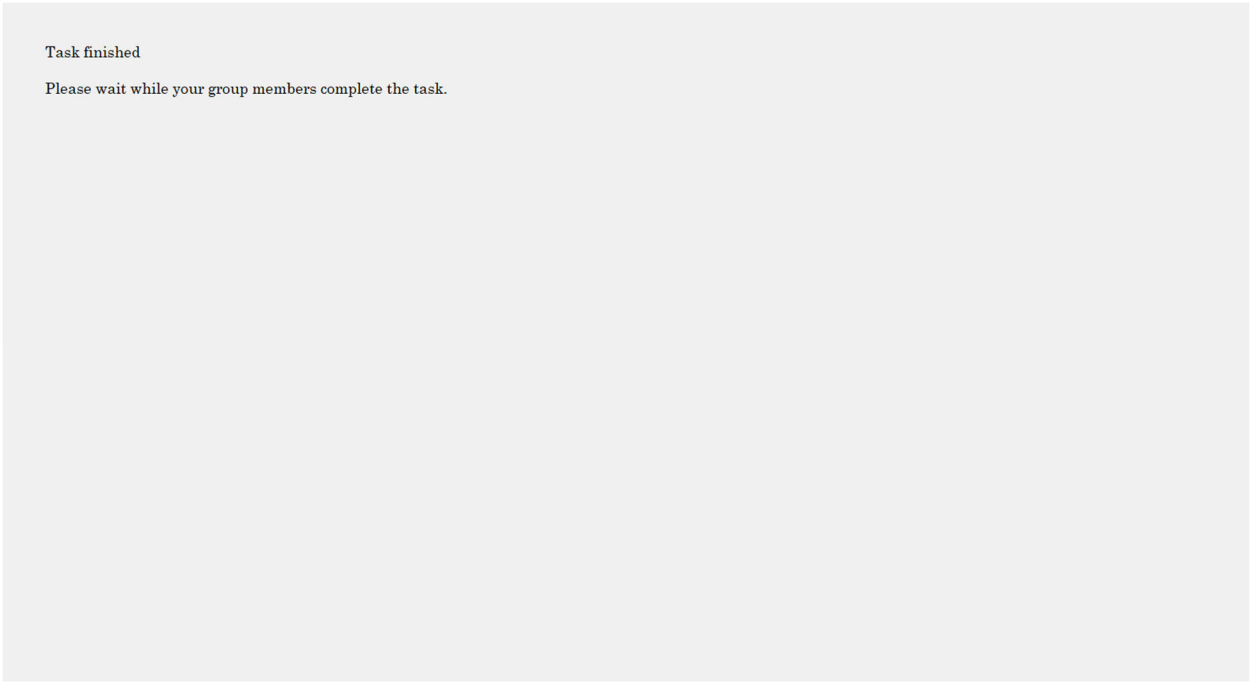


Part 6 consisted of only the following choice.

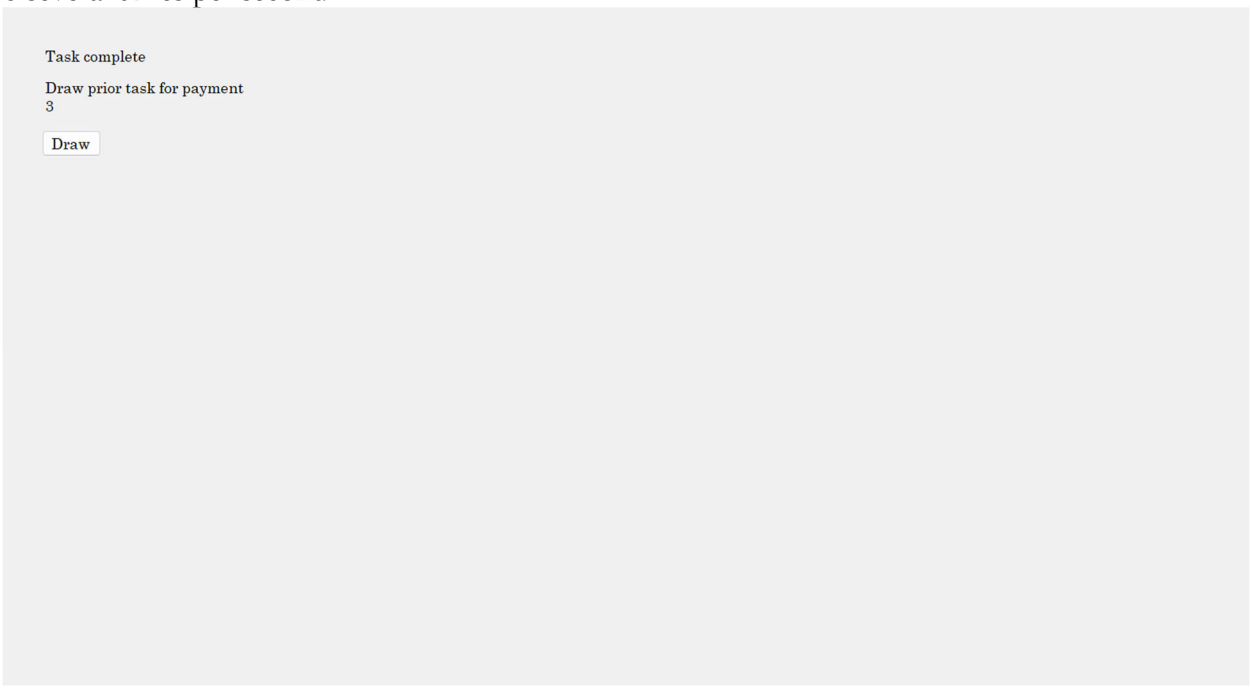
The image below shows a token allocation with decreasing weight on each option.



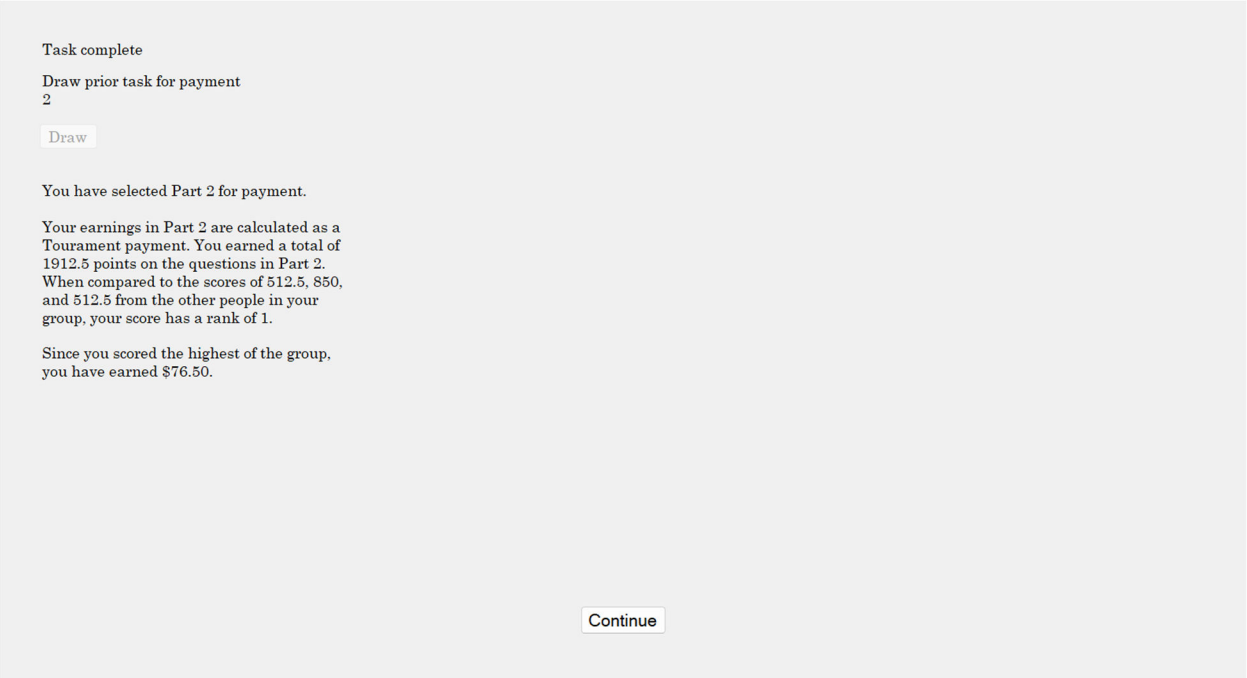
Once a participant finished all parts of this task, she saw the following screen if any group members had not yet completed part 3. This waiting screen was necessary to ensure that all group members had completed all thirty-six RPM questions so that tournament performance could be fully evaluated.



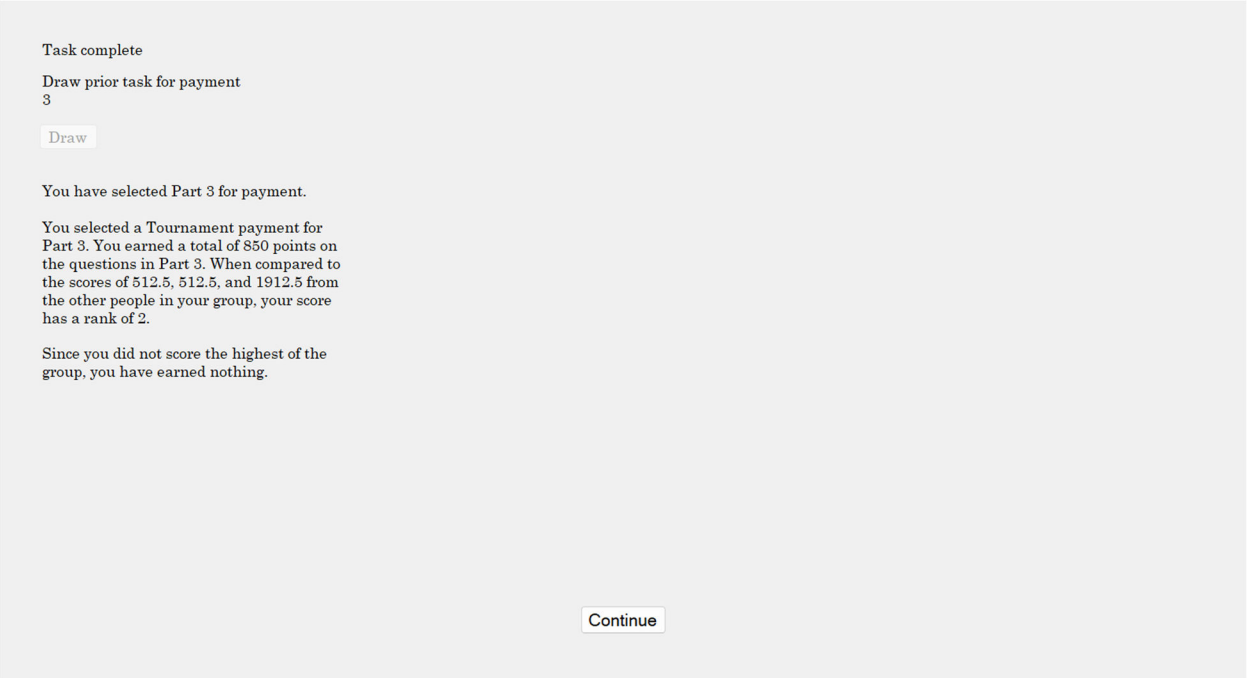
Once all group members had completed all RPM questions, earnings realization took place. This stage began as below, with the on-screen integer randomly changing values between 1, 2, 3, 4, 5, or 6 several times per second.



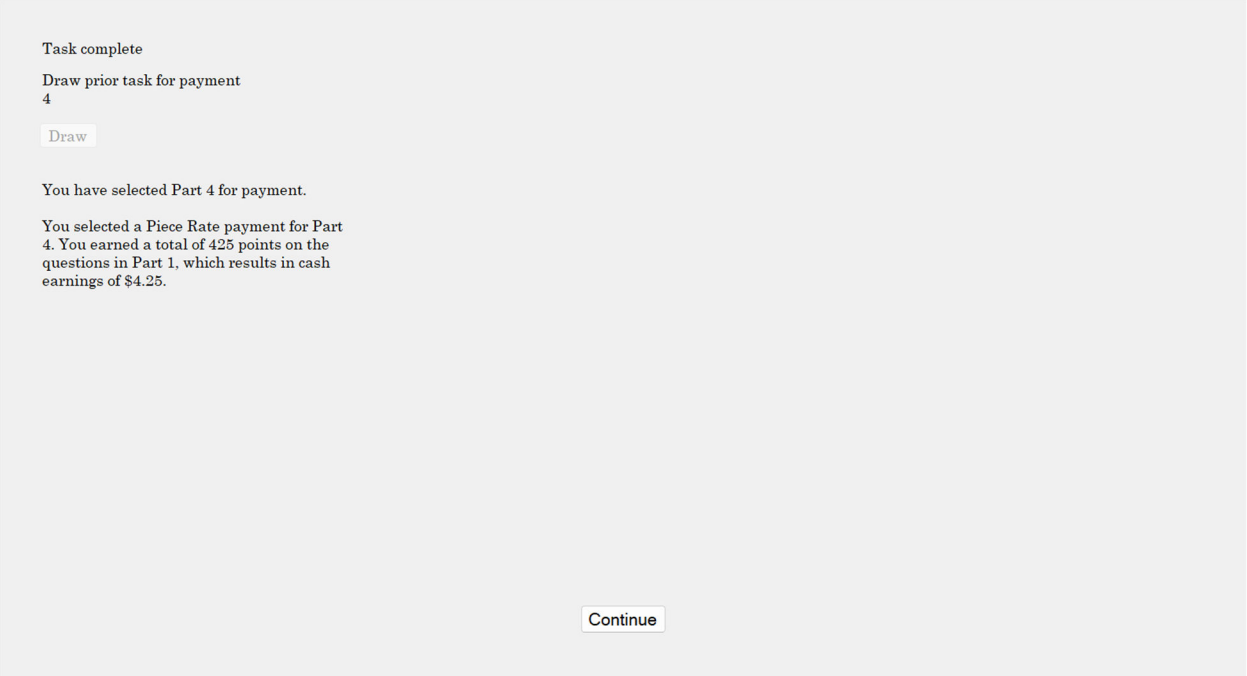
When the subject clicked the button, the 'next' integer value not yet displayed on the screen was then displayed and determined which of the six parts would count for payment. If part 2 was selected for payment, then the following screen was shown.



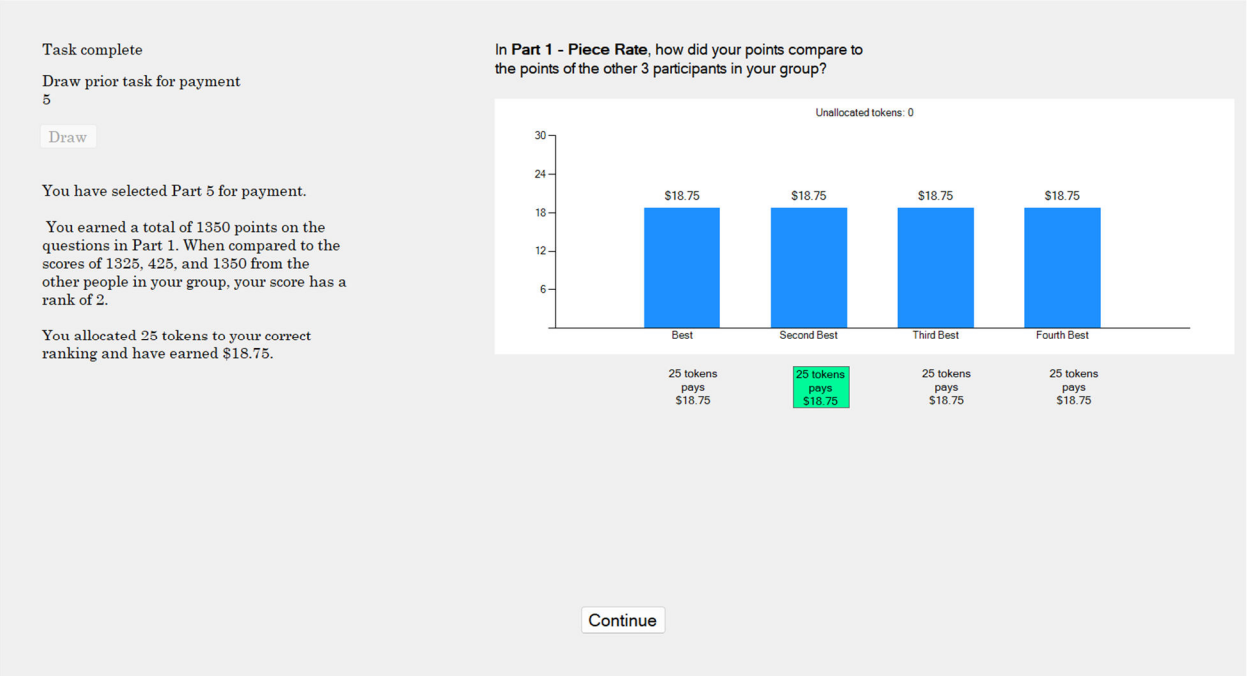
If part 3 was selected for payment, the following screen was shown.



If part 4 was selected for payment, the following screen was shown.



If part 5 was selected for payment, then the following screen was shown.



The remaining two cases not shown were analogous to the above screens.