October 24, 2021

Transmission Game: Study Materials for Study 2 (SM2)

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Abstract

Transmission Game: Study Materials for Study 2 (SM2)

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SM2-1 Requirements and attention checks

SM2-1.1 Qualifications

At the beginning of the survey, participants were informed about the following requirements:

- Location in the United States

- No use of VPS, VPN, or proxy
- Allowing JavaScript to be executed within the survey
- Use of Firefox, Chrome, or Safari (not IE) [IE does not allow for the execution of some utilized script animations]
- A screen resolution of at least 800X600.
- Participants had to indicate the abbreviation of the US state they were in.

We conducted a series of tests to check for the fulfillment of these requirements. In particular, we implemented the following technical steps before the survey:

1. The location given by the browser was required to be within the US.
2. Two IP checks were conducted (iphub.info and proxycheck.io) to verify the stated browser location and to flag participants with suspicious IP addresses.
3. The resolution was checked (with some lenience) to correspond to the specified minima.
4. The availability of JavaScript was tested using Qualtrics' embedded variables between questions.
5. The browser type was flagged if a version of the Internet Explorer was used.
6. The indicated state abbreviation was checked not to be "US" or "U.S.A.".

Any failure to pass a check resulted in a premature survey exit requesting that the participant should return the task on Prolific.

In addition, two attention checks had to be passed to begin the survey, described in the following section.

SM2-1.2 Two attention checks

Two attention checks were randomly selected from two separate pools of attention checks. The first attention check was a combination of an information block and a question. In the information block, participants were asked to answer the question on the following page by responding with one of six different possible responses (either given verbatim or indirectly; e.g., "the number of days in April"). The question asked for their favorite book but referenced back to the information block.

The second attention check asked participants to identify elements in a group of words that did not refer to animals in one case, or did not name American states in the other case (with false responses constructed out of elements of existing state names).

Participants had to pass both attention checks to enter the survey. Participants who failed at least one attention check were asked to return the task on Prolific. These checks were followed by the consent form, also detailing payment modalities and data policies (including sharing in repositories). Participants who agreed to give consent continued to the beginning of the survey.

Study information and declaration of consent

Thank you very much for your interest in participating in our survey on decision-making, problem-solving, and personality.

1. The studys aim

In this survey, we want to investigate how participants engage with a number of experimental and problem-solving tasks, games, and surveys and investigate relationships between these different forms of behaviors and aspects of personality, political attitudes and health-related behavior.

2. Course and Content of the Study

Participation will take approximately 20–30 min (for most participants). You will play a game, make decisions, respond to survey questions and solve problems. We will use your Prolific ID (for payment), some demographic information (gender, age, education, and income), but no name or email address. We will also ask you about your political preferences and ask some health-related questions.

3. Does participation entail any risks?

No risks or discomforts are anticipated. There is no deception involved in this study.

4. What will happen to the collected information and data?

This study is a research project of [...]. The collected data will be scientifically analyzed for research purposes.

The raw survey data will be stored on European Qualtrics servers. For analysis, identifying personal data (Prolific ID and IP address) and your study data will be stored separately from working files after verifying eligibility and location. We will replace Prolific ID and IP address by an individual code number. Only selected project members can link contact data and study data via this code number. The link between contact and study data and the original survey data will be deleted no later than ten years after participation.

The study data (but not Prolific IDs and IP addresses) can be made available to cooperation partners for collaborative analysis. Furthermore, the study data can be made accessible via research data bases or scientific publications (typically via the Internet). As a matter of principle, study data are only transferred or published without Prolific IDs, IP addresses or any uniquely identifying information.

We have no influence on the data stored on Prolific servers. Your IP address may be tracked with Google Analytics and we test for VPN-use via iphub.info and proxycheck.io (no responses are transmitted; only IP address and location data based on the IP address).

5. Voluntary Participation

You can end your participation at any time. If you do not want to continue further, you can simply close the questionnaire and return your submission on the Prolific page. You can withdraw your consent to the use of the collected data with effect for the future at any time and without negative consequences as long as responses are still connected to your Prolific ID and not publicly shared. To do this, please contact [...].

6. Consent

This document has informed you about participation in the survey on decision making and problem solving. The study involves a single session of about 20-30 minutes and we will pay

you a fixed payment of GBP 2.25. This fixed amount is likely to be transferred within a few days after participation. There is a possible bonus payment. This bonus payment will be paid within two weeks after participating. Reasons why your answers could be rejected: If you do not complete the questionnaire, we cannot accept your submission. If you submit without completing the study, your submission will be rejected. If we see strong evidence of random or nonsensical responding throughout the survey, we reserve the right to reject the submission (this would be based on the whole pattern of responses, not single answers).

[*The following sentence was presented with a checkbox, and progress beyond this point was conditional on checking the box.*]

I have noted and understood the conditions outlined above. I would like to participate in the study and agree to the collection, storage, and use of my data as described above.

SM2-2 Demographics 1

Note: numbers in brackets after options indicate the numeric coding in the dataset.

SM2-2.1 Gender

What gender do you identify as?

- Male
- Female
- Alternative answer: [*text entry box*]
- Prefer not to say

SM2-2.2 Age

Age [*text entry box*]
[*Page break*]

SM2-2.3 Education

What is the highest degree or level of education you have completed?

- Some High School
- High School
- Bachelor's degree
- Master's degree
- PhD / MD / doctorate degree
- Professional degree

[*Page break*]

SM2-2.4 MTurk

Are you also registered on Amazon Mechanical Turk (your answer has no impact on your ability to participate):

- yes
- no

[*Follow-up question if yes:*]

SM2-2.4.1 Number of HITs

How many HITs (in total) have you completed on Amazon Mechanical Turk in your lifetime? (Please try to give your best estimate)
[*text entry box*]

SM2-3 Transmission Game Instructions (for all conditions)

SM2-3.1 Page 1/5

[*See Figure SM2-1.*]

In the next part, you will play a game with 99 other participants (there are 100 players in this game, including you).
The other participants might not play the game at the same time as you do, so you will not have to wait for others.
Rest assured that the other players are other participants on Prolific. We never deceive participants in our instructions or invent participants who do not exist.
We will determine the results of the game, after we have collected the responses of all players.

Next, we will explain the rules of the game.

SM2-3.2 Page 2/5

[*See Figure SM2-2 and Figure SM2-6.*]

The game lasts 25 rounds.
In each round you will make one decision. Your decisions will affect your own bonus payment and can affect other players' bonus payments.

Every player has a color, either blue or purple.
You and every other player all start as blue players.

[*Image of population*]

Some players may change from blue to purple in the course of the game (we explain

below how this can happen).
Once a player has changed to purple, they stay purple for the remainder of the game.
It is not possible to change back to blue.

Like all the other players, you will only know your color at the beginning (blue).
Once the game has started, and throughout the game, nobody will know their own color, nor will they know any other player's color.

In the course of the game, you will earn points.

At the end of the game, blue players will receive a bonus payment based on the number of points they have earned across all rounds.
Each point is worth a fixed amount of bonus money for a blue player.

In contrast, purple players will NOT receive a bonus payment for this game. Their points are not converted into money at the end of the game.

SM2-3.2.1 Comprehension Check 1

[*For all comprehension checks, the following method was used: Participants had an unlimited number of attempts to find the correct solution, but each false response was counted via JavaScript, separately for each question. Errors for multiple comprehension checks on the same page were counted individually. Participants could not progress to the next page unless answering all comprehension check questions correctly at the same time.*]

Which of the following are possible player colors? (check all that apply)

- red
- blue (*)
- black
- yellow
- green
- purple (*)
- orange
- brown

SM2-3.2.2 Comprehension Check 2

What is your own color at the start of the game:

- purple
- blue (*)
- red
- orange

SM2-3.2.3 Comprehension Check 3

How many players are there in total in this game (including you)? Please enter the number. [*text entry box*]

SM2-3.2.4 Comprehension Check 4

Who will earn bonus money at the end of the game?

- All players.
- All blue players. (*)
- All purple players.
- Only some of the blue players.
- Bonus money will be distributed at random.

SM2-3.3 Page 3/5

[*See Figure SM2-3 and Figure SM2-7.*]

[*Image of population at the beginning of the first round.*]

At the start of the game, just before the first round, eight randomly chosen players will change from blue to purple.
No player will know whether they have changed color or not: After the start of the game, no player knows their color.

In each round of the game, each player will be paired with one of the other 99 players (there is an equal chance to be paired with any one of them).
Both will decide on one action: either G or H. These decisions will affect your bonus payment.

A player who chooses action G will receive 8 points.
A player who chooses action H will receive 40 points.

SM2-3.3.1 Comprehension Check 5

How many players are blue at the beginning of the first round after 8 players have changed to purple? [*text entry box*]

SM2-3.3.2 Comprehension Check 6

How many actions can you choose from in each round? (please select the correct number)

- 0
- 1

- 2 (*)
- 3
- 4
- 99
- 100
- It depends on the round.

SM2-3.3.3 Comprehension Check 7

Is it possible to know your color after the game has started?

- Yes
- No (*)
- Sometimes

SM2-3.4 Page 4/5

[*See Figure SM2-4 and Figure SM2-8.*]

[*Image of pairings and consequences.*]

If two blue players or two purple players are paired, neither player will change color in this round.

What happens if a blue player is paired with a purple player?
In this case, the blue player may change into a purple player.
The probability of this change depends on the actions that both players choose in this round.

[*Image of matrix with color change probabilities.*]

If both choose action G (8 points), there is a 5% chance that the blue player changes into a purple player in that round.
This means, 1 in 20 blue players would change on average in this situation, 19 of 20 would stay blue.

If one of the two players chooses action H (40 points) instead, the chance is increased (by 10%) to 15%.
This means, 3 in 20 blue players would change on average in this situation, 17 of 20 would stay blue.

If both players choose action H, the chance is increased (by another 10%) to 25%.
This means, 5 in 20 blue players would change on average in this situation, 15 of 20 would stay blue.

SM2-3.4.1 Comprehension Check 8

Imagine the following: You are purple and paired with another purple player.
Both of you choose option H.
What is the chance that you change into a blue player?

- This is not possible (0%). I cannot change back into blue. (*)
- 5%
- 15%
- 25%
- 30%
- Always (100%).

SM2-3.4.2 Comprehension Check 9

Imagine the following: You are purple and paired with a blue player.
Both of you choose option H.
What is the chance that you change into a blue player?

- This is not possible (0%). I cannot change back into blue. (*)
- 5%
- 15%
- 25%
- 30%
- Always (100%).

SM2-3.4.3 Comprehension Check 10

Imagine the following: You are blue and paired with a purple player.
Both of you choose option H.
What is the chance that you change into a purple player?

- This is not possible (0%).
- 5%
- 15%
- 25% (*)
- 30%
- Always (100%).

SM2-3.4.4 Comprehension Check 11

Imagine the following: You are blue and paired with a purple player. Both of you choose option G.
What is the chance that you change into a purple player?

- This is not possible (0%).
- 5% (*)
- 15%
- 25%
- 30%
- Always (100%).

SM2-3.4.5 Comprehension Check 12

Imagine the following: You are blue and paired with a purple player. You choose option G; the other player chooses option H.
What is the chance that you change into a purple player?

- This is not possible (0%).
- 5%
- 15% (*)
- 25%
- Always (100%).

SM2-3.4.6 Comprehension Check 13

Imagine the following: You are blue and paired with a purple player. You choose option H; the other player chooses option G.
What is the chance that you change into a purple player?

- This is not possible (0%).
- 5%
- 15% (*)
- 25%
- Always (100%).

SM2-3.4.7 Comprehension Check 14

Imagine the following: You are blue and paired with another blue player.
Both of you choose option H.
What is the chance that you change into a purple player?

- This is not possible (0%). (*)
- 5%
- 15%
- 25%
- Always (100%).

SM2-3.5 Page 5/5

[*See Figure SM2-5 and Figure SM2-9.*]

As you know, you can receive 8 points or 40 points in each of the 25 rounds.
How much would you earn per point if you are a blue player at the end of the game?

Points are converted into bonus money at an exchange rate of:
10 points equal 5p.

So, 100 points are worth 50p and 200 points are worth £1 of possible bonus payment.
Each choice of action G is potentially worth 4p in the end, each choice of action H is potentially worth 20p.

SM2-3.5.1 Comprehension Check 15

Imagine you had scored 600 points by the end of the game.
How much bonus money would you receive if you are a blue player at the end of the game?

- Nothing
- £1.50
- 60p
- £3.00 (*)
- £6.00
- None of the above

SM2-3.5.2 Comprehension Check 16

Imagine you had scored 600 points by the end of the game.
How much bonus money would you receive if you are a purple player at the end of the game?

- Nothing (*)
- £1.50
- 60p
- £3.00
- £6.00
- None of the above

SM2-3.6 Screenshots of Instruction pages 1–5

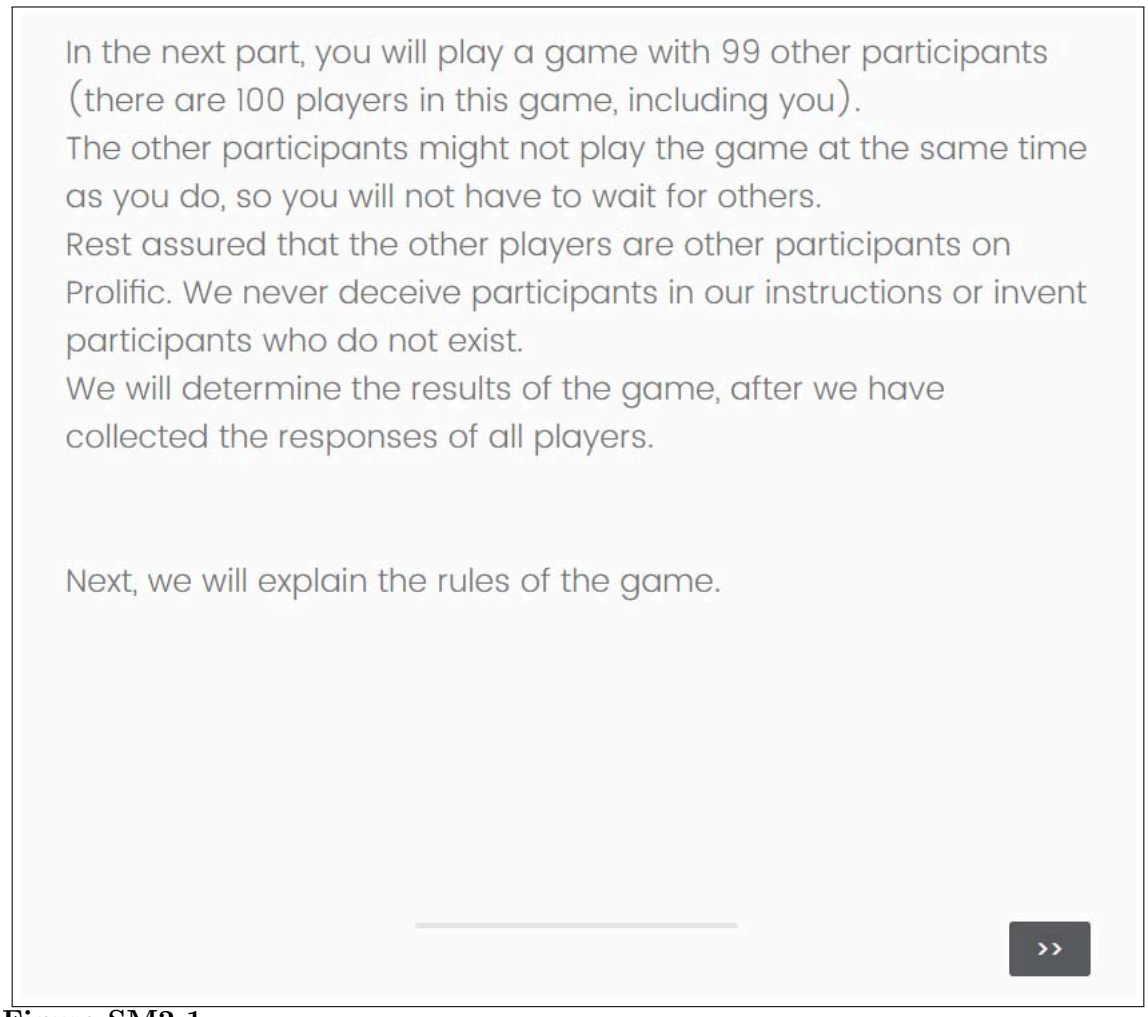


Figure SM2-1
Game Instructions Page 1

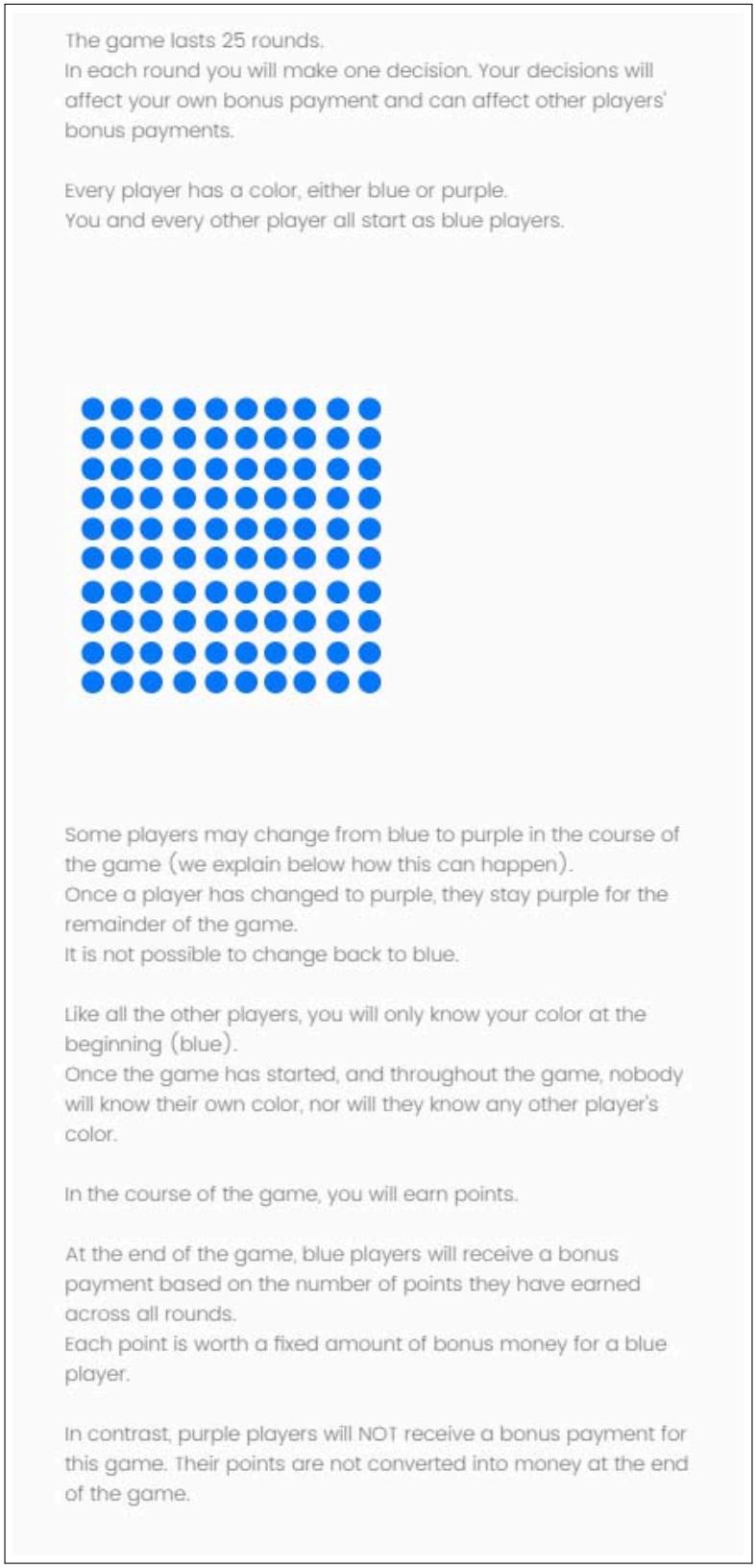
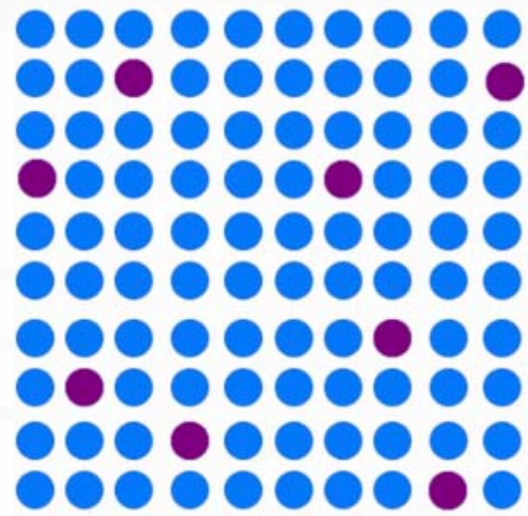


Figure SM2-2
Game Instructions Page 2

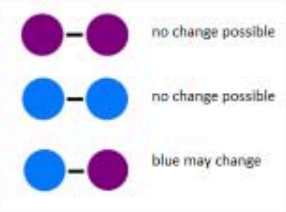


At the start of the game, just before the first round, eight randomly chosen players will change from blue to purple.
No player will know whether they have changed color or not:
After the start of the game, no player knows their color.

In each round of the game, each player will be paired with one of the other 99 players (there is an equal chance to be paired with any one of them).
Both will decide on one action: either G or H. These decisions will affect your bonus payment.

A player who chooses action **G** will receive **8** points.
A player who chooses action **H** will receive **40** points.

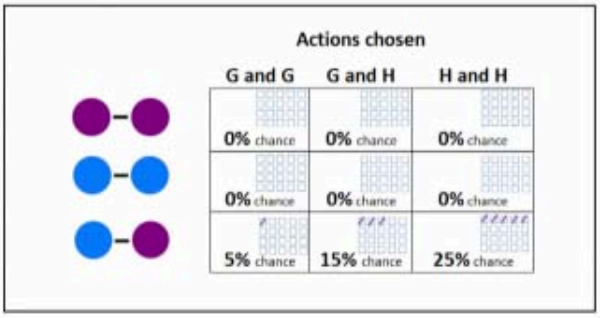
Figure SM2-3
Game Instructions Page 3



If two blue players or two purple players are paired, neither player will change color in this round.

What happens if a blue player is paired with a purple player? In this case, the blue player may change into a purple player. The probability of this change depends on the actions that both players choose in this round.

Chance of color change to purple



If both choose action G (8 points), there is a 5% chance that the blue player changes into a purple player in that round.
This means, 1 in 20 blue players would change on average in this situation, 19 of 20 would stay blue.

If one of the two players chooses action H (40 points) instead, the chance is increased (by 10%) to 15%.
This means, 3 in 20 blue players would change on average in this situation, 17 of 20 would stay blue.

If both players choose action H, the chance is increased (by another 10%) to 25%.
This means, 5 in 20 blue players would change on average in this situation, 15 of 20 would stay blue.

Figure SM2-4
Game Instructions Page 4

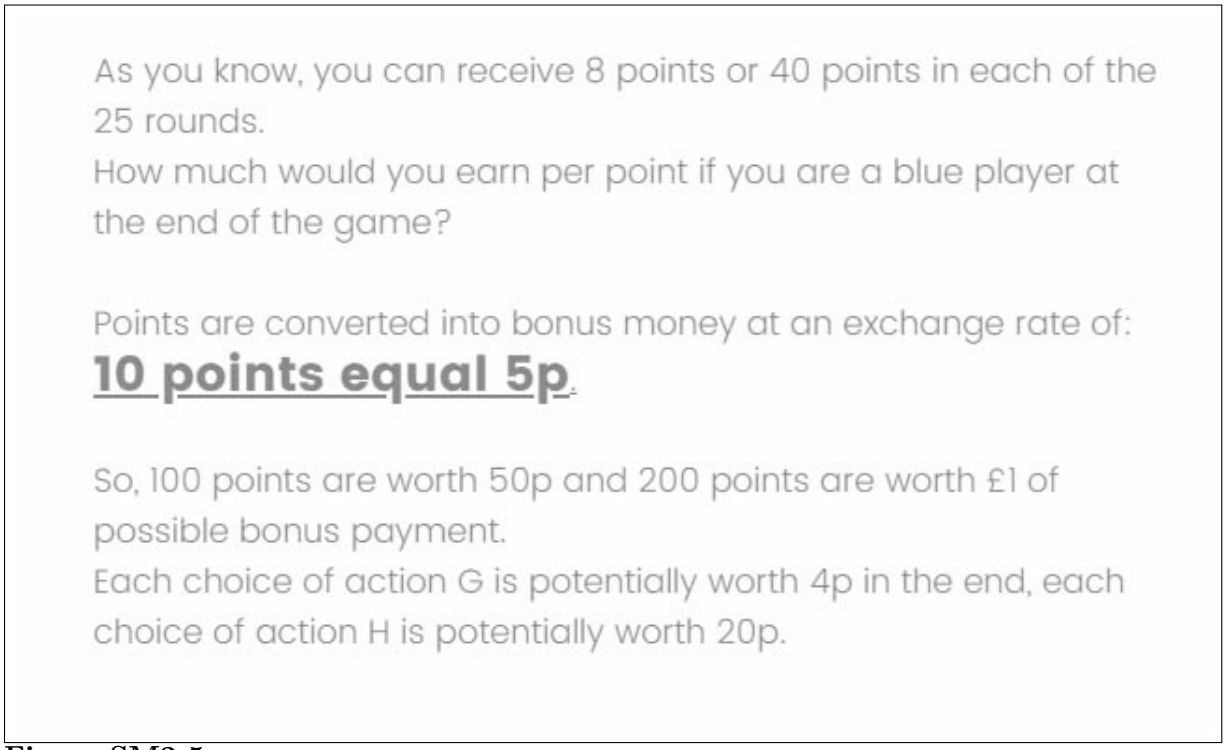


Figure SM2-5
Game Instructions Page 5

SM2-3.7 Screenshots of Comprehension checks pages 2–5

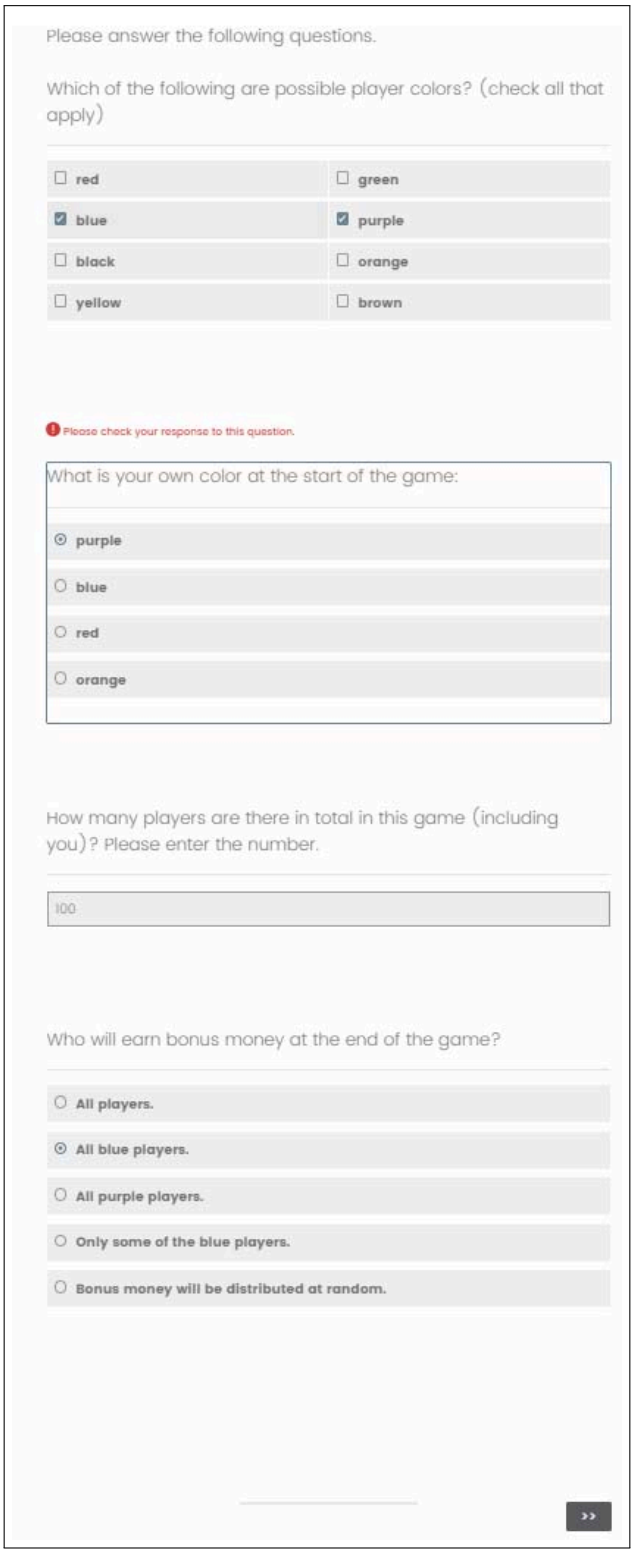


Figure SM2-6
Comprehension Checks Page 2 (presented below instructions)

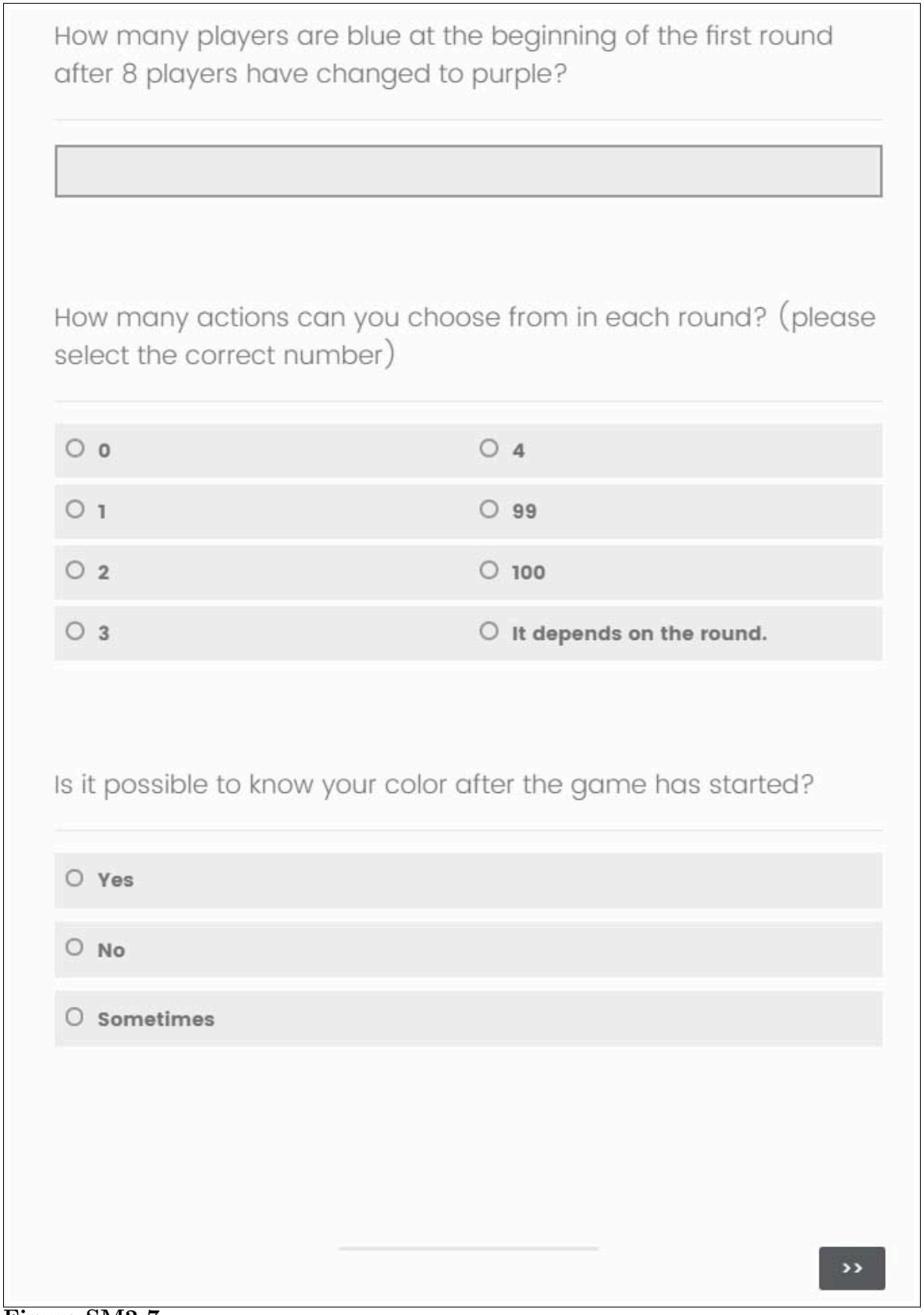


Figure SM2-7
Comprehension Checks Page 3 (presented below instructions)

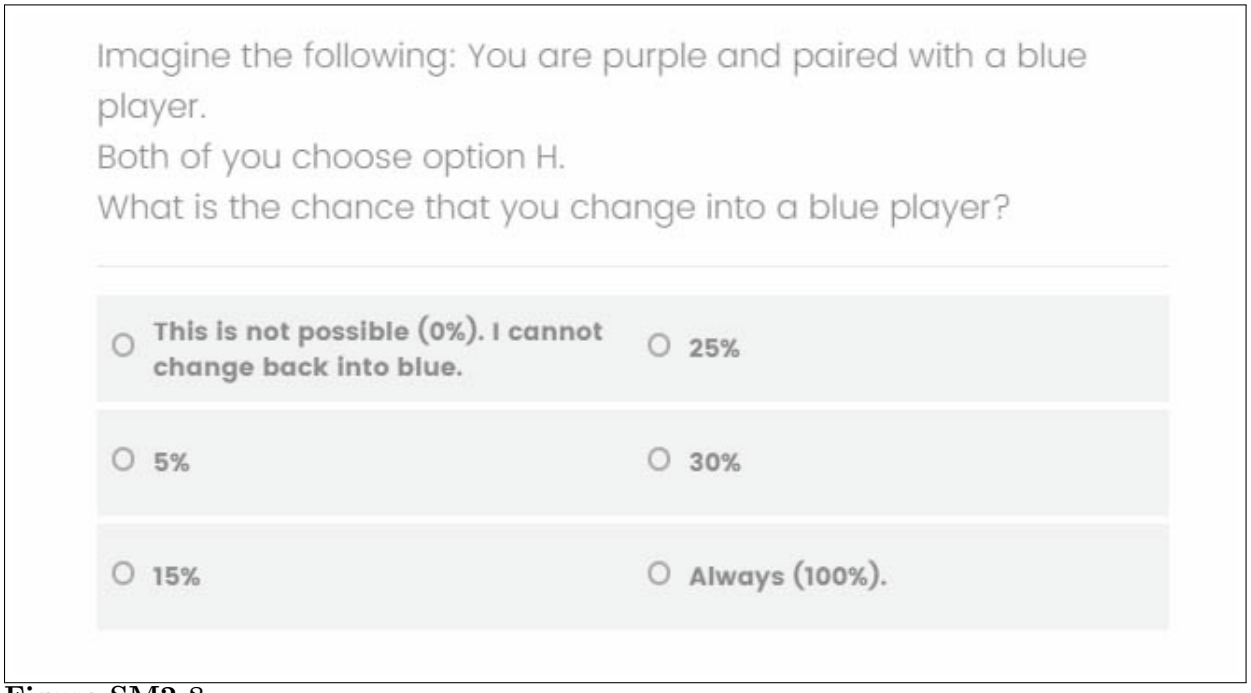


Figure SM2-8
Comprehension Checks Page 4 (Example; presented below instructions)

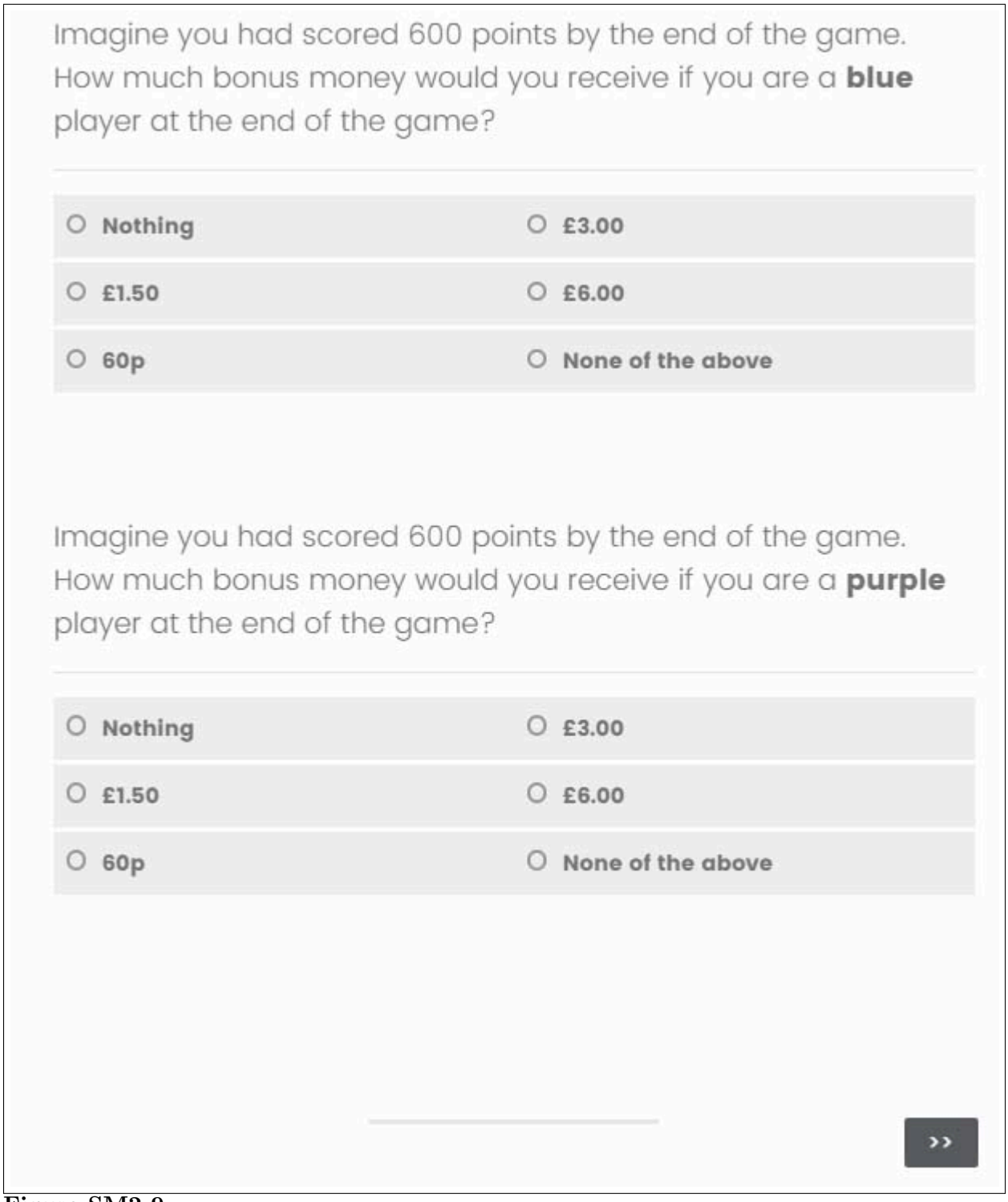


Figure SM2-9
Comprehension Checks Page 5 (presented below instructions)

SM2-4 Transmission Game: condition-specific instructions

SM2-4.1 Instructions: Injunctive norms condition

We would like to highlight some consequences of your choices:

You will have noticed that you can obtain a **personal benefit** by choosing action H (=40 points) over action G (=8 points).
But be aware that this benefit in points comes at a **potential cost paid by others, and even by yourself**.
If you are a purple player and choose action H, there is a higher chance that a blue player you are paired with will turn purple (thereby losing their bonus money for the game).
If you are a blue player paired with a purple player and you choose action H, then you will have a higher chance of turning purple yourself (thereby losing your bonus money for the game).

All points scored across the rounds are worth nothing to a purple player.

Choosing action H may therefore endanger your own bonus money and the bonus money of other participants.
Choosing action G protects others and yourself from changing into purple players and losing bonus money.

In brief:
Choose action G to protect your and other players' bonus money.

SM2-4.2 Screenshot: Injunctive norms

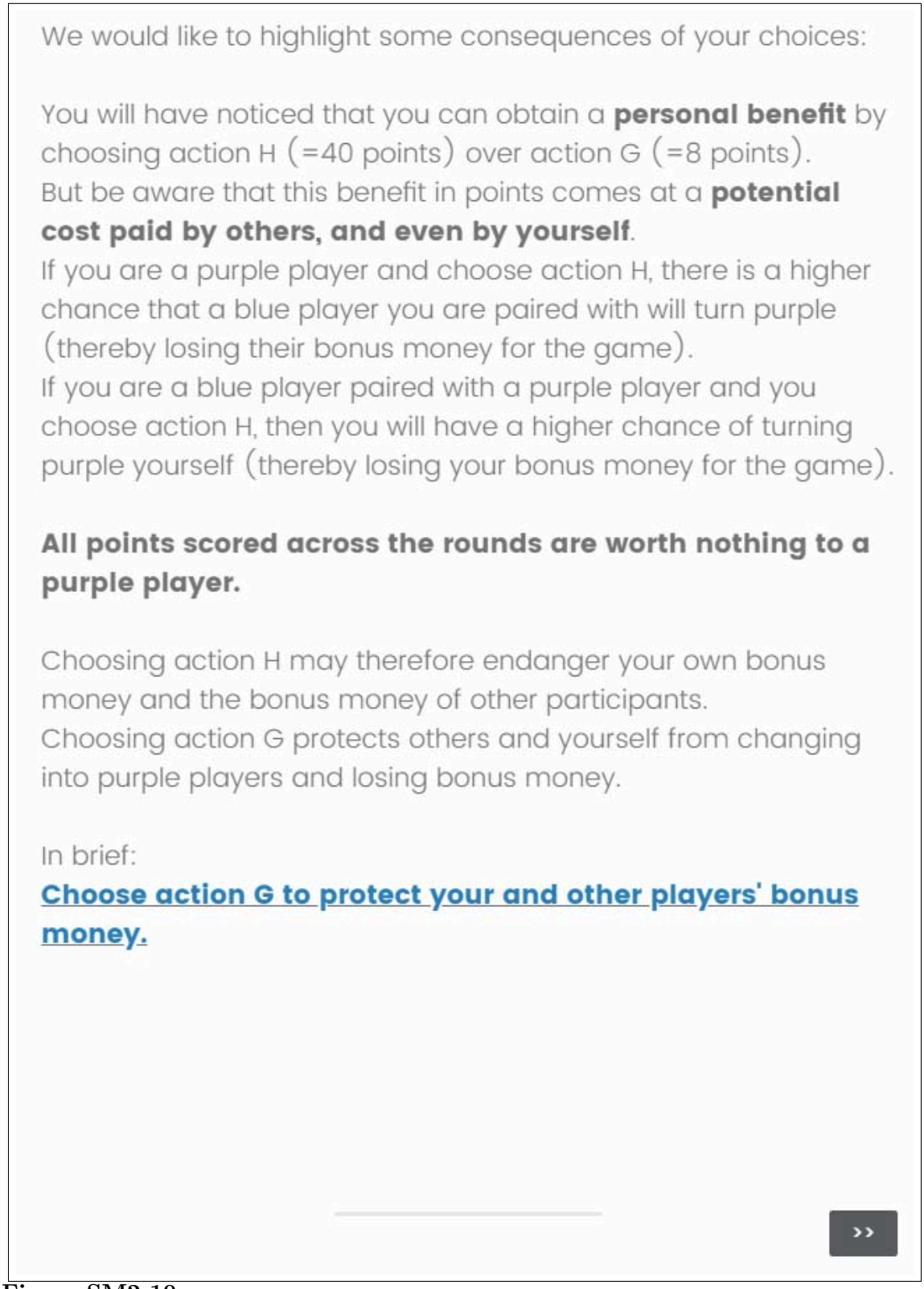


Figure SM2-10
Instructions (injuncitve norms)

SM2-4.3 Instructions: Chain reaction condition

[*These instructions consist of nine pages, each featuring an image of the game development. All images can be seen in the screenshots.*]

SM2-4.3.1 Page 1/9

We would like to show you an example of how a single change of player color can result in a chain reaction of color changes.
In this example, one player begins the first round as a purple player and is paired with a blue player.

SM2-4.3.2 Page 2/9

Now imagine that—as a consequence of both players' actions—the blue player changes to purple.
There is now one more purple player in the game who will not receive a bonus payment at the end. But the effects of this change do not end here.

SM2-4.3.3 Page 3/9

The purple player will meet 24 other players over the course of the game. It is possible that none of these 24 other players change color.
But if only one of the two players chooses action H in each round, the chance of changing color would be 15% in each round (and it would be 25% if both choose H).

SM2-4.3.4 Page 4/9

In this example, 5 of the 24 players change color to purple.
In total, there are now six more players who have changed color as a consequence of the first pair of actions.
But the effects of the initial change do not end here.

SM2-4.3.5 Page 5/9

Each of the five purple players who changed color (as a consequence of being paired with the player who changed first) will meet other players during the remaining rounds of the game.

SM2-4.3.6 Page 6/9

In this example, 19 more players (in addition to the previous 6) change color due to these interactions.

SM2-4.3.7 Page 7/9

In total, there are now 25 players who have changed color as a consequence of the first pair of actions. But the effects of the initial change do not end here.

SM2-4.3.8 Page 8/9

Each of the 19 players at the end of the previous chain will meet other players in the remaining rounds of the game, and so forth.

SM2-4.3.9 Page 9/9

Many more players may change color (and may lose their bonus for this game) as a consequence of the very first pair of choices.

Players can change their color for other reasons as well and some of the dots above might actually be the same player (since two players may meet the same third player in different rounds)but this does not change the lesson of this example:

In this game, if one player changes color, other players (potentially many players) may also change color in a chain reaction.

The chance of changing color is higher when at least one player chooses action H and highest when both choose action H.

SM2-4.4 Screenshots: Chain reaction

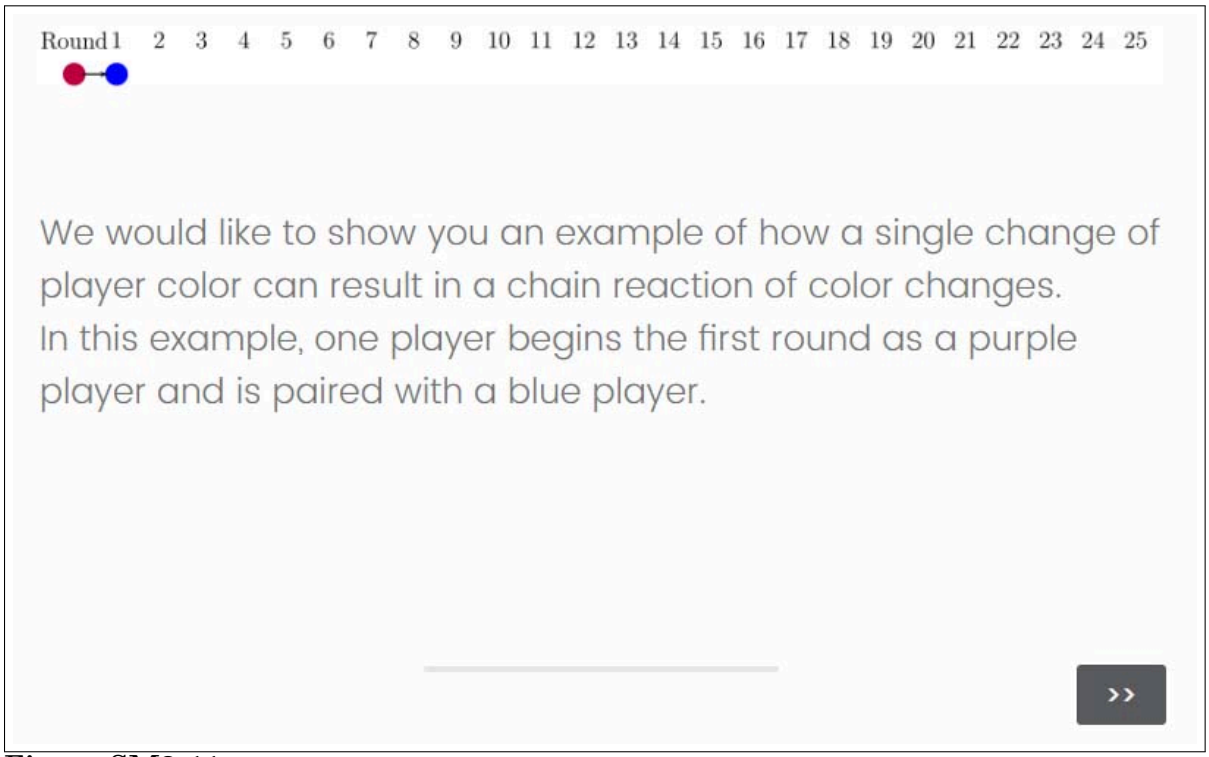


Figure SM2-11
Instructions (chain reaction, page 1/9)

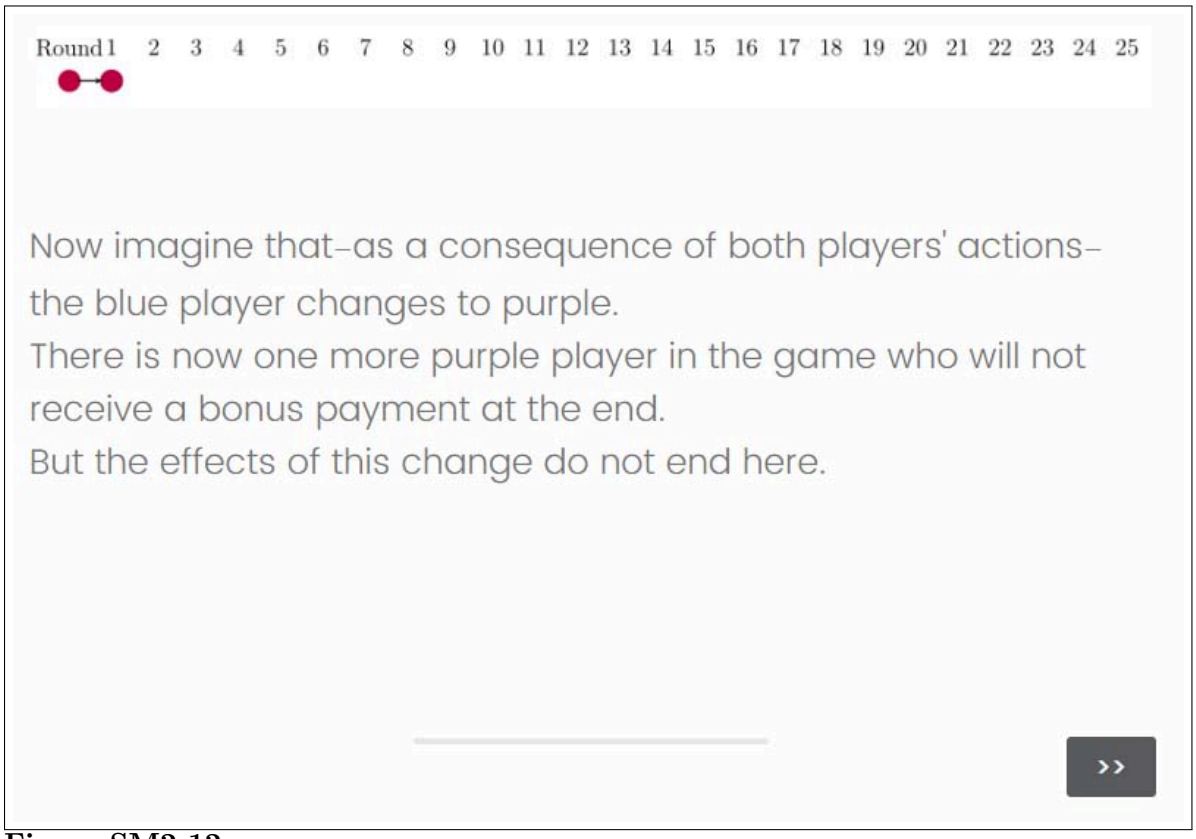


Figure SM2-12
Instructions (chain reaction, page 2/9)

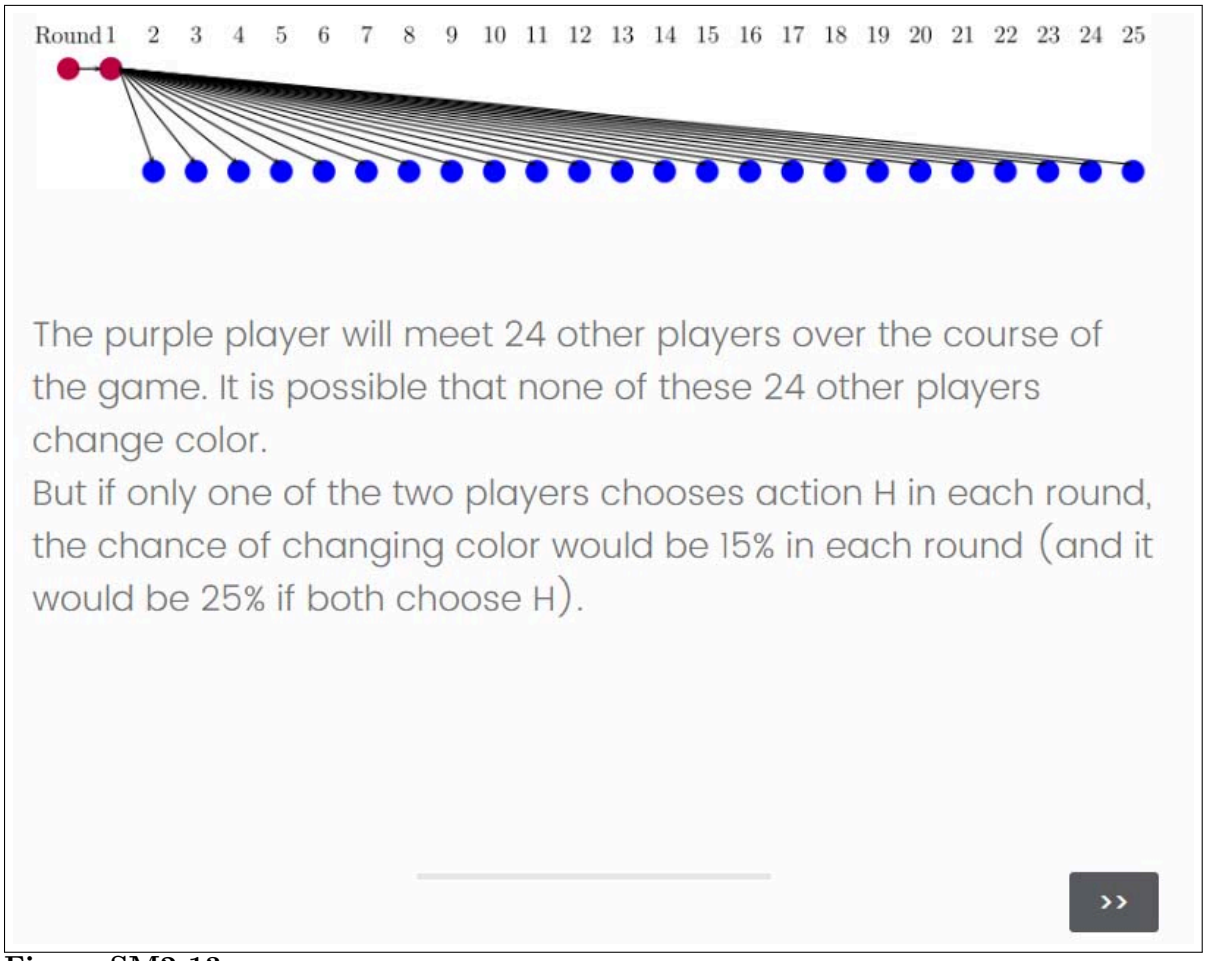


Figure SM2-13
Instructions (chain reaction, page 3/9)

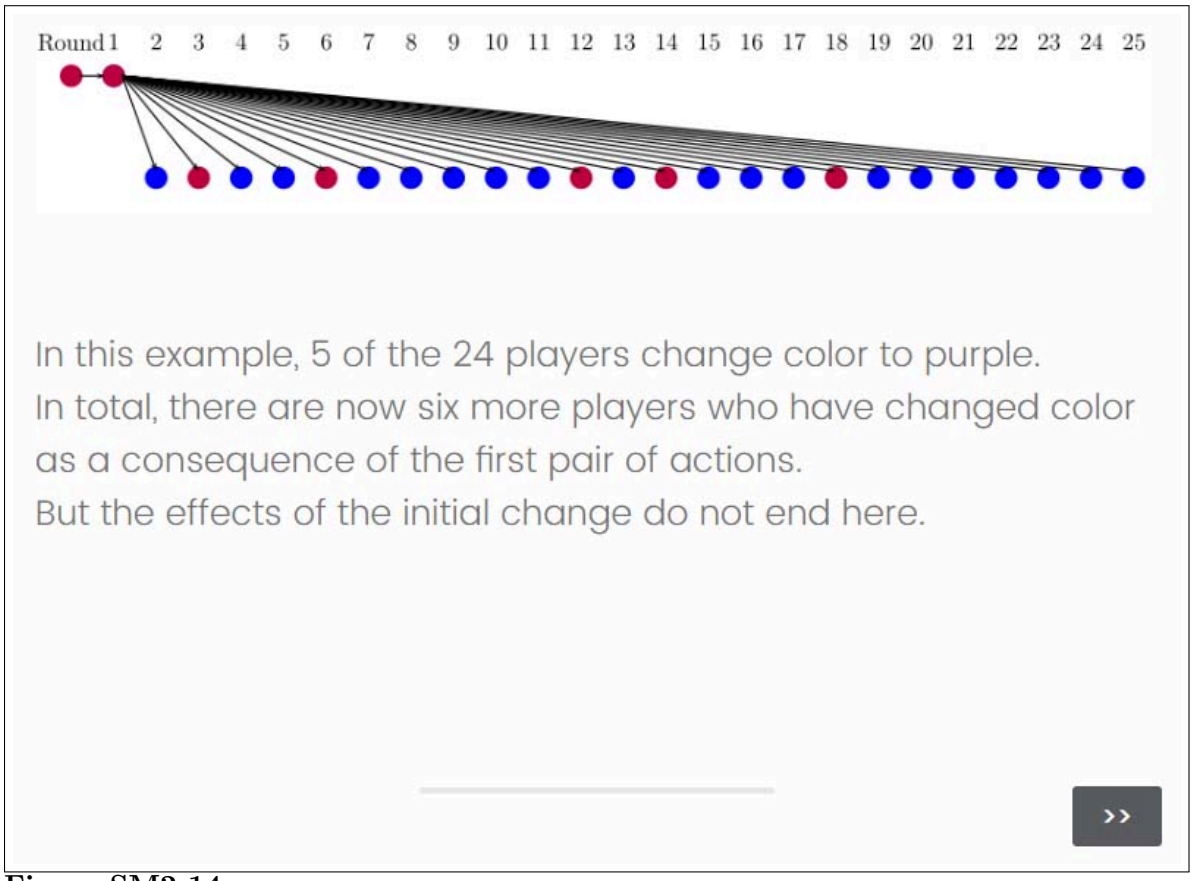


Figure SM2-14
Instructions (chain reaction, page 4/9)

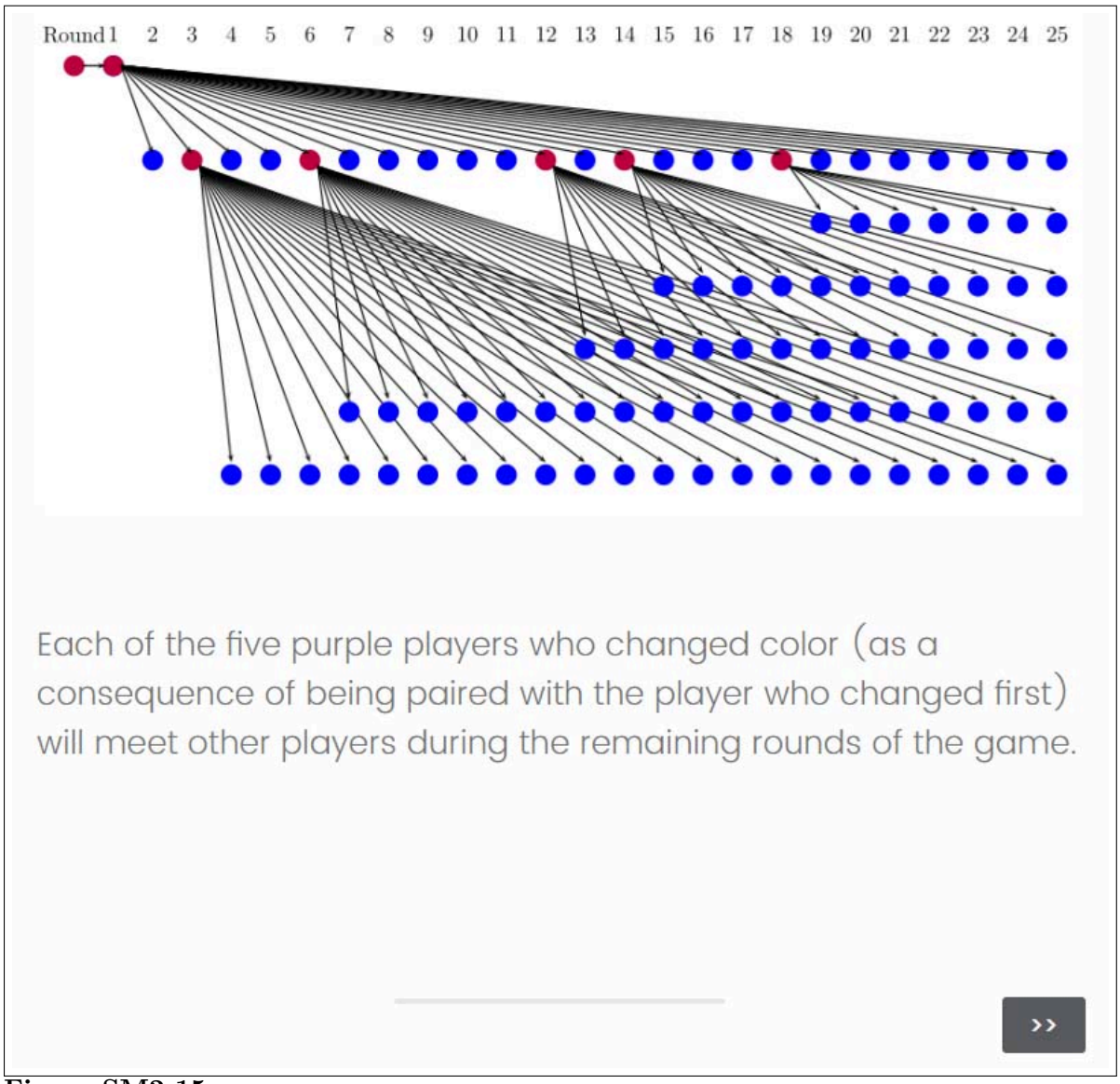


Figure SM2-15
Instructions (chain reaction, page 5/9)

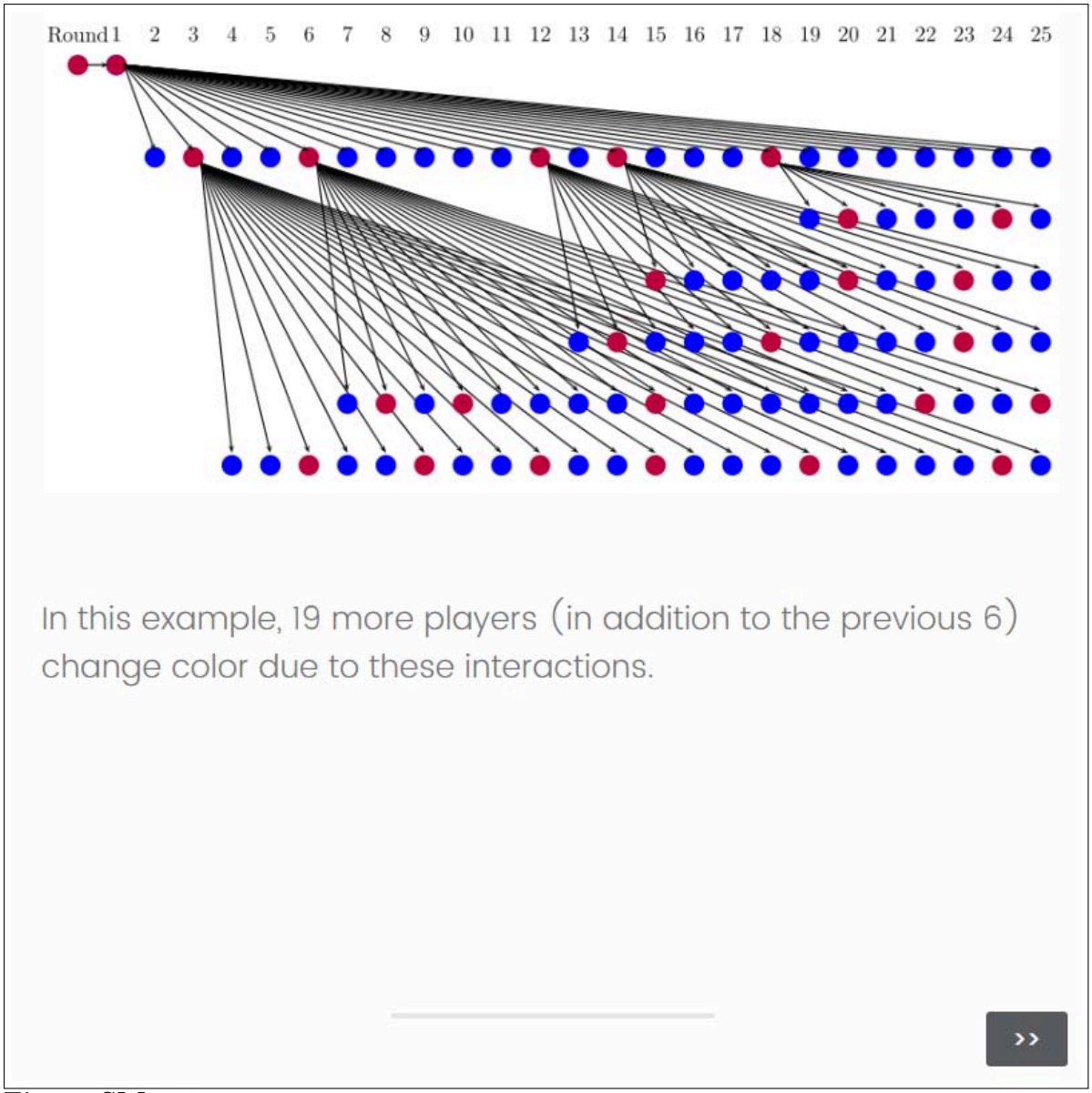


Figure SM2-16
Instructions (chain reaction, page 6/9)

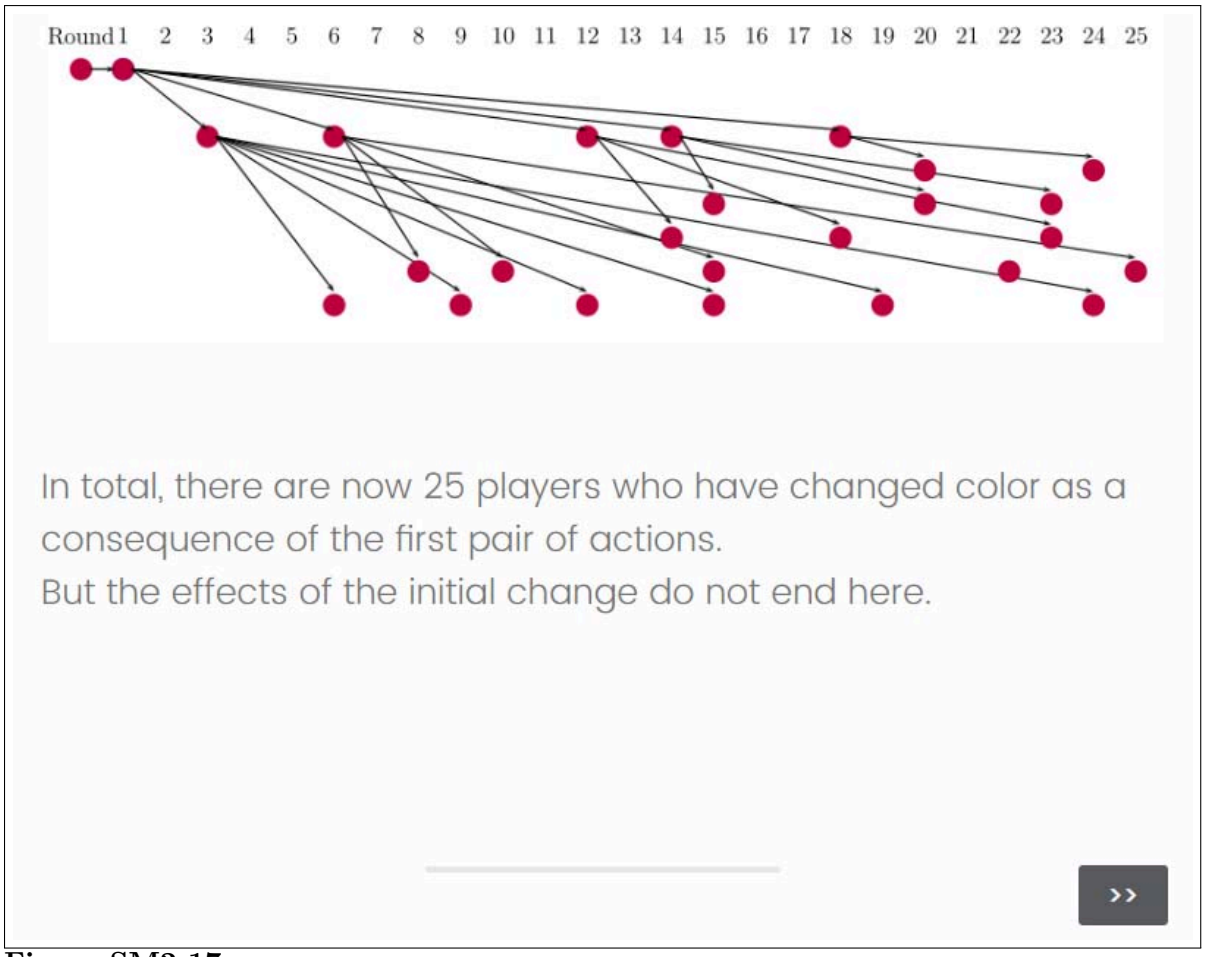


Figure SM2-17
Instructions (chain reaction, page 7/9)

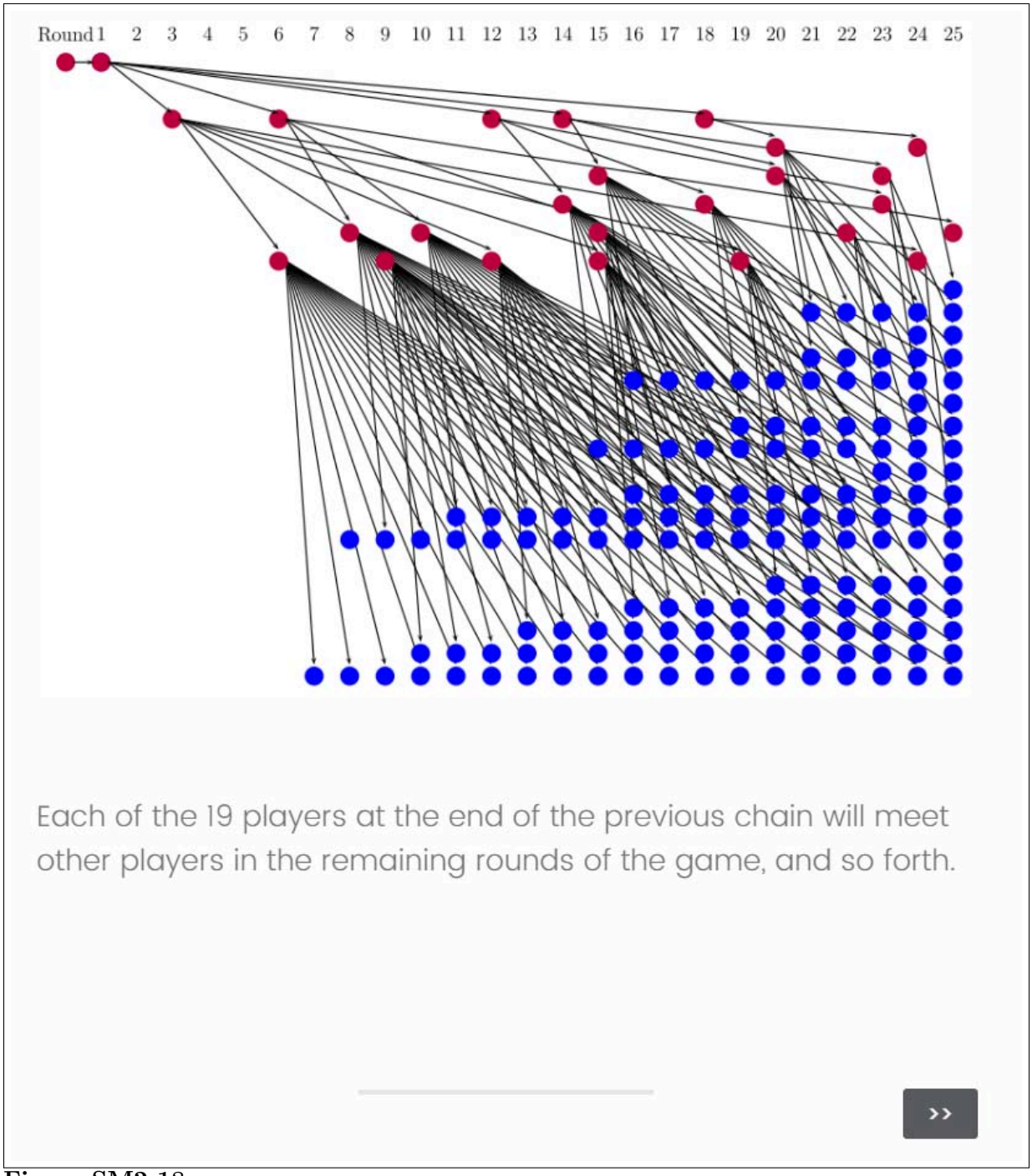


Figure SM2-18
Instructions (chain reaction, page 8/9)

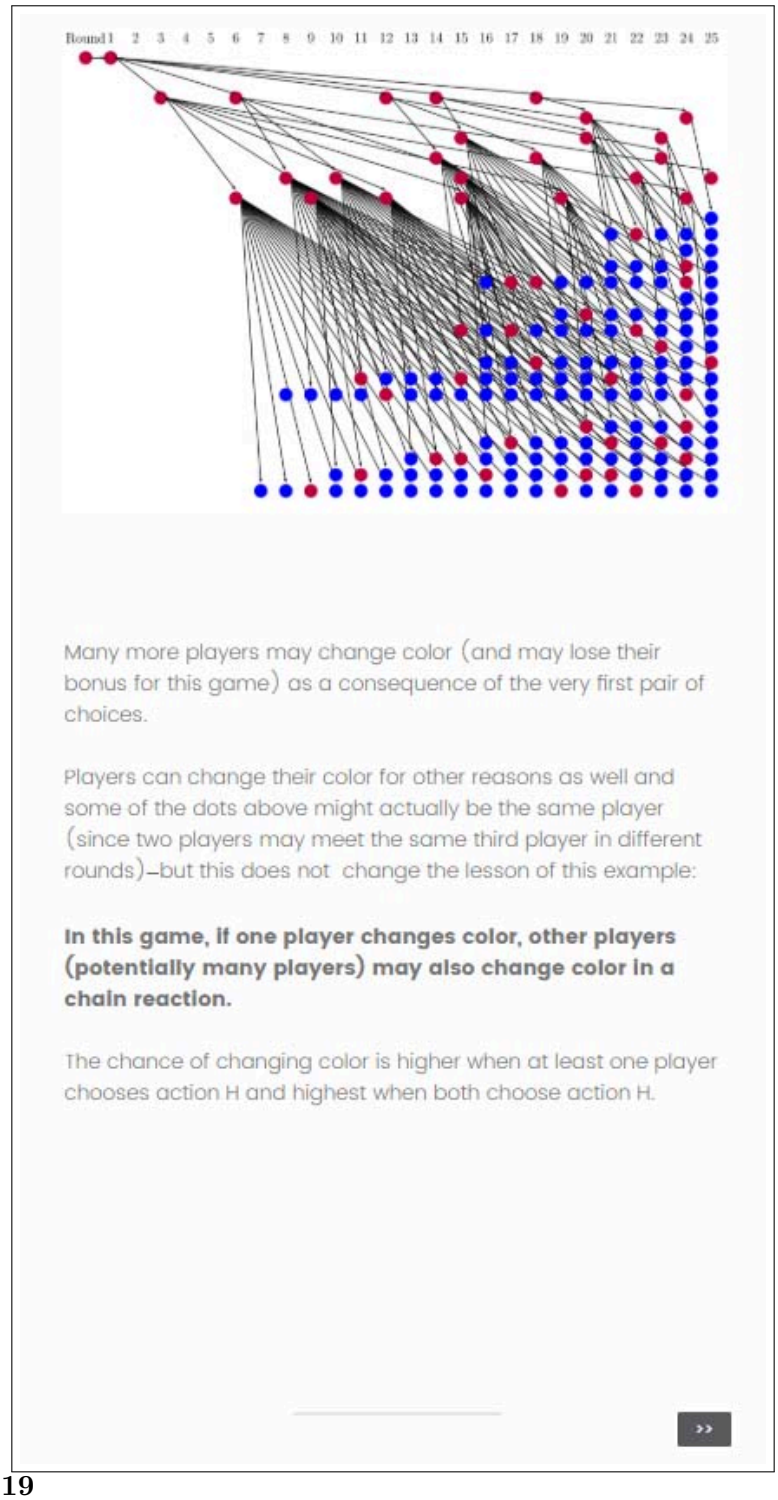


Figure SM2-19
Instructions (chain reaction, page 9/9)

SM2-4.5 Instructions: Simulator condition

SM2-4.5.1 Page 1/2

Before starting the game, you will see simulations of how the game could play out. These simulations explore the relationship between player decisions and color changes. There are many different ways that 100 players in this game could decide, and it would take a long time to study all of them.

The simulations therefore focus on games in which each player follows a simple rule: They either choose action H all the time or they choose action G all the time. You will be able to observe five game types:

1. **99% H: 99** of the 100 players always choose **H** (and **1** player always chooses **G**).
2. **75% H: 75** of the 100 players always choose **H** (and **25** players always choose **G**).
3. **50% H: 50** of the 100 players always choose **H**(and **50** players always choose **G**).
4. **10% H: 25** of the 100 players always choose **H** (and **75** players always choose **G**).
5. **1% H: 1** of the 100 players always chooses **H** (and **99** players always choose **G**).

You will find the simulator on the following page.

SM2-4.5.2 Page 2/2

You can simulate games by clicking on the buttons below the graph. The button label tells you which type of game is simulated. For example, the "75% H" button will simulate a game in which 75 players always choose option H and 25 players always choose option G for all 25 rounds, as described before.

Each simulation result will be shown in the graph below.

All the way on the right (on top of the y-axis), you can see how many of the 100 players changed to purple after the 25th round. The higher the point, the more players are purple (between 0 and 100). All these players would not receive any bonus money if the game were real, not simulated.

All the way to the left (above the 0 on the x-axis), you can see how many of the 100 players start the first round as purple players (always 8).

In between, you can see how many players are purple at the end of each round.

As you know, outcomes in the game partly depend on chance. Therefore, two games of the same type might result in different numbers of purple players. By simulating a game type several times, you can experience how different these numbers can be.

You can simulate each game type as often as you like. Each time you will see an entirely new game from start to finish. Each game starts with 100 blue players and the eight purple players are determined at random. Different players will be paired and actions may result in different consequences.

You need to click each button at least three times before you can continue to the next page. By clicking on the same button, you can observe how the same type of game can result in different consequences when played several times. By clicking on different buttons, you will be able to compare different game types to see how game results depend on player behavior.

Each button click will simulate a new game (the order of clicks does not matter).

[*The simulator is presented below this page, see screenshot.*]

SM2-4.6 Screenshots: Simulator

[*The instructions are shown in Figure SM2-20, Figure SM2-21, and Figure SM2-22. The simulator part in Figure SM2-22, reacts to button clicks by simulating single games with the specified rate of risk-seeking decision makers, followed by an animated transition of the results graph showing the number of purple players across rounds in the simulated game. The simulations are done on the participant's computer individually (see the code in section SM2-24.1). The screenshots contain examples for simulations with 99% (see Fig. SM2-23), 75% (see Fig. SM2-24), 50% (see Fig. SM2-25), 25% (see Fig. SM2-26), and three examples of 1% games (see Fig. SM2-27, Fig. SM2-28, and Fig. SM2-29 with the tooltip available for all data points shown). Numbers shown in button captions are counted down with each click, and the continue button is shown once all counters reach zero (see Fig. SM2-30). There is no enforced upper limit to the number of simulations per participant.*]

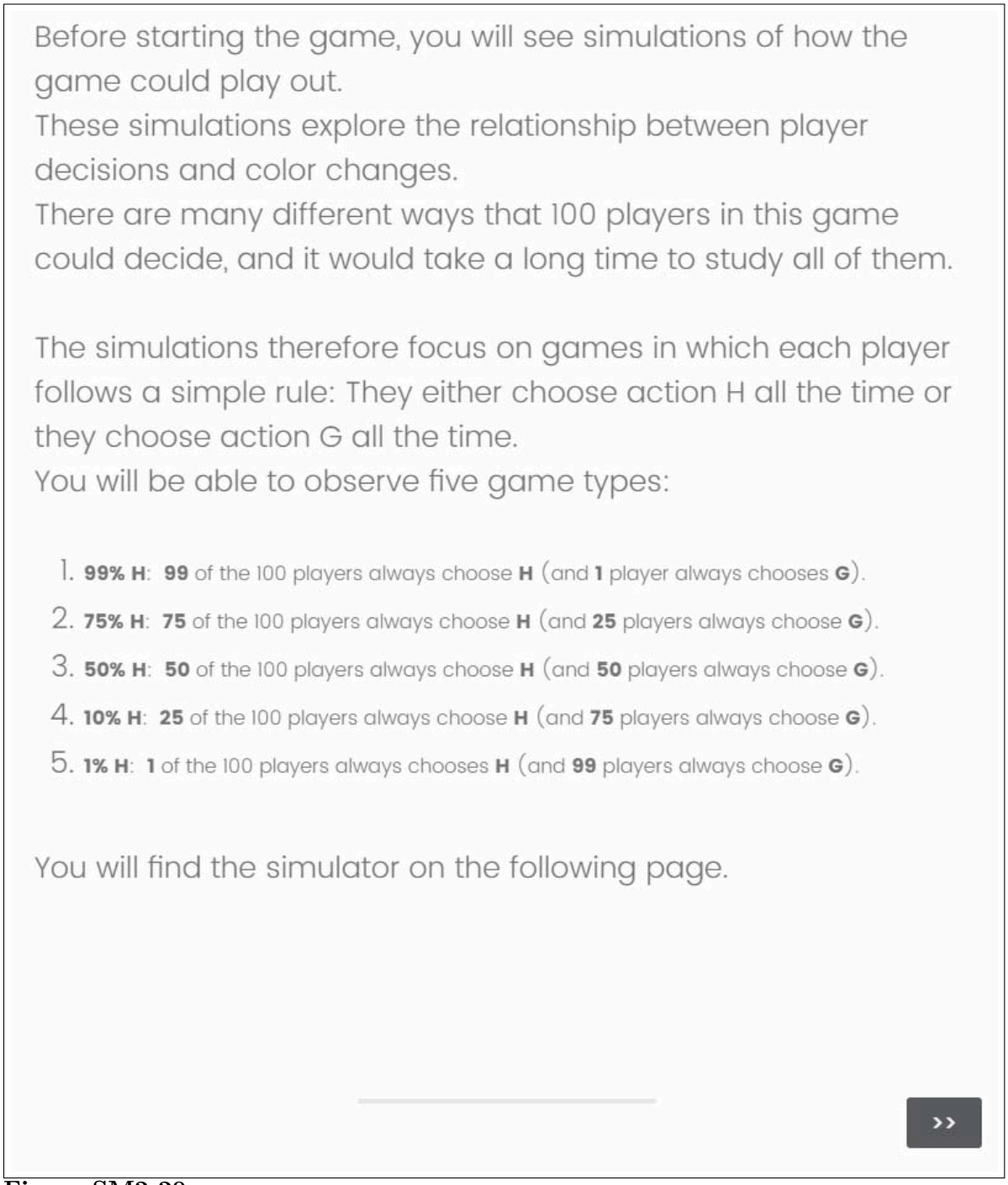


Figure SM2-20
Instructions (simulator, page 1/2)

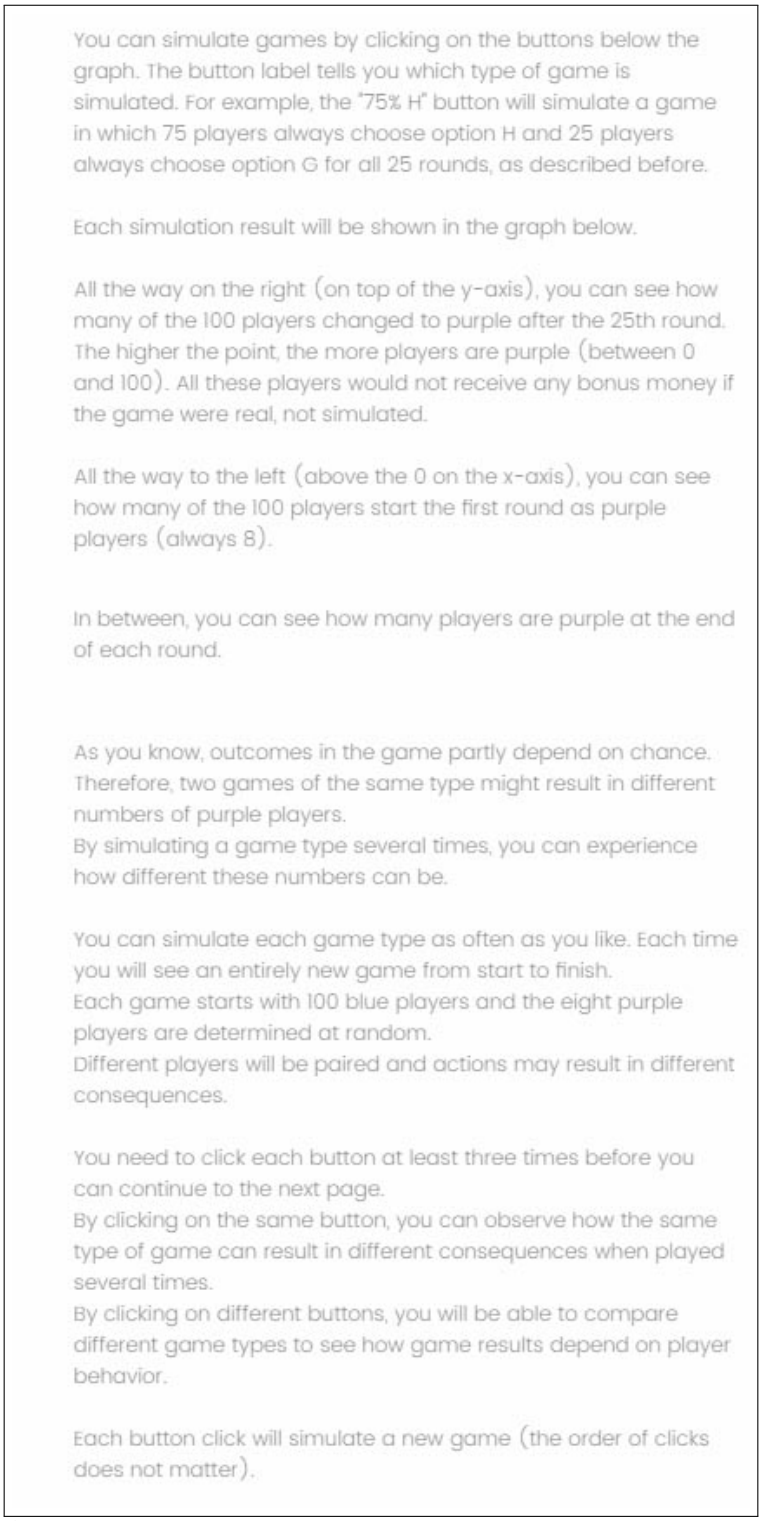


Figure SM2-21
Instructions (simulator, page 2/2, upper part)

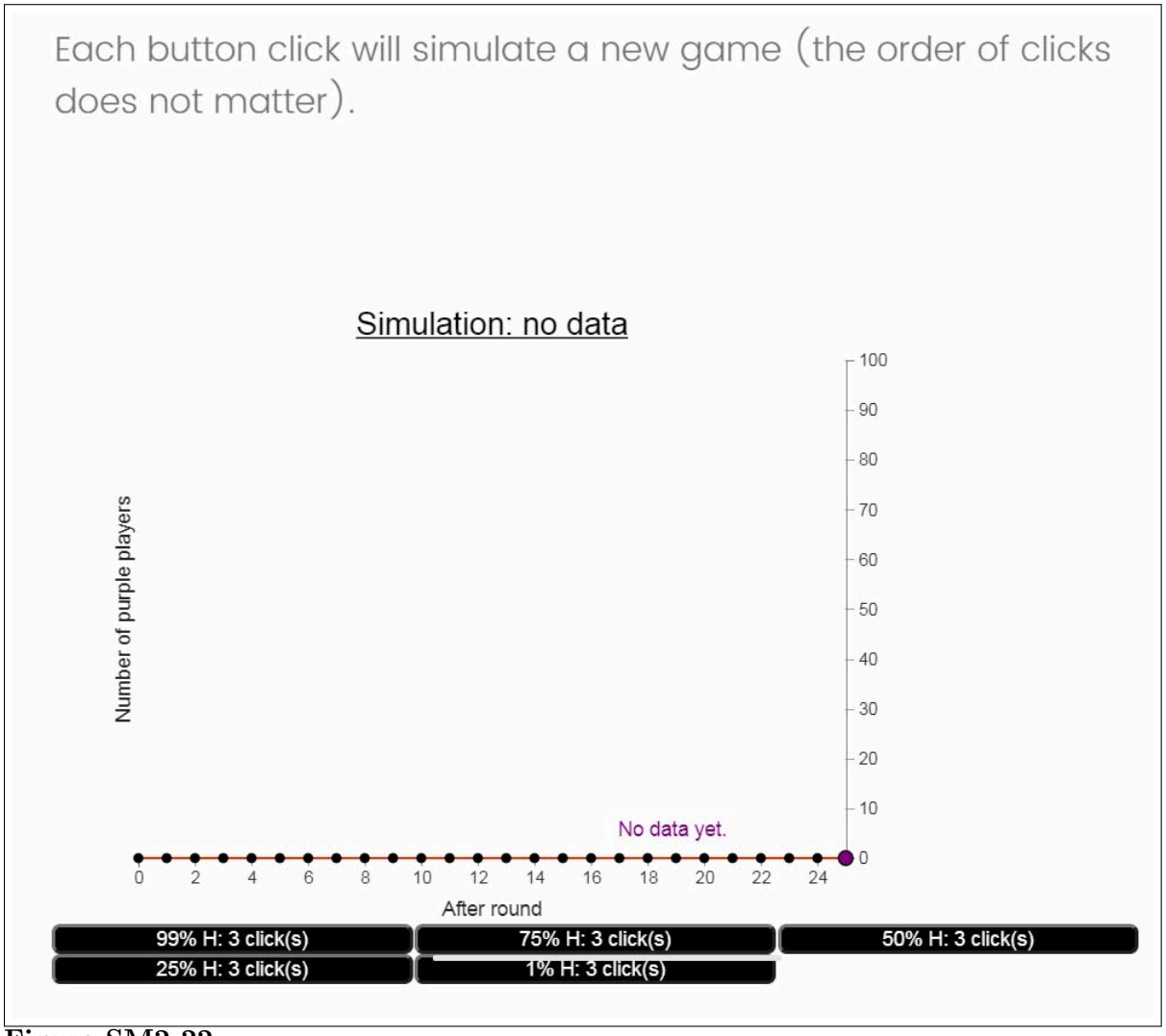


Figure SM2-22

Instructions (simulator, page 2/2, lower part)

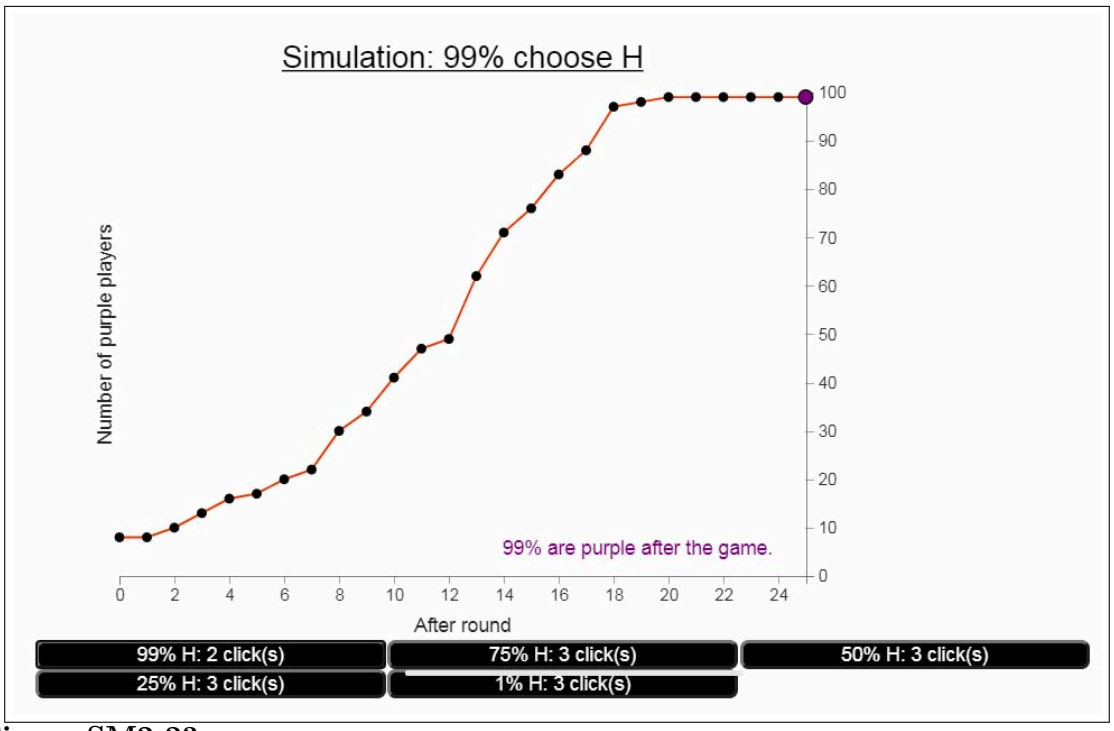


Figure SM2-23
Instructions (simulator, example of 99% H results)

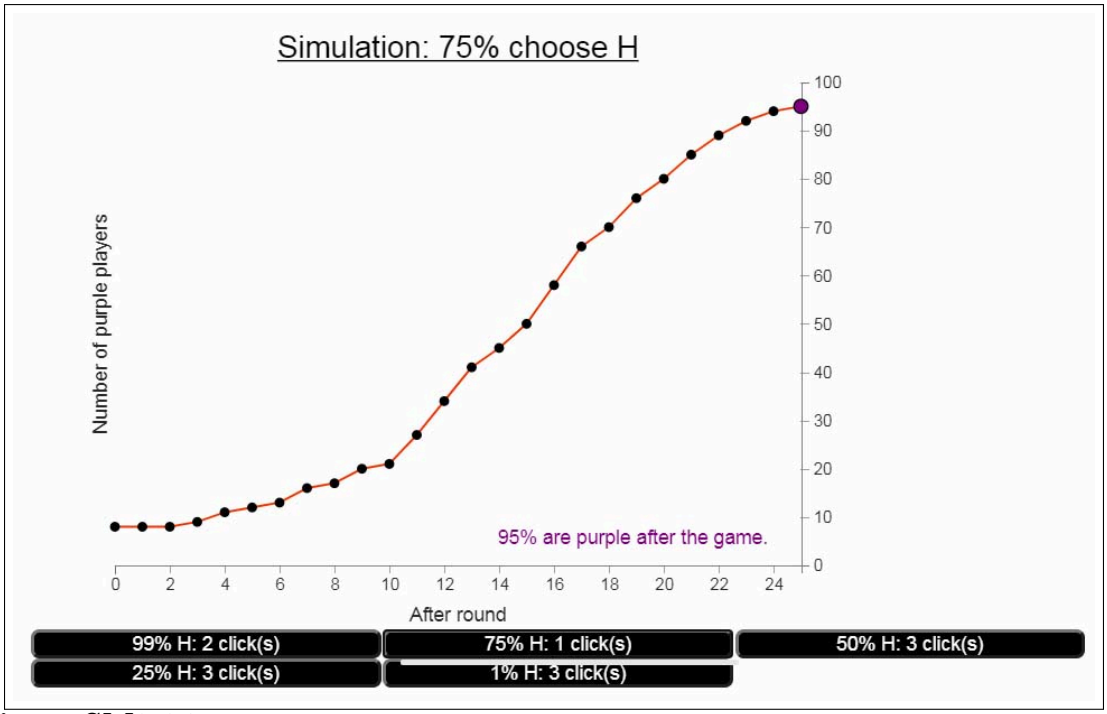


Figure SM2-24
Instructions (simulator, example of 75% H results)

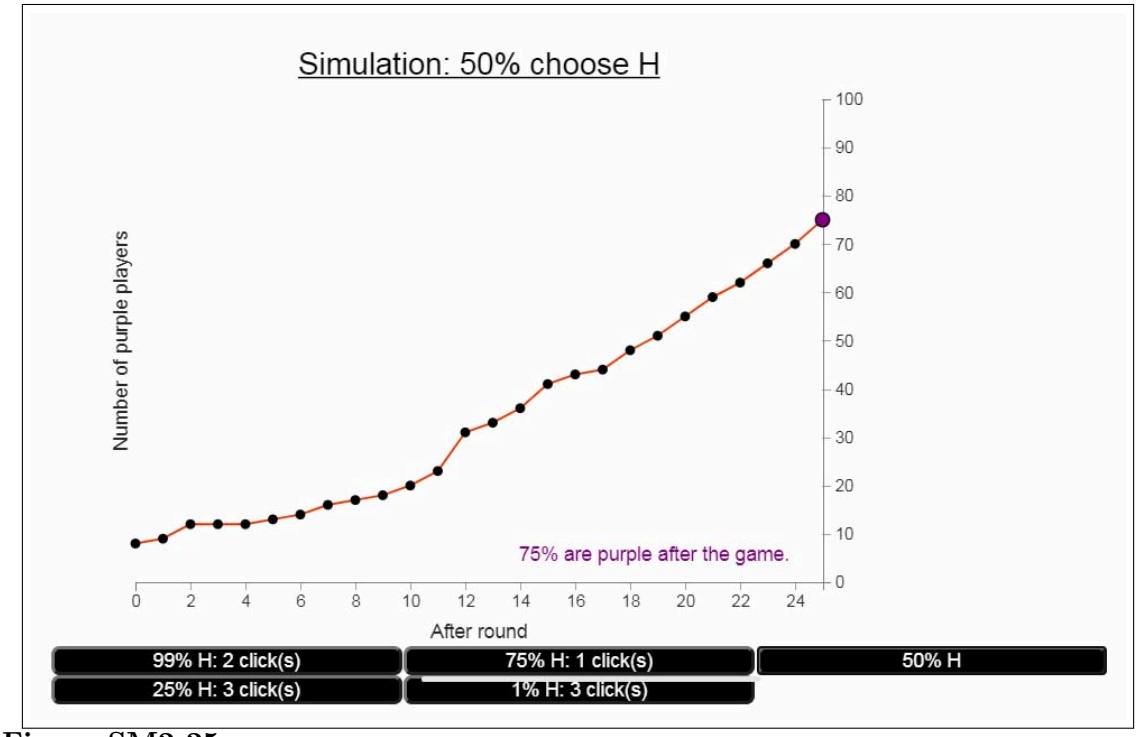


Figure SM2-25
Instructions (simulator, example of 50% H results)

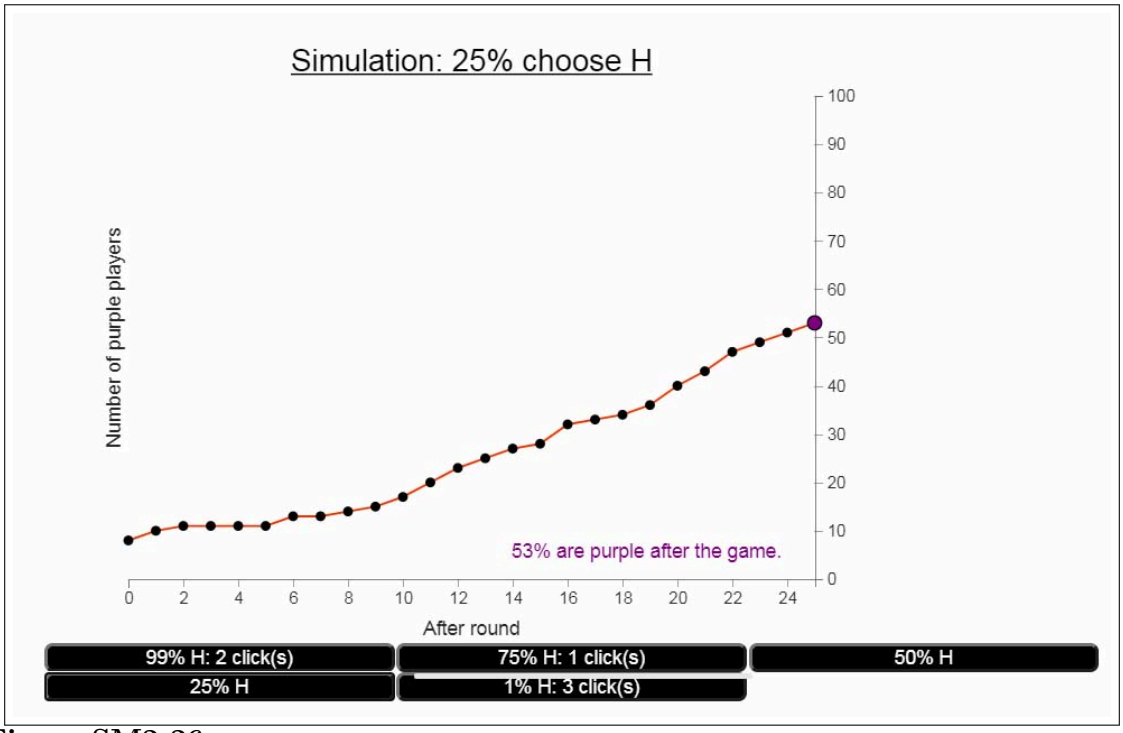


Figure SM2-26
Instructions (simulator, example of 25% H results)

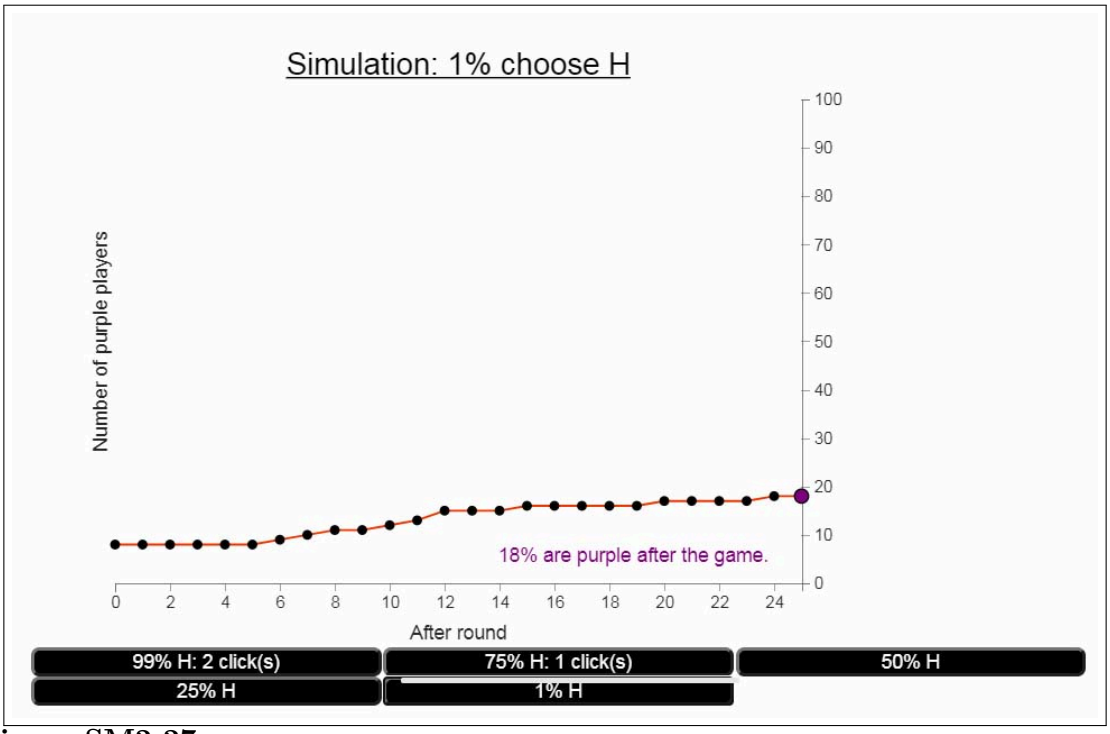


Figure SM2-27
Instructions (simulator, example of 1% H results)

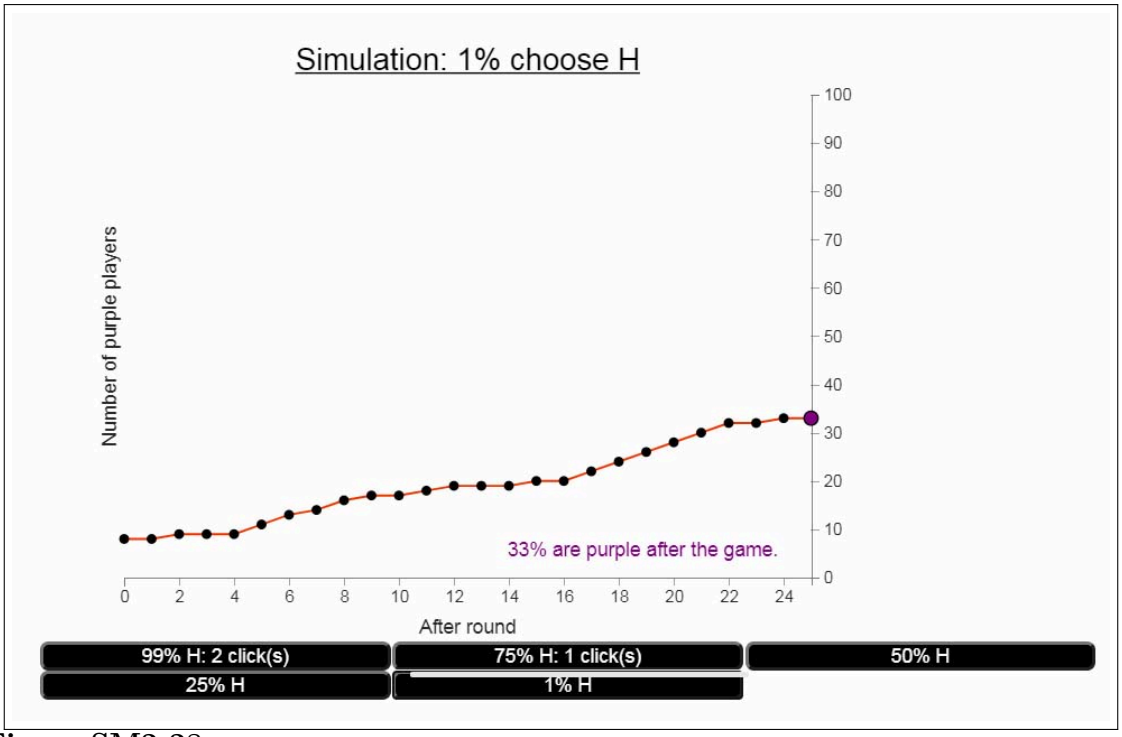


Figure SM2-28
Instructions (simulator, a second example of 1% H results)

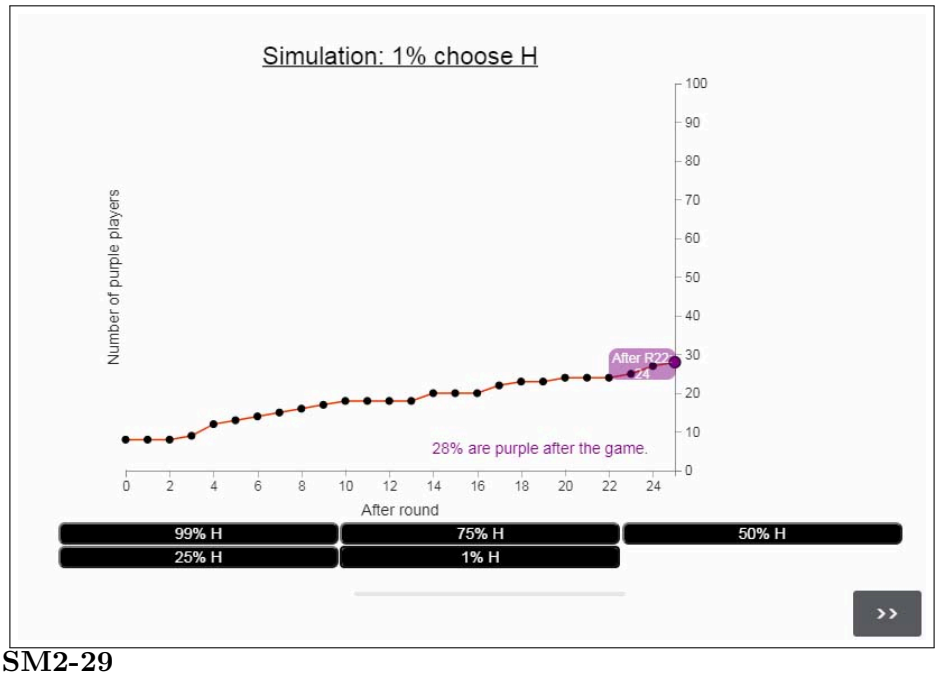


Figure SM2-29

Instructions (simulator, a second example of 1% H results with tooltip shown)

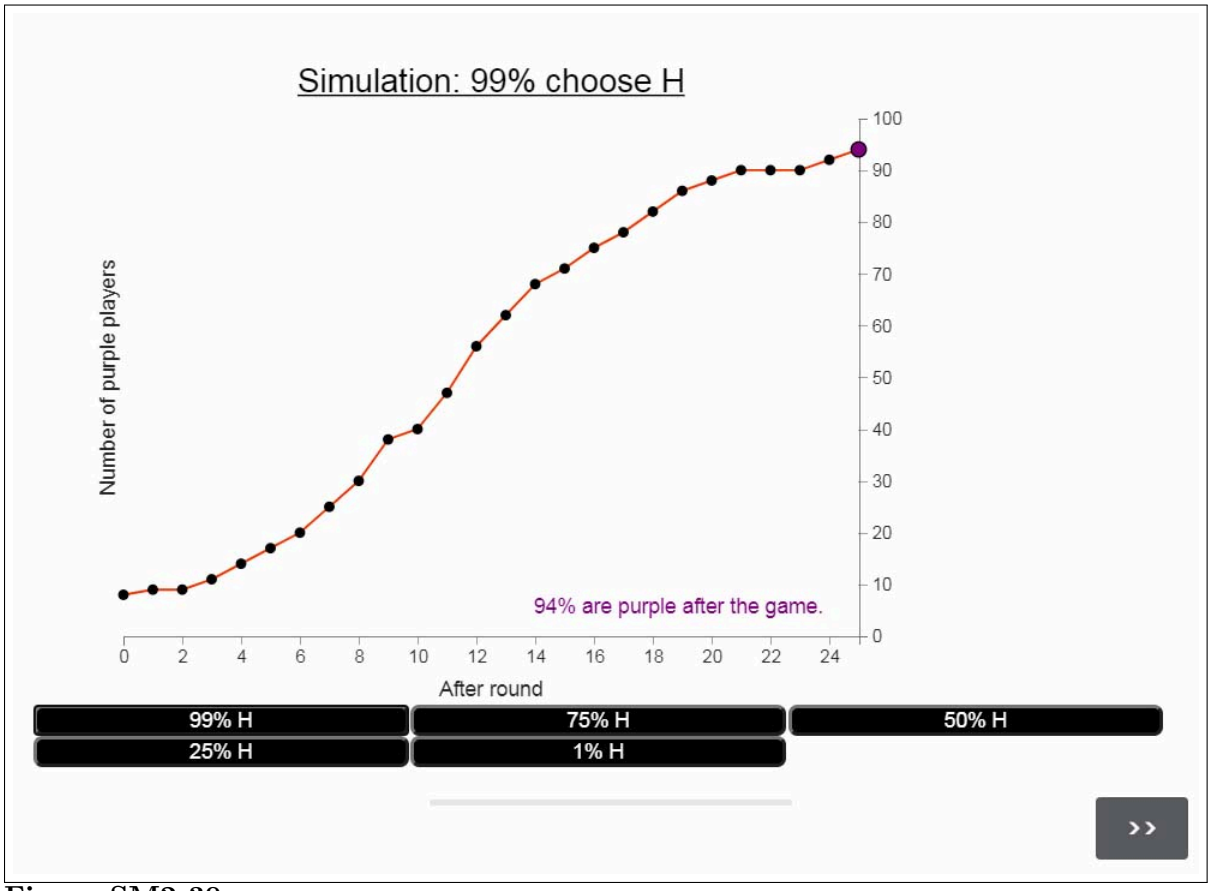


Figure SM2-30

Instructions (simulator, the button to continue is shown after a minimum of three clicks on each game button)

SM2-5 Transmission Game (with some condition-specific parts)

SM2-5.1 Introduction

[*This text was shown in all conditions (with an additional part in the vicarious learning and descriptive norm conditions, as presented below). This common part is also shown in Figure SM2-31 and Figure SM2-32.*]

You will now play the game. Note that every other player in your game will have the same information as you have. They will also have seen the same instructions as you have.

This is a brief summary of the rules:

1. **At the start of the game** all 100 players (yourself included) are blue.
2. **Before the first round only**, eight randomly selected players change into purple players.
3. **During each round**:
   - Players are paired at random.
   - Each player chooses an action and receives points (8 points for G, 40 points for H).
   - A blue player that is paired with a purple player may change into a purple player (with a probability between 5% and 25%, see the figure below).
   - A blue player that is paired with a blue player never changes color, no matter which actions are chosen.
4. **After 25 rounds, at the end of the game**, the payoff across all rounds for blue players will be converted into bonus money. Purple players will not receive bonus money for this task.

You will not have to wait for the other players (they may play the game before or after you).
We will collect your decisions and the decisions of 99 other players, then play out the game once to determine the results.
Afterwards, we will inform you about your color at the end of the game in a message when you receive your bonus payment for the entire survey.

[*Image of matrix with color change probabilities, as shown in the instructions (see Fig. SM2-32).*]

SM2-5.2 Screenshots of game introduction

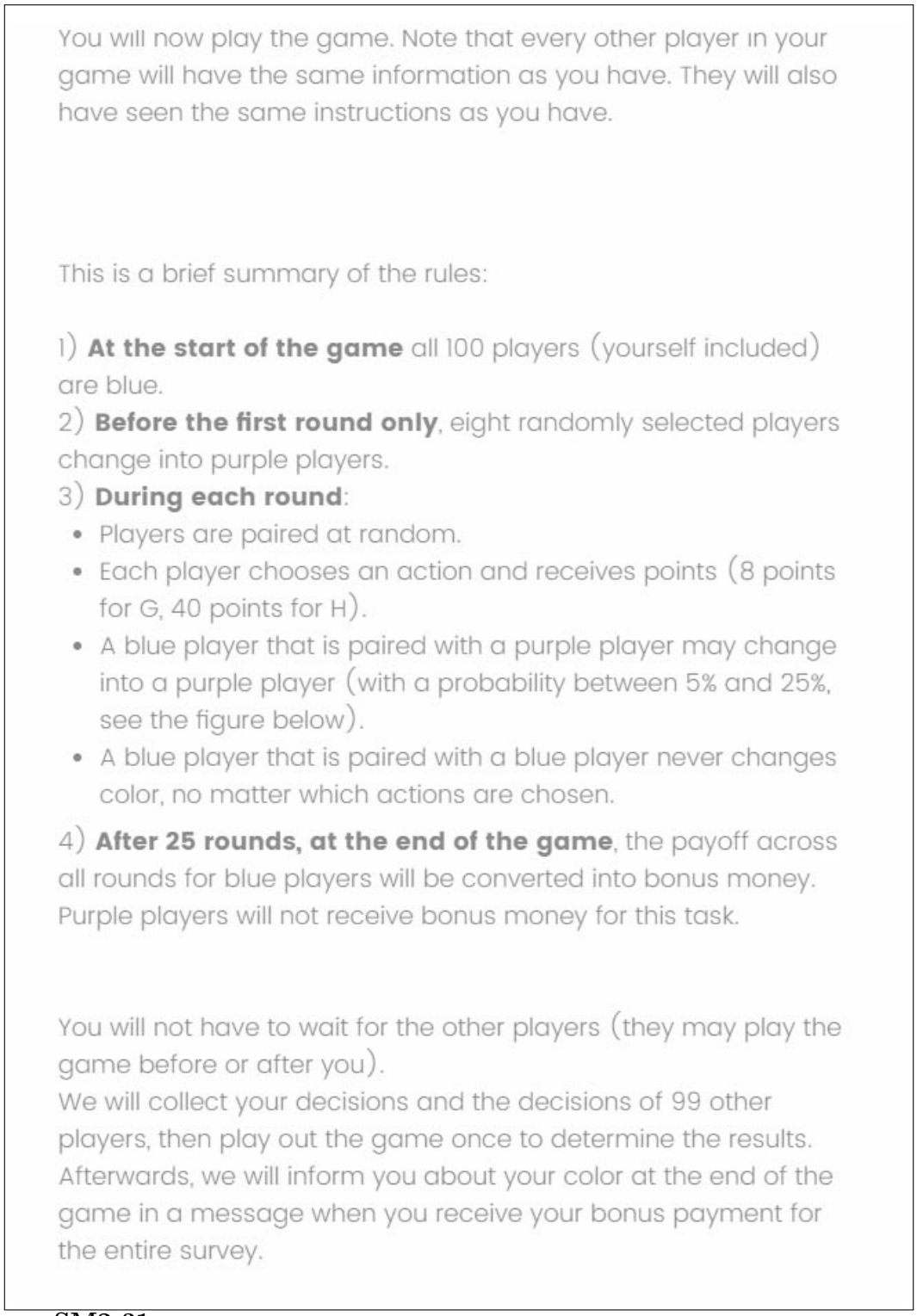


Figure SM2-31
Game Introduction

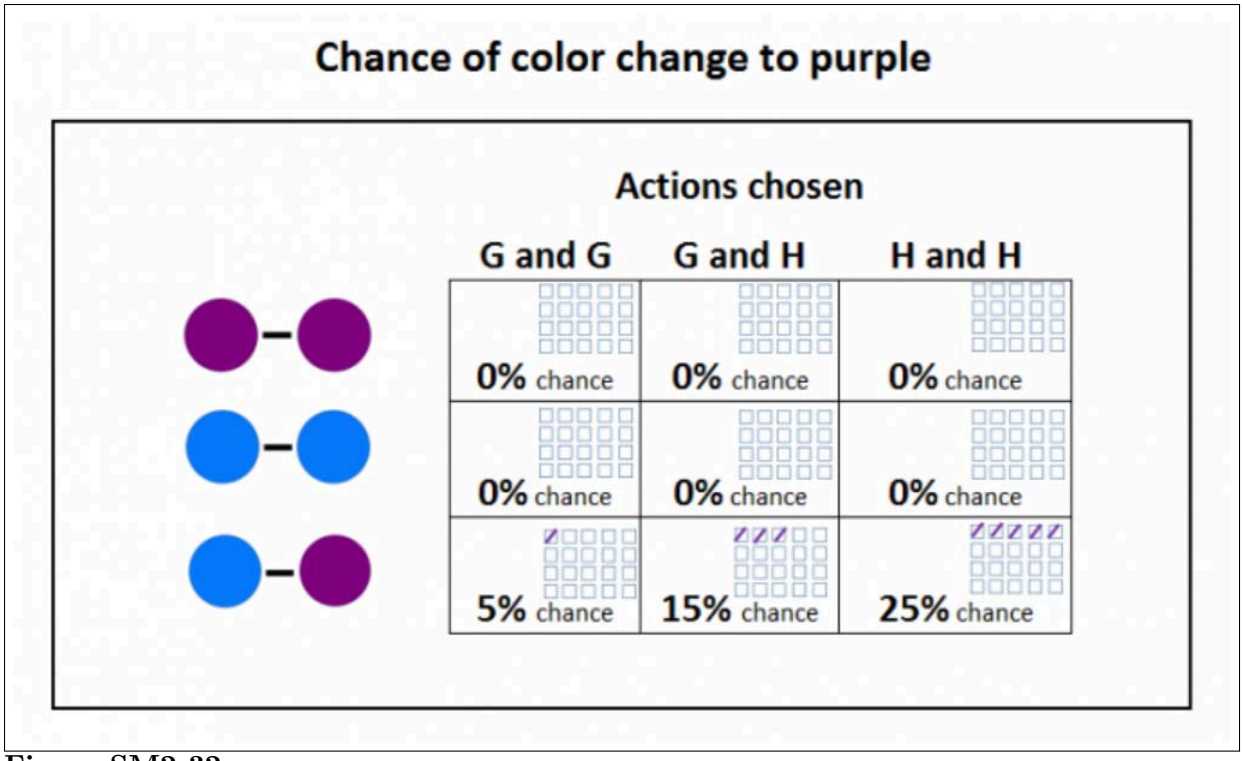


Figure SM2-32
Game matrix (presented below game introduction)

SM2-5.3 Introduction: Addition in the vicarious learning condition

[*The following text was shown below the standard introduction part (see Fig. SM2-33).*]

In the course of the game, we will inform you about a group of participants that played the game earlier.

Before each decision, you will be able to see how many players in the previous group were purple at the beginning of each round of their game.
A graph will show you these numbers up to the round you are about to play.

This number may differ from the number of purple players in your own game.

SM2-5.4 Screenshot: Addition in the vicarious learning condition

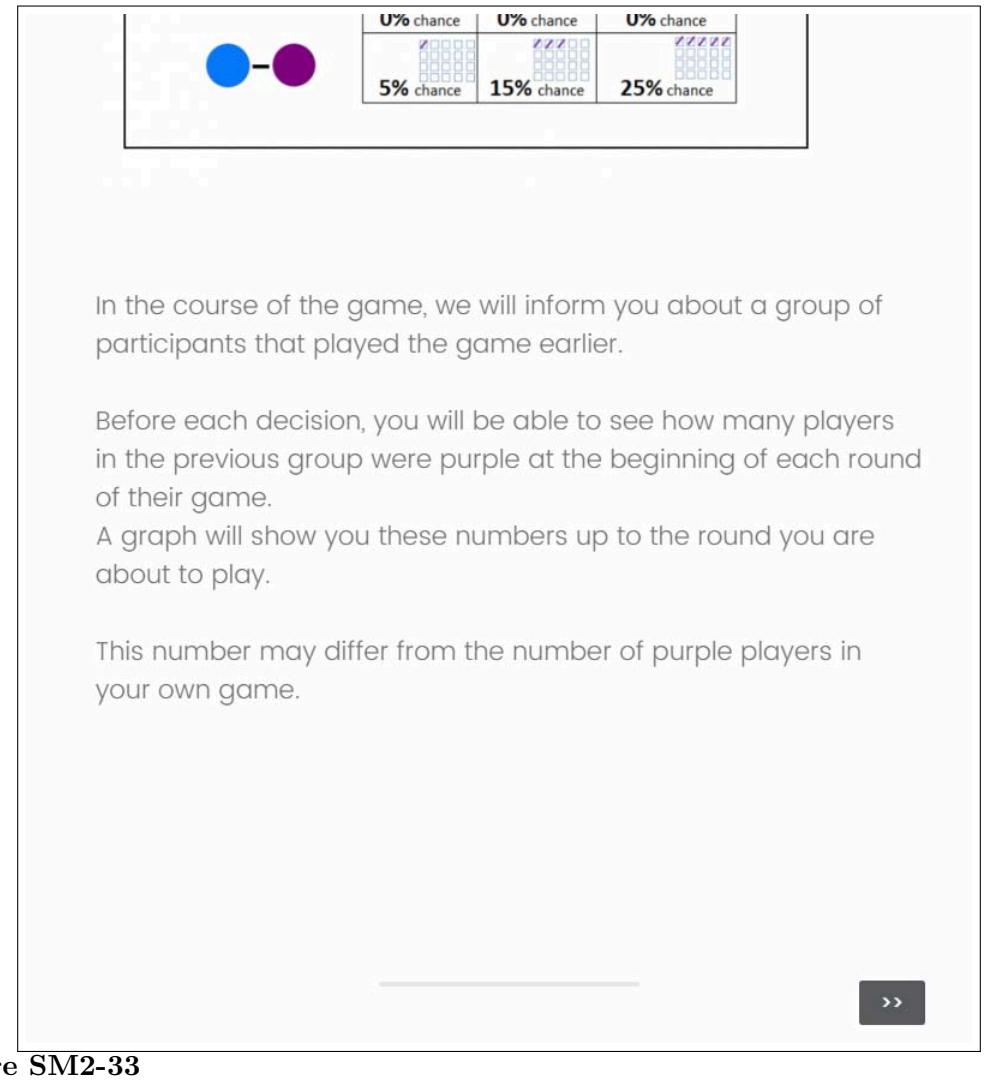


Figure SM2-33

Instructions (vicarious learning condition, the text was shown below the standard instructions)

SM2-5.5 Introduction: Addition in the descriptive norms condition

[*The following text was shown below the standard introduction part (see Fig. SM2-34).*]

In the course of the game, we will inform you about a group of participants that played the game earlier.

Before each decision, you will be able to see how many players in the previous group chose action G in the round you are about to play.

This number may differ from the number of players choosing G in your own game.

SM2-5.6 Screenshot: Addition in the descriptive norms condition

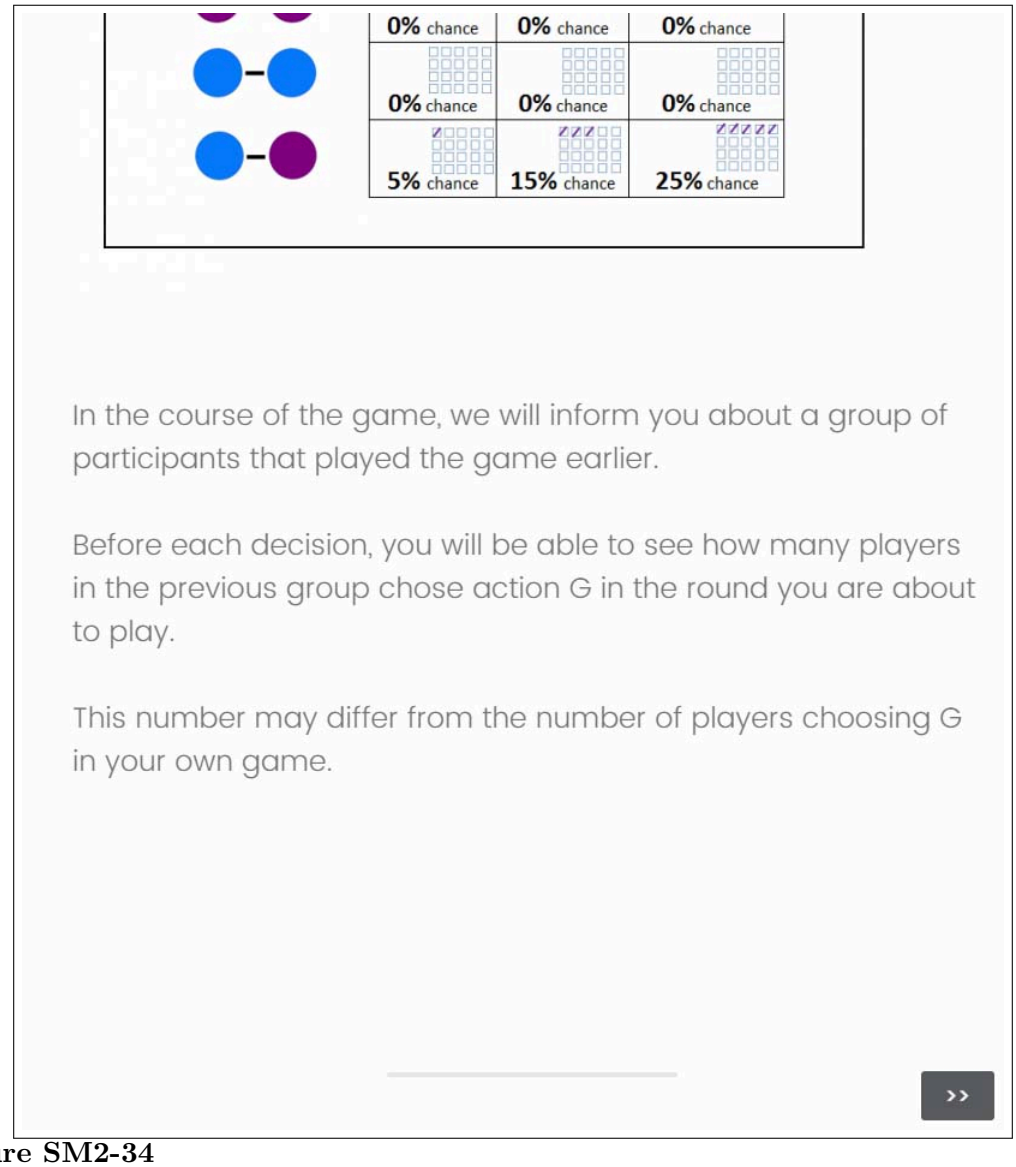


Figure SM2-34

Instructions (Descriptive norms condition, the text was shown below the standard instructions)

SM2-5.7 Rounds (control, chain reaction, and simulator condition)

[*See Figure SM2-35 and Figure SM2-36.*]

Round [*current round*]/25
Points gained so far: [*current number of points*] (+ [*points gained in previous round*])
Possible bonus: £[*current bonus*] (+£[*bonus amount gained in previous round*])
Points will be converted into bonus money after the final round (for blue players only).

Which of the two actions do you choose?

- Action G: I receive 8 points. (8)
- Action H: I receive 40 points. (40)

SM2-5.8 Screenshots: Rounds (control, chain reaction, and simulator condition)

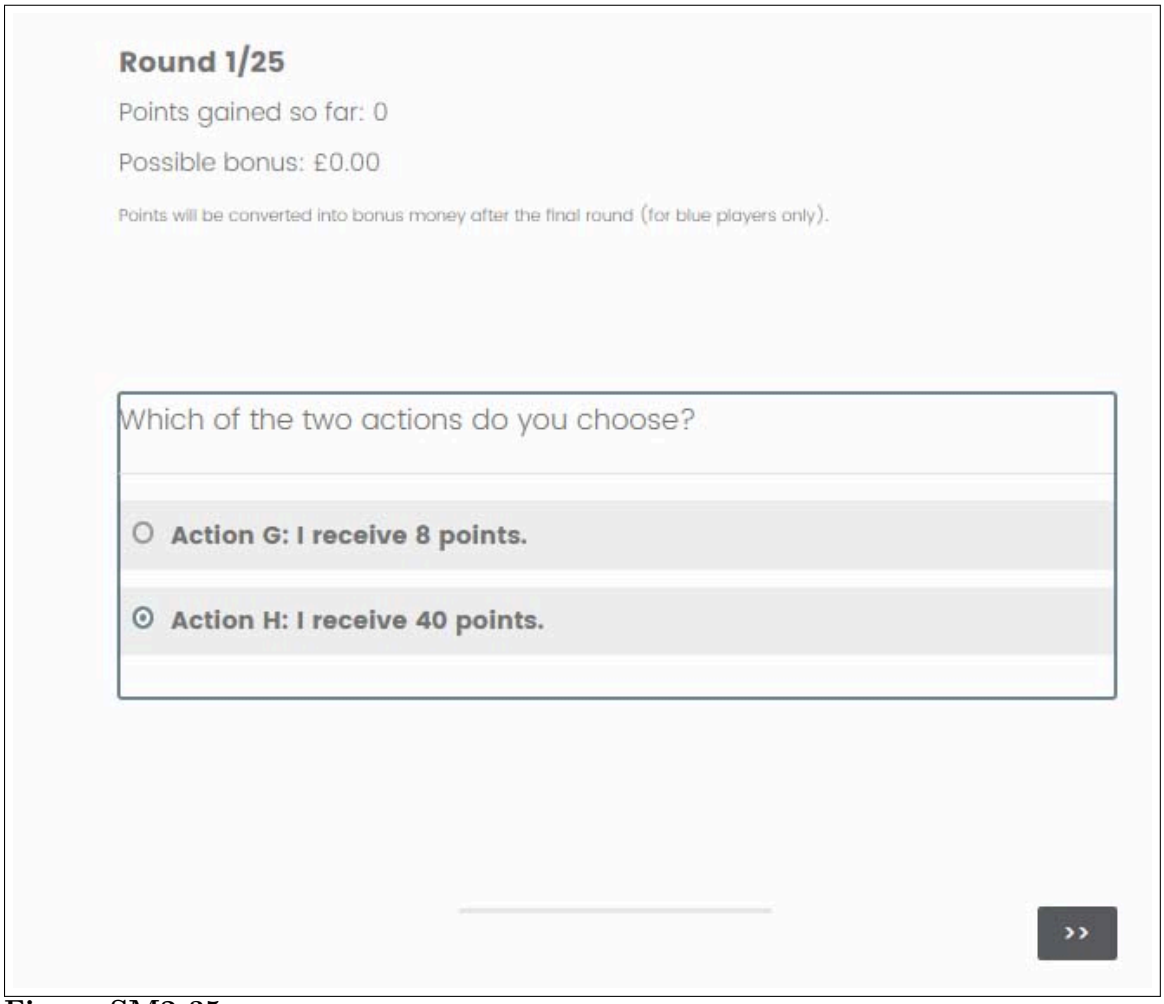


Figure SM2-35
Game round 1 (example)

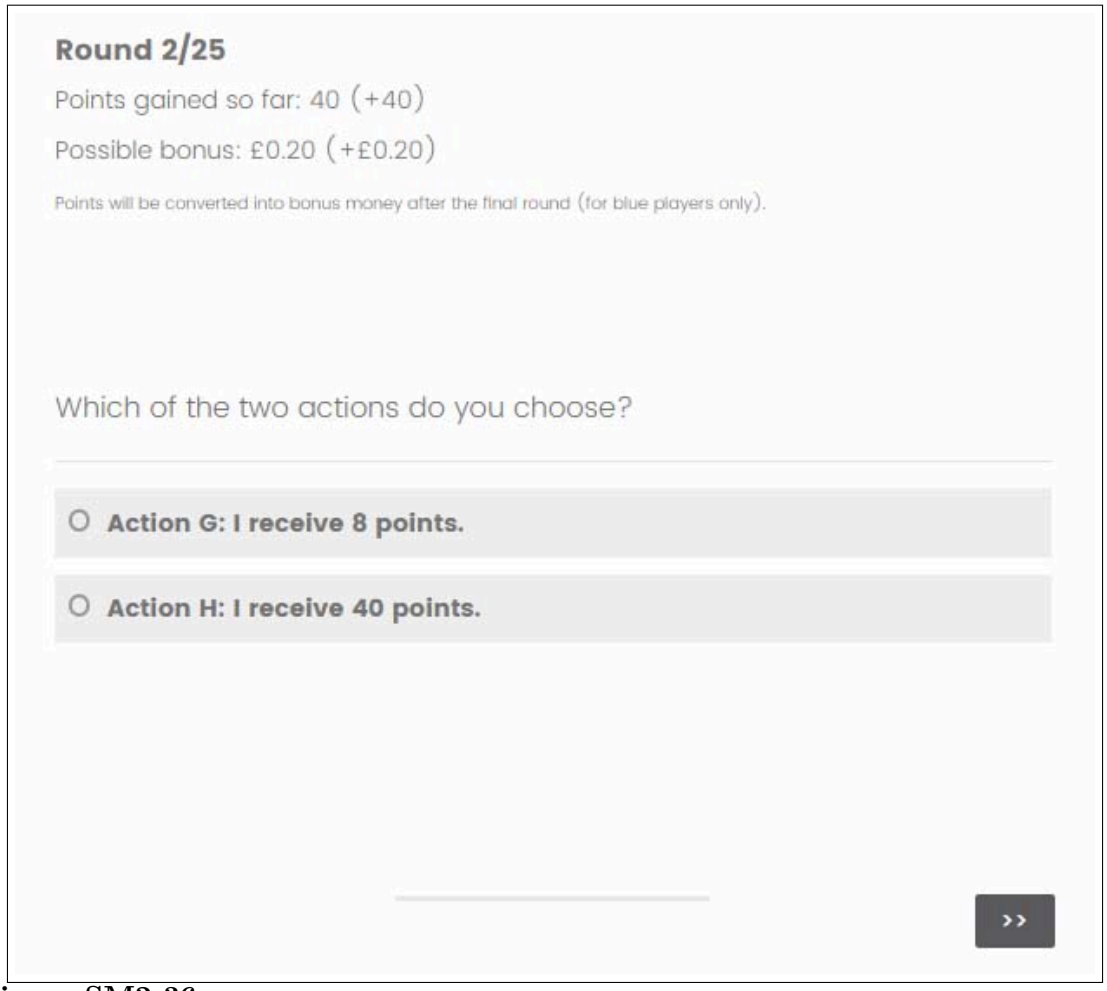


Figure SM2-36
Game round 2 (example)

SM2-5.9 Rounds (vicarious learning condition)

[*See Figure SM2-37, Figure SM2-38, and Figure SM2-39.*]

Round [*current round*]/25
Points gained so far: [*current number of points*] (+ [*points gained in previous round*])
Possible bonus: £[*current bonus*] (+£[*bonus amount gained in previous round*])
Points will be converted into bonus money after the final round (for blue players only).

[*Graph of the number of purple participants in the previous group up to before the current round.*]

Above you can see information about the previous group of participants at the same point in the game.

Which of the two actions do you choose?

- Action G: I receive 8 points. (8)
- Action H: I receive 40 points. (40)

SM2-5.10 Screenshots: Rounds (vicarious learning condition)

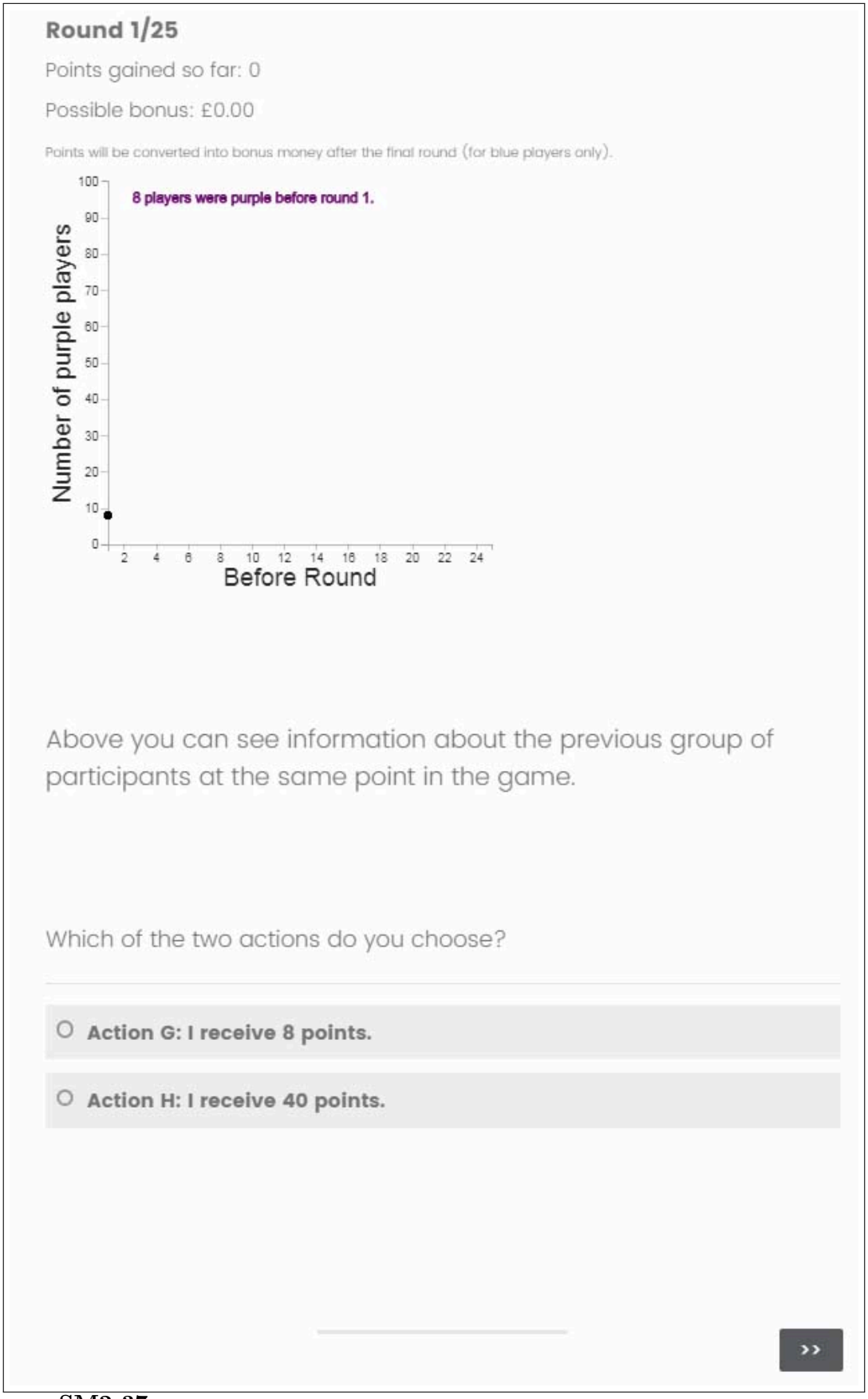


Figure SM2-37
Game round 1 (example in vicarious condition)

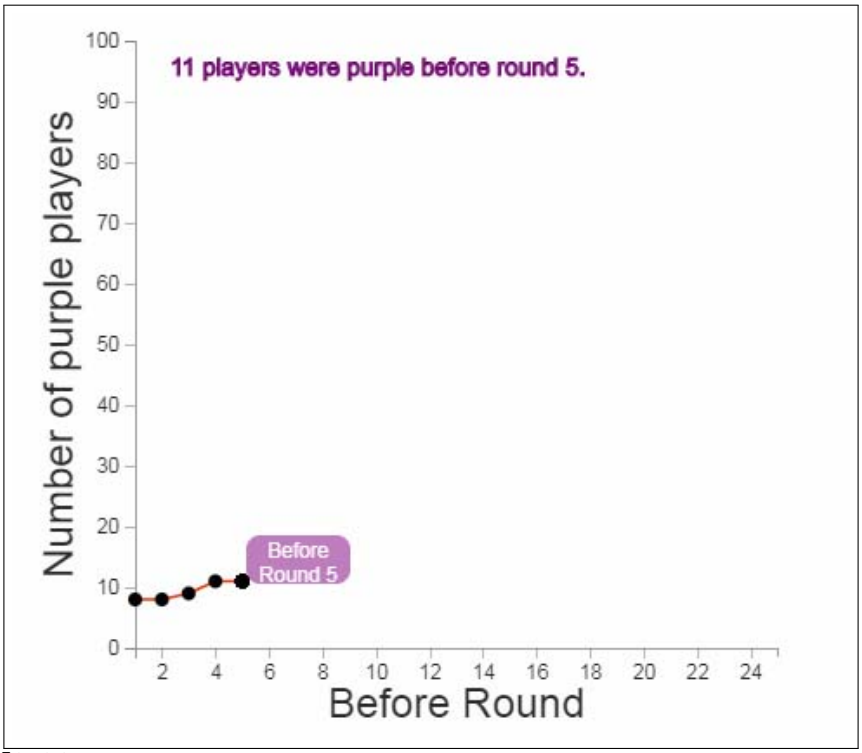


Figure SM2-38
Graph in game round 5 (example in vicarious condition with tooltip shown)

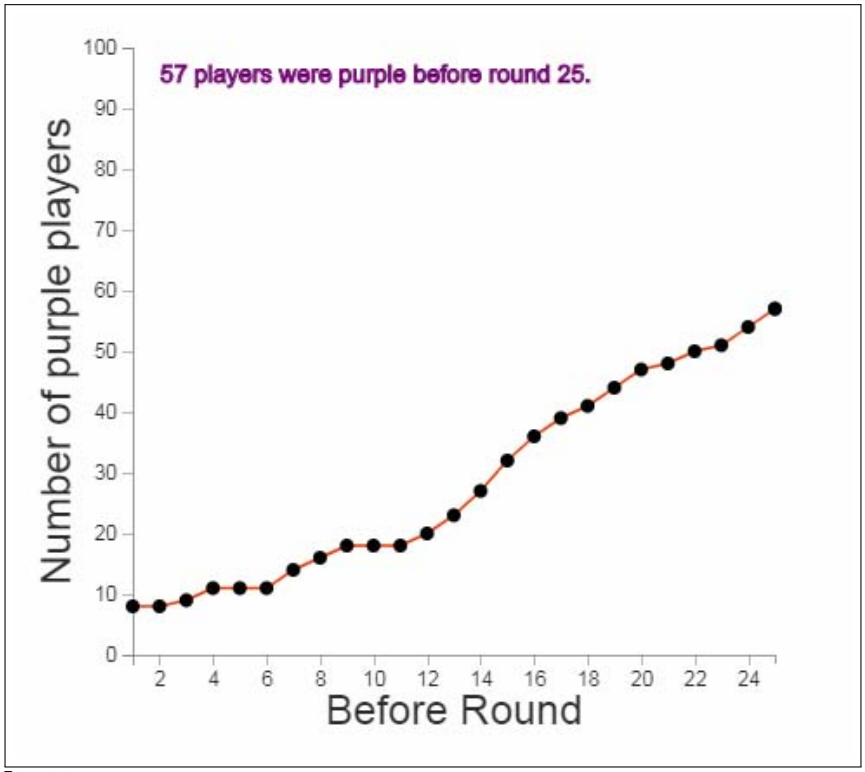


Figure SM2-39
Graph in game round 25 (example in vicarious condition)

SM2-5.11 Rounds (descriptive norms condition)

[*All participants in this condition saw the same observed numbers, see Figure SM2-40 and Figure SM2-41.*]

Round [*current round*]/25
Points gained so far: [*current number of points*] (+ [*points gained in previous round*])
Possible bonus: £[*current bonus*] (+£[*bonus amount gained in previous round*])
Points will be converted into bonus money after the final round (for blue players only).

In the previous group of participants, [*number of participants in previous group who chose G*] of 100 participants chose action G in round [*current round number*.

Which of the two actions do you choose?

- Action G: I receive 8 points. (8)
- Action H: I receive 40 points. (40)

SM2-5.12 Screenshots: Rounds (descriptive norms condition)

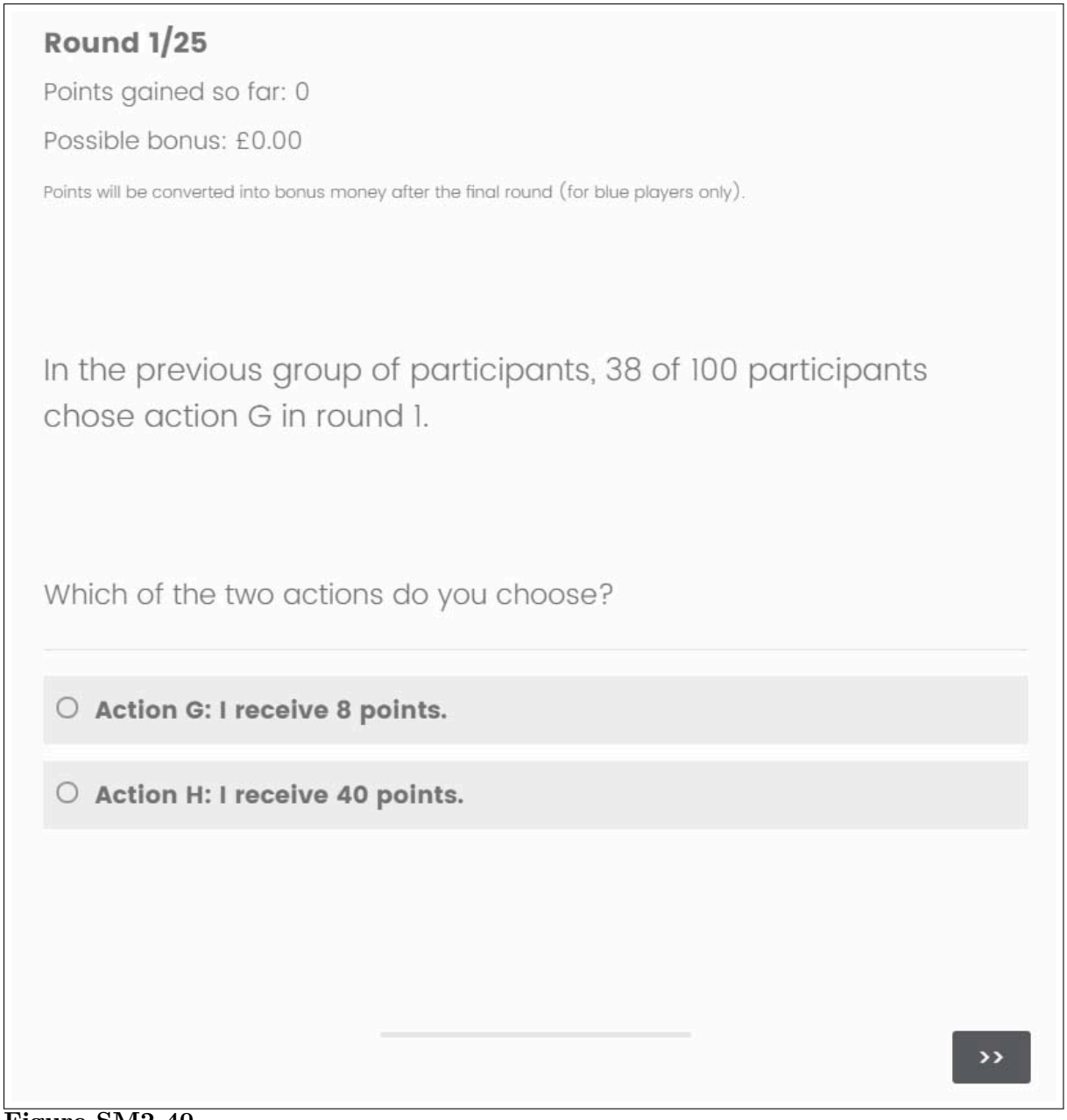


Figure SM2-40

Graph in game round 1 (example in descriptive norms condition)

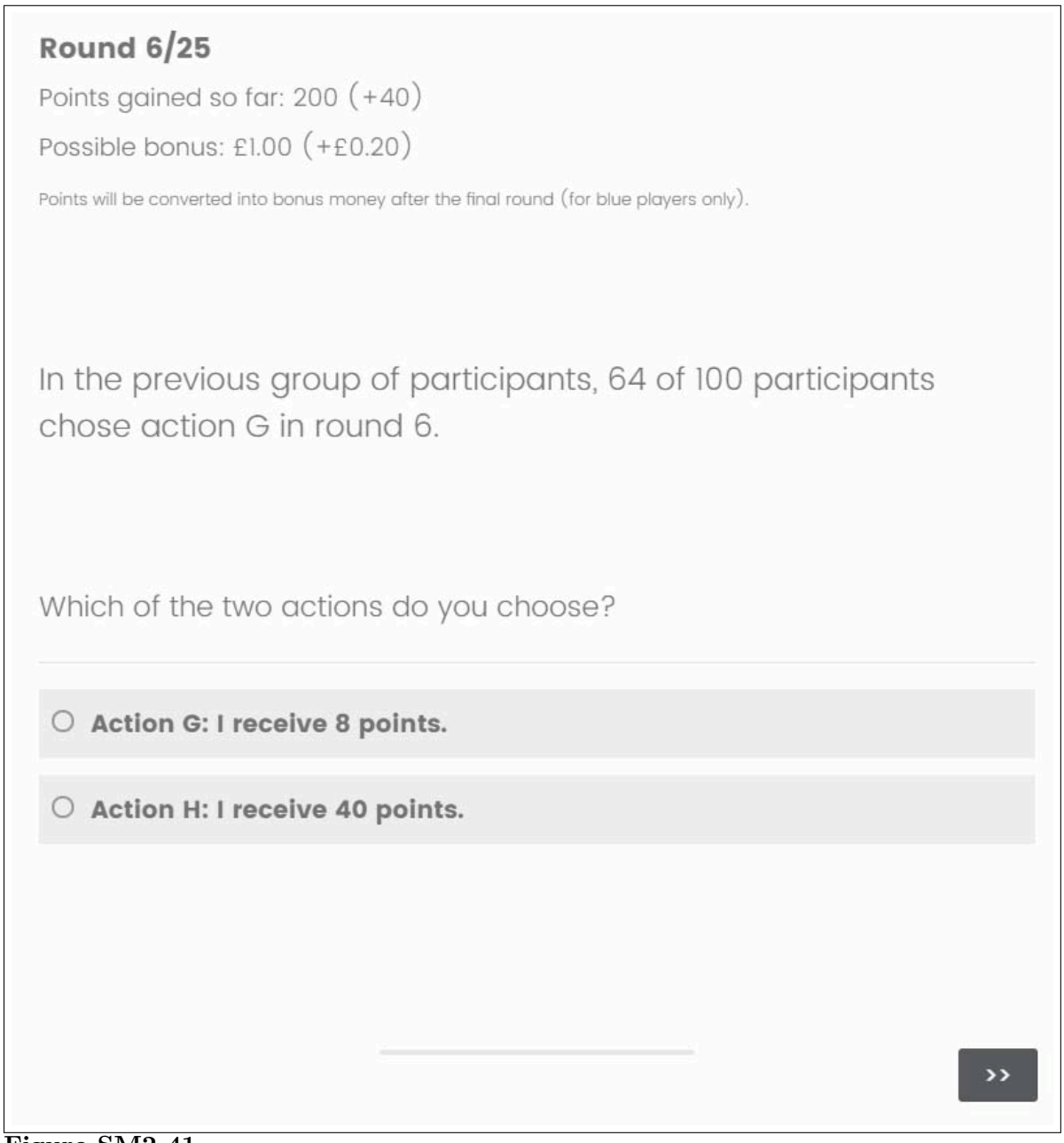


Figure SM2-41

Graph in game round 6 (example in descriptive norms condition)

SM2-5.13 Rounds (injunctive norms condition)

[*The same message was added in all rounds; see Figure SM2-42 and Figure SM2-38.*]

Round [*current round*]/25
Points gained so far: [*current number of points*] (+ [*points gained in previous round*])
Possible bonus: £[*current bonus*] (+£[*bonus amount gained in previous round*])
Points will be converted into bonus money after the final round (for blue players only).

Choose action G to protect your and other players' bonus money.

Which of the two actions do you choose?

- Action G: I receive 8 points. (8)
- Action H: I receive 40 points. (40)

SM2-5.14 Screenshots: Rounds (injunctive norms condition)

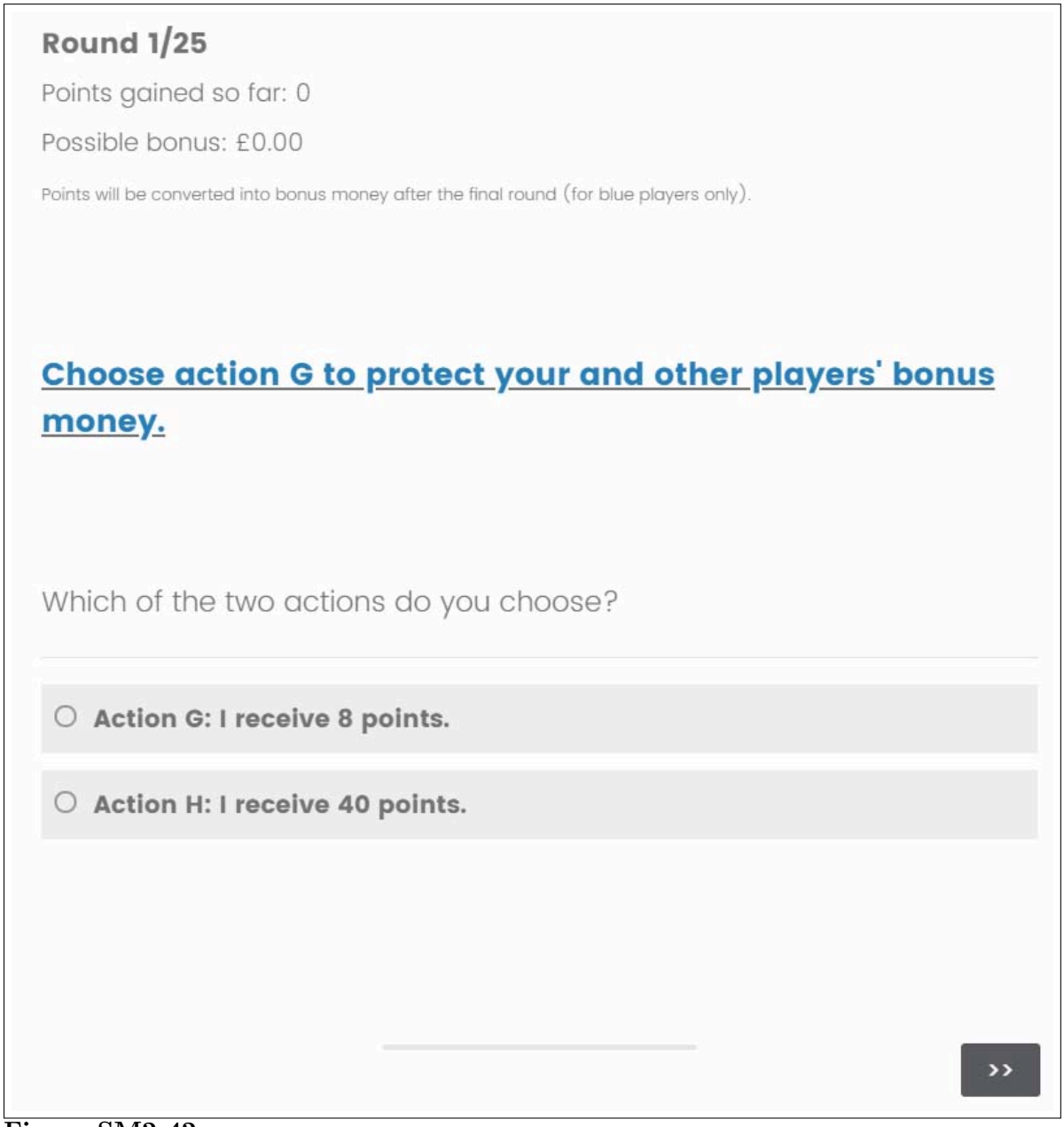


Figure SM2-42
Game round 1 (example in injunctive norms condition)

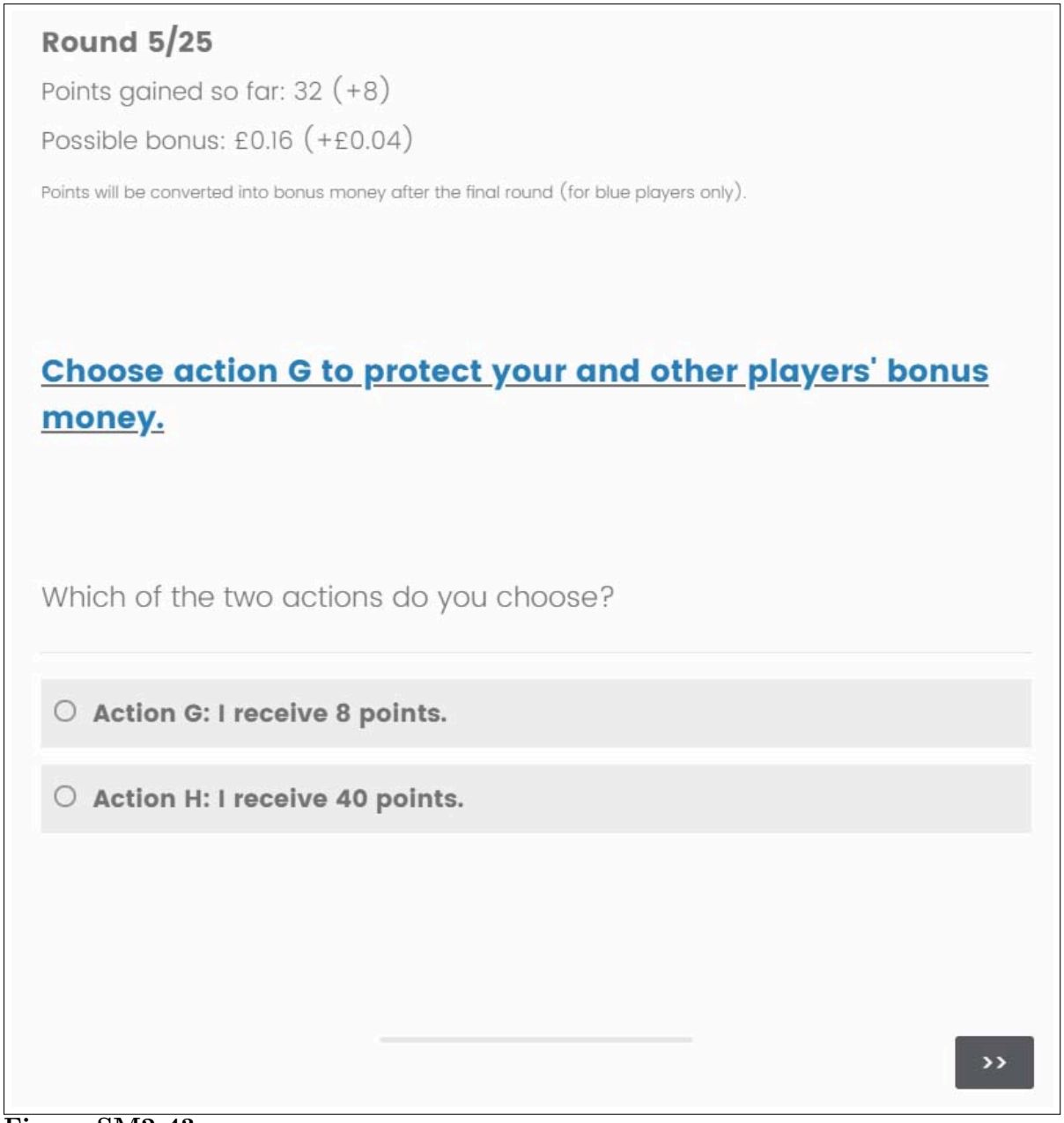


Figure SM2-43
Game round 5 (example in injunctive norms condition)

SM2-5.15 Final Results (in all conditions)

[*See Figure SM2-44.*]

End of game
Points gained: [*final number of points*]
Possible bonus: £[*final bonus amount*]
Points will be converted into bonus money (for blue players only).

SM2-5.16 Screenshots of game

Figure SM2-44
End of game (example)

SM2-6 Postquestionnaire (all conditions)

SM2-6.1 Goals

[*See Figure SM2-45.*]

Please indicate how much you agree or disagree with the following statements. [Each question is answered on a five-point scale with the following labels: Strongly disagree (0) — Disagree (1) — Neither agree nor disagree (2) — Agree (3) — Strongly agree (4)]

- I wanted to make as much bonus money as possible.
- I wanted to make more bonus money than other players.
- I felt responsible for other players.

- I wanted to make other players switch color.
- I was afraid to switch color in this game.
- I tried to anticipate what others were doing in this game.
- I followed my gut in this game.
- I wanted to take some risk in this game.
- I wanted to protect others in this game.
- I did not care at all what happened in this game.
- I wanted that the entire group receives as much money as possible.

SM2-6.2 Expectations: own color

[*See Figure SM2-46.*]

What do you think: How likely is it that your final color is purple?
Please enter a value between 0 (no chance) and 100 (certain that you are purple).
[*text entry box*]

SM2-6.3 Hypothetical messages

[*See Figure SM2-47.*]

What would you say to other participants who chose option G (8 points) most of the time?
[*text entry box: minimum of 5 characters*]

What would you say to other participants who chose option H (40 points) most of the time?
[*text entry box: minimum of 5 characters*]

SM2-6.4 Expectations: all players

[*See Figure SM2-48 and Figure SM2-49.*]

How many players in your group do you think were purple in each of the following rounds?
[For each number the question is answered on a slider with values from 0 to 100]

- After round 1
- After round 5
- After round 10

- After round 15
- After round 20
- After round 25

[*page break*]

How many players in your group do you think chose action H (40 points) in each of the following rounds? [For each number the question is answered on a slider with values from 0 to 100]

- In round 1
- In round 5
- In round 10
- In round 15
- In round 20
- In round 25

SM2-6.5 Screenshots Postquestionnaire (first, common part)

Figure SM2-45
Postquestionnaire Page 1

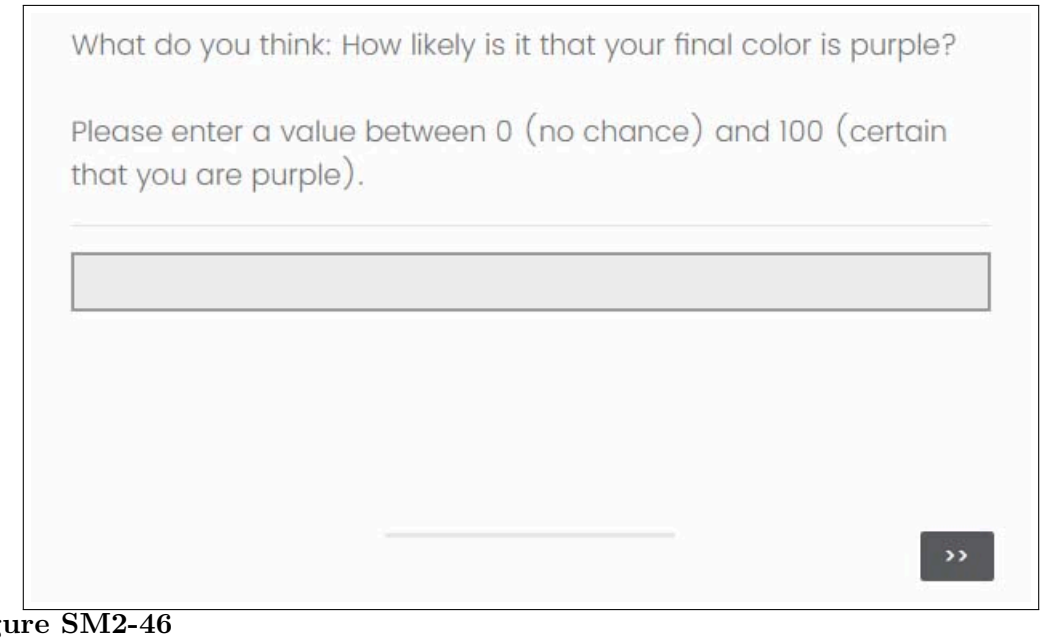


Figure SM2-46
Postquestionnaire Page 2

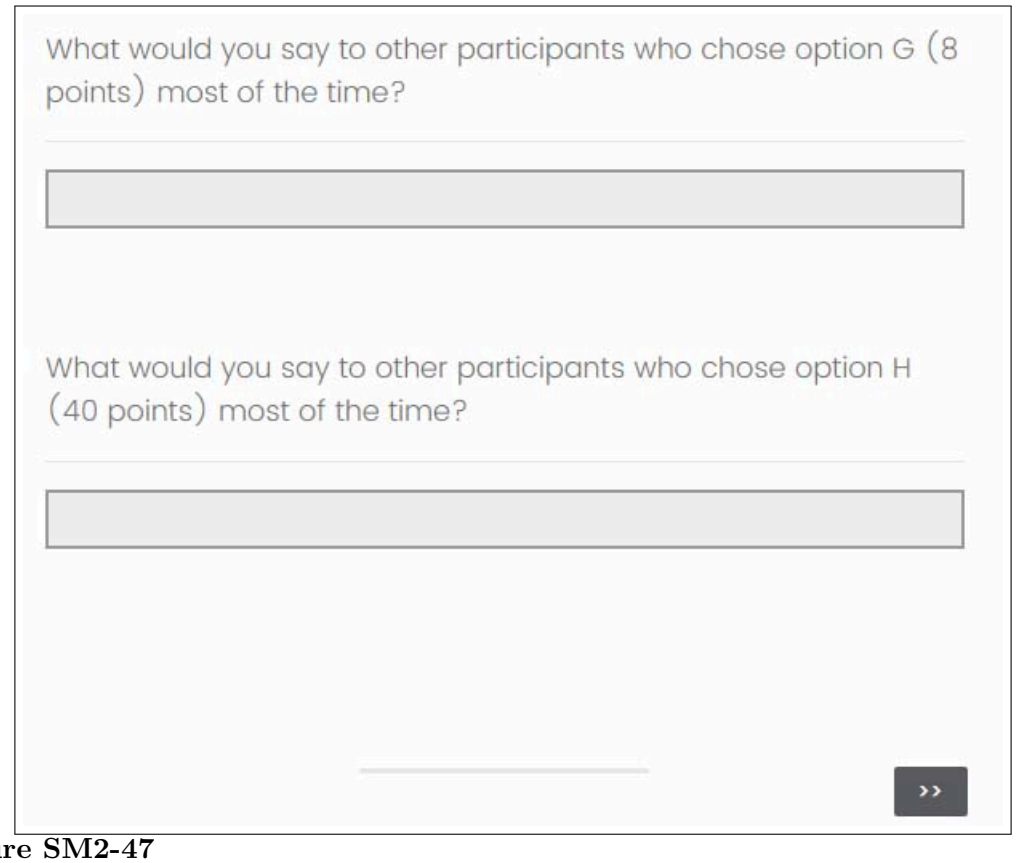


Figure SM2-47
Postquestionnaire Page 3

Figure SM2-48
Postquestionnaire Page 4

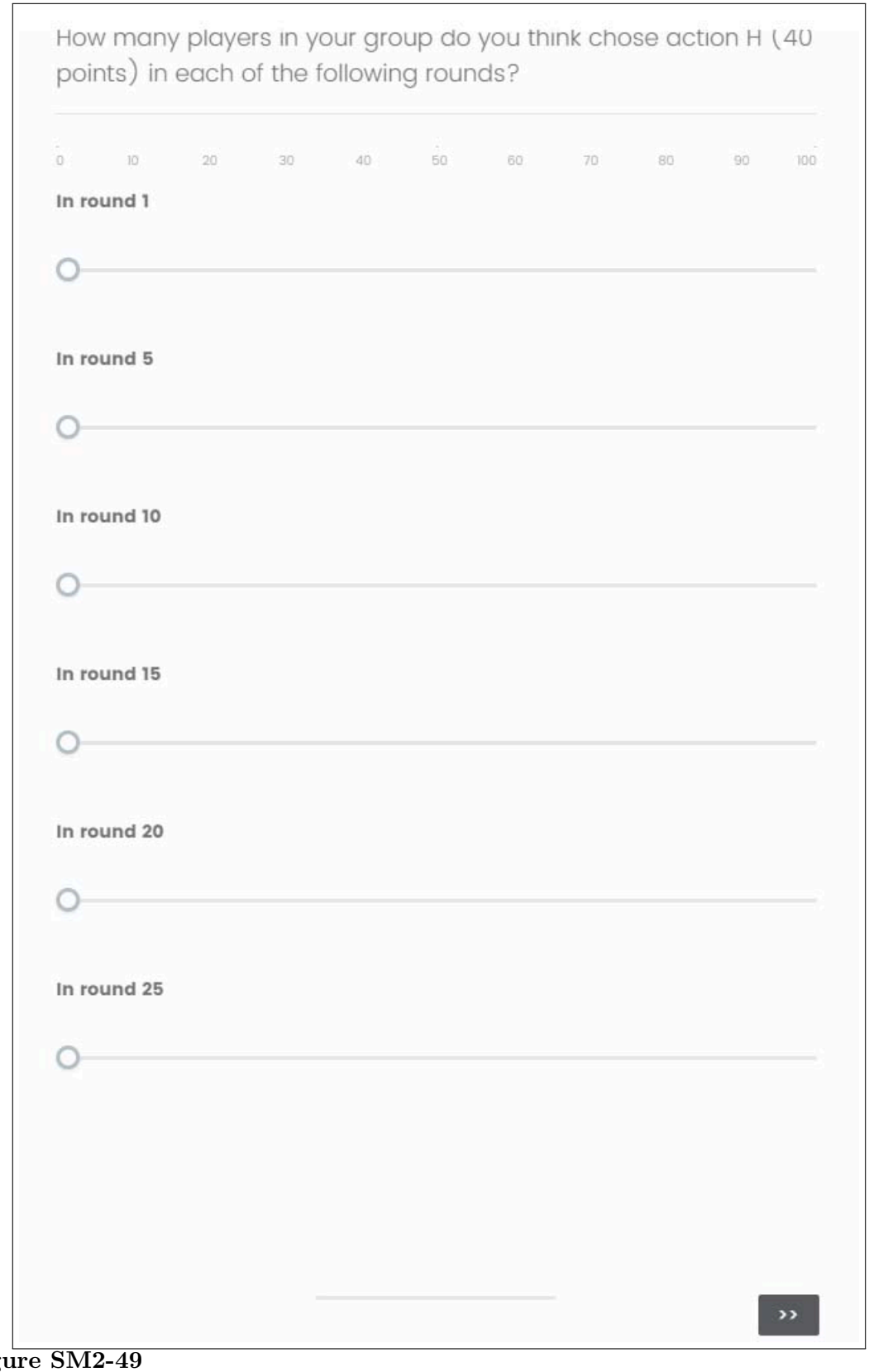


Figure SM2-49
Postquestionnaire Page 5

SM2-7 Condition-specific postquestionnaires

SM2-7.1 Vicarious learning condition

During the game, we informed you about the number of purple participants in a previous group of participants.

Regarding this information, please indicate how much you agree or disagree with the following statements.

[Each item is presented in a matrix and answered on a six-point scale with the following labels: Strongly disagree—Disagree —Slightly disagree—Slightly agree—Agree—Strongly agree]

- I liked the information.
- The information was easy to understand.
- The information influenced my decisions in the game.
- The information was a waste of my time.
- I would have chosen action H (40 points) more often, if I had not received this information.
- I would have chosen action H (40 points) less often, if I had not received this information.

Please add any comments you have regarding the information about previous purple players.
[*text entry box*]

SM2-7.2 Injunctive norms condition

Before the game, we explained some relationships and summarized them in a simple message:

Choose action G to protect your and other players' bonus money.

Regarding this message, please indicate how much you agree or disagree with the following statements.

[Each item is presented in a matrix and answered on a six-point scale with the following labels: Strongly disagree—Disagree —Slightly disagree—Slightly agree—Agree—Strongly agree]

- I liked the message.
- The message was easy to understand.

- The message influenced my decisions in the game.
- The message was a waste of my time.
- I would have chosen action H (40 points) more often, if I had not received this message.
- I would have chosen action H (40 points) less often, if I had not received this message.

Please add any comments you have regarding the message.
[*text entry box*]

SM2-7.3 Descriptive norms condition

During the game, we informed you about the choices of a previous group of participants.

Regarding this information, please indicate how much you agree or disagree with the following statements.

[Each item is presented in a matrix and answered on a six-point scale with the following labels: Strongly disagree—Disagree —Slightly disagree—Slightly agree—Agree—Strongly agree]

- I liked the information.
- The information was easy to understand.
- The information influenced my decisions in the game.
- The information was a waste of my time.
- I would have chosen action H (40 points) more often, if I had not received this information.
- I would have chosen action H (40 points) less often, if I had not received this information.

Please add any comments you have regarding the information about previous choices.
[*text entry box*]

SM2-7.4 Chain reaction condition

[*See Figure SM2-50.*]

Before starting the game, we showed you possible chain reactions of color changes using a number of illustrations.

Regarding this demonstration, please indicate how much you agree or disagree with the following statements.

[Each item is presented in a matrix and answered on a six-point scale with the following labels: Strongly disagree—Disagree —Slightly disagree—Slightly agree—Agree—Strongly agree]

- I liked the demonstration.
- The demonstration was easy to understand.
- The simulator influenced my decisions in the game.
- The simulator was a waste of my time.
- I would have chosen action H (40 points) more often, if I had not played around with the simulator.
- I would have chosen action H (40 points) less often, if I had not played around with the simulator.

Please add any comments you have regarding the simulator.
[*text entry box*]

SM2-7.5 Simulator condition

[*See Figure SM2-51.*]
Before starting the game, we gave you the chance to explore how the game could play out using a simulator.

Regarding this simulator, please indicate how much you agree or disagree with the following statements.

[Each item is presented in a matrix and answered on a six-point scale with the following labels: Strongly disagree—Disagree —Slightly disagree—Slightly agree—Agree—Strongly agree]

- I liked the simulator.
- The simulator was easy to understand.
- The simulator was easy to use.
- The demonstration influenced my decisions in the game.
- The demonstration was a waste of my time.
- I would have chosen action H (40 points) more often, if I had not seen the demonstration.

- I would have chosen action H (40 points) less often, if I had not seen the demonstration.

Please add any comments you have regarding the simulator.
[*text entry box*]

SM2-8 Screenshots (examples): Condition-specific postquestionnaires

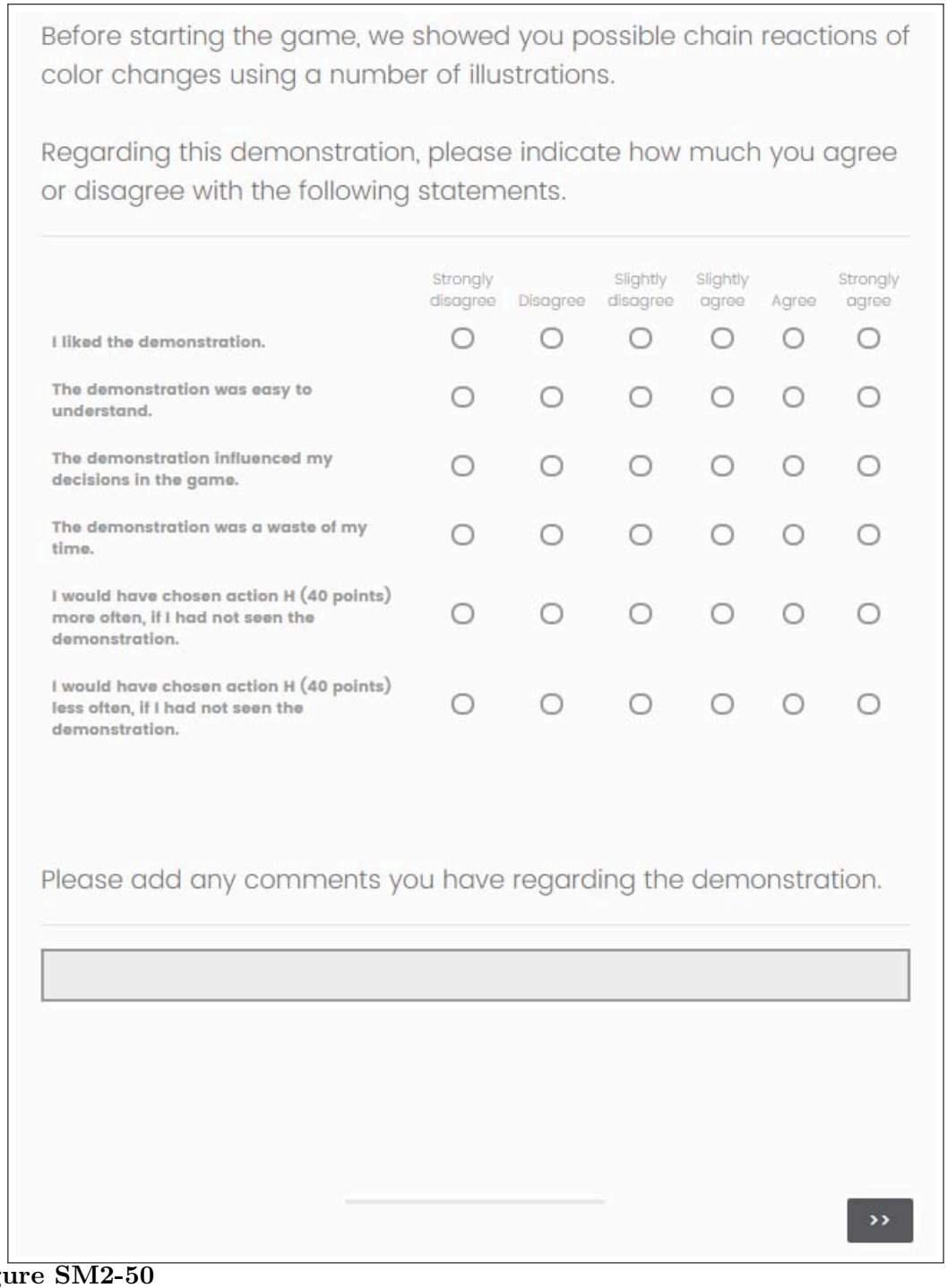


Figure SM2-50

Specific postquestionnaire in chain reaction condition

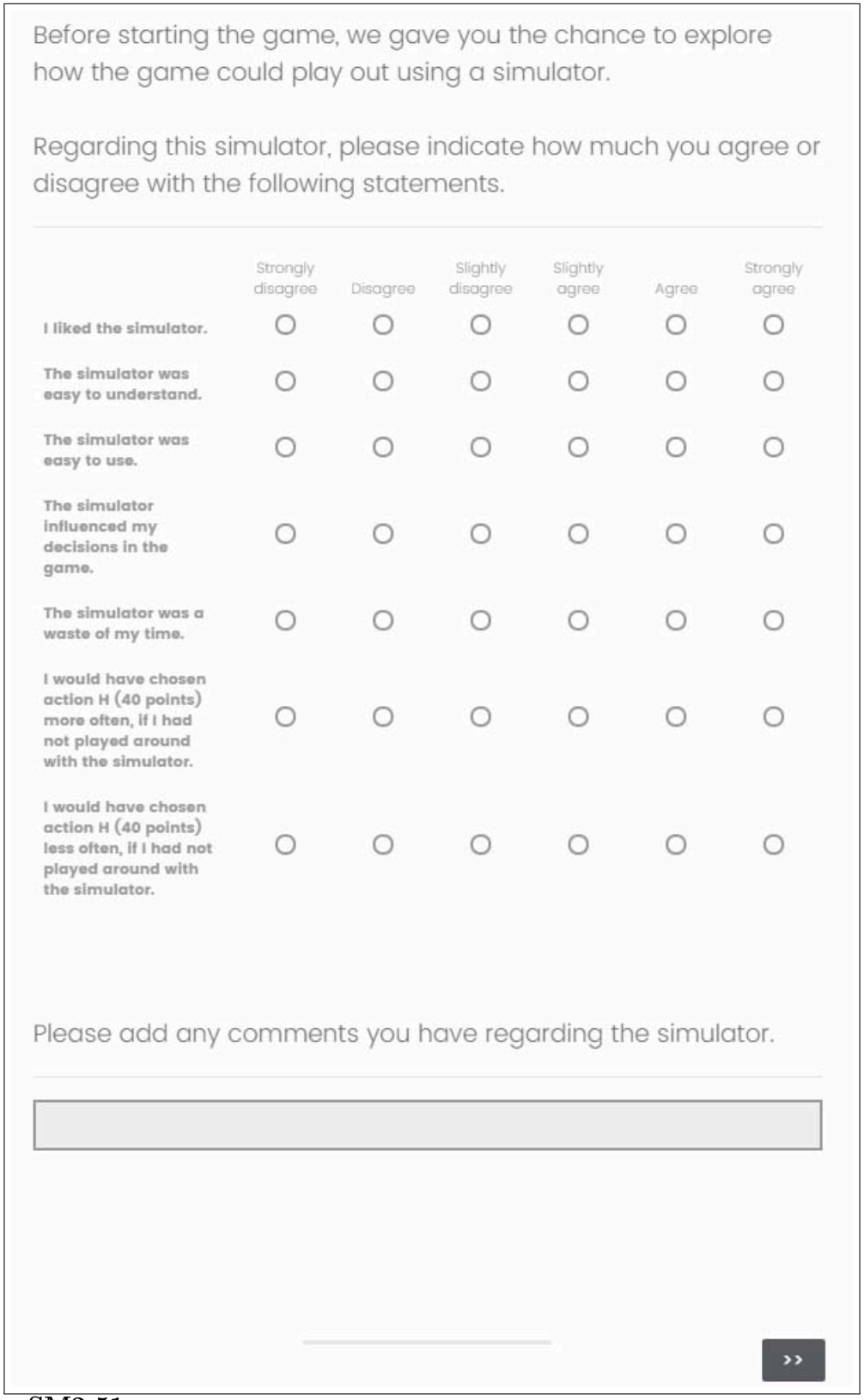


Figure SM2-51

Specific postquestionnaire in the simulator condition

SM2-9 Final postquestionnaire element (in all conditions)

[*See Figure SM2-52.*]

Is there anything you have experienced that this game reminds you of? (if yes, please briefly explain)
[*text entry box*]

Do you have any other comments regarding this game, your experience playing it, or any other aspect related to it?

SM2-9.1 Screenshot: Final postquestionnaire element (in all conditions)

[*text entry box*]

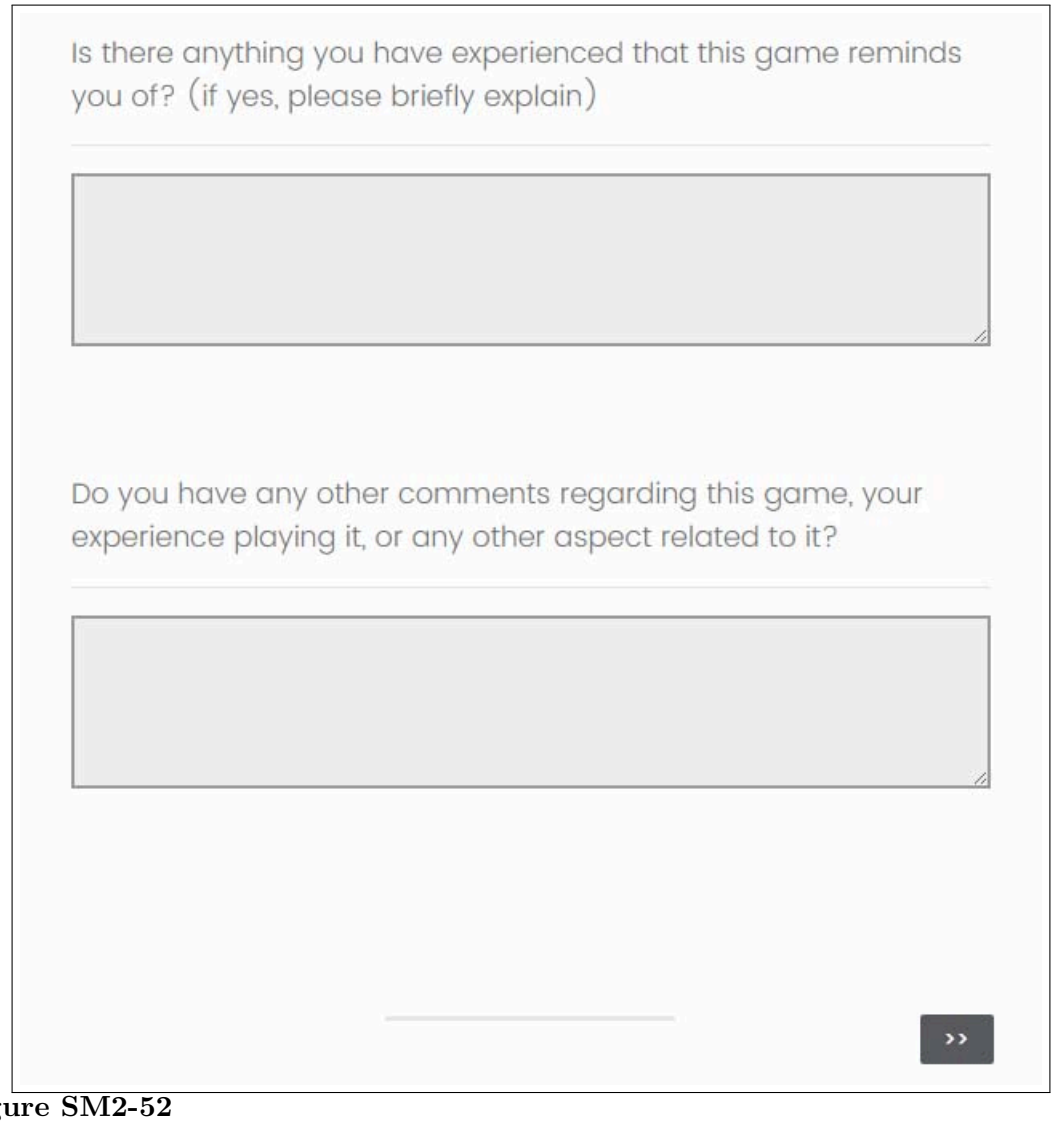


Figure SM2-52
Postquestionnaire Page 7

SM2-10 CRT1

[*See Figure SM2-53.*]

A golden bat and a golden ball cost $5,000 in total.
The bat costs $4,000 more than the ball.
How much does the golden ball cost?

[The first seven responses were shown in randomized order]

- $1,000
- $500
- $750
- 5 cents
- 10 cents
- $250
- $2,000
- None of the above

SM2-10.1 Screenshot of calculation block 1

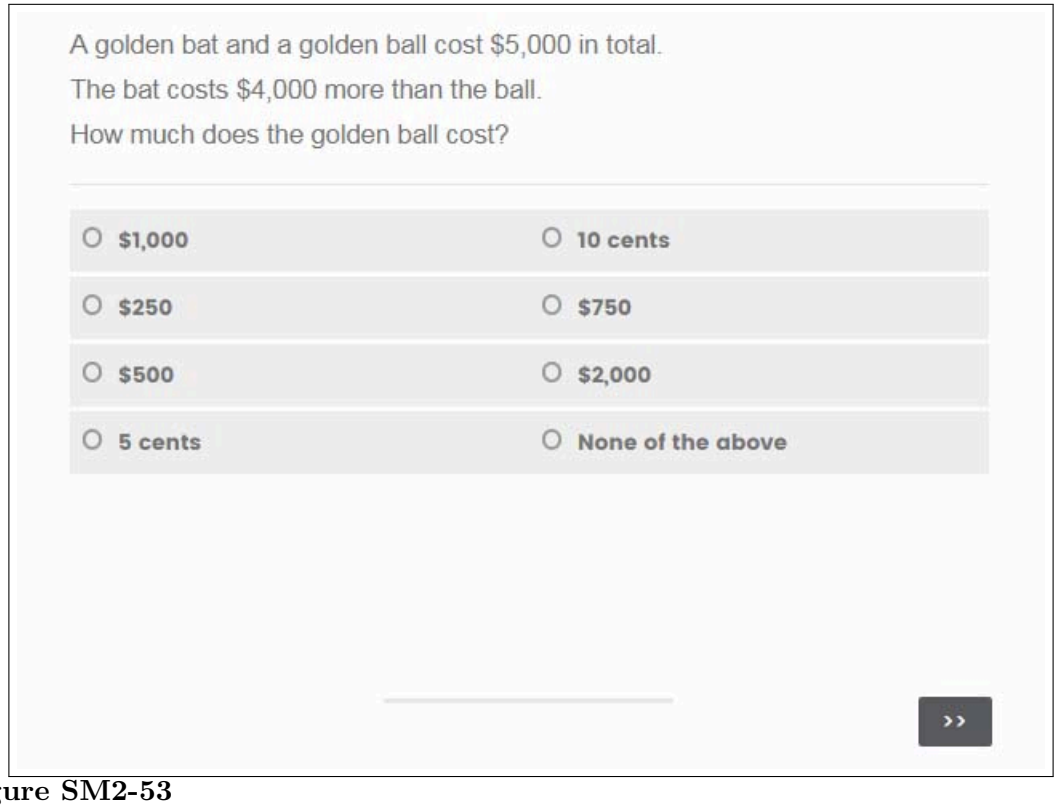


Figure SM2-53
Calculation block 1: CRT1

SM2-11 HEXCACO scales

[*Two of the scales (H and E) are taken from the HEXACO-60, the remainder (X, A, C, and O) are taken from the HEXACO-BHI.*]

SM2-11.1 Items and scale—Page 1/3

[*See Figure SM2-54.*]

Please read each statement and decide how much you agree or disagree with that statement.
Please answer every statement, even if you are not completely sure of your response.

[Statements are presented in a matrix block. Responses are given on a five-point scale with the following labels: 1-strongly disagree—2-disagree—3-neutral (neither agree nor disagree)—4-agree—5-strongly agree]

- I wouldn't use flattery to get a raise or promotion at work, even if I thought it would succeed. (H+)
- I would feel afraid if I had to travel in bad weather conditions. (E+)
- I can look at a painting for a long time. (O+)
- I think that I am entitled to more respect than the average person is. (H-)
- I sometimes can't help worrying about little things. (E+)
- I make sure that things are in the right spot. (C+)
- I would get a lot of pleasure from owning expensive luxury goods. (H-)
- When I suffer from a painful experience, I need someone to make me feel comfortable. (E+)
- I remain unfriendly to someone who was mean to me. (A-)
- I'd be tempted to use counterfeit money, if I were sure I could get away with it. (H-)
- I feel like crying when I see other people crying. (E+)
- I am seldom cheerful. (X-)

SM2-11.2 Items and scale—Page 2/3

Please read each statement and decide how much you agree or disagree with that statement.
Please answer every statement, even if you are not completely sure of your response.

[Statements are presented in a matrix block. Responses are given on a five-point scale with the following labels: 1-strongly disagree—2-disagree—3-neutral (neither agree nor disagree)—4-agree—5-strongly agree]

- Nobody likes talking with me. (X-)
- If I want something from someone, I will laugh at that person's worst jokes. (H+)
- When it comes to physical danger, I am very fearful. (E+)
- I think science is boring. (O-)
- I want people to know that I am an important person of high status. (H-)
- I easily approach strangers. (X+)

- I postpone complicated tasks as long as possible. (C-)
- Having a lot of money is not especially important to me. (H+)
- I worry a lot less than most people do. (E-)
- I often express criticism. (A-)
- I often do things without really thinking. (C-)
- Even when Im treated badly, I remain calm. (A+)

SM2-11.3 Items and scale—Page 3/3

Please read each statement and decide how much you agree or disagree with that statement.
Please answer every statement, even if you are not completely sure of your response.

[Statements are presented in a matrix block. Responses are given on a five-point scale with the following labels: 1-strongly disagree—2-disagree—3-neutral (neither agree nor disagree)—4-agree—5-strongly agree]

- I would never accept a bribe, even if it were very large. (H+)
- I can handle difficult situations without needing emotional support from anyone else. (E-)
- I have a lot of imagination. (O+)
- I wouldn't pretend to like someone just to get that person to do favors for me. (H+)
- I feel strong emotions when someone close to me is going away for a long time. (E+)
- I work very precisely. (C+)
- If I knew that I could never get caught, I would be willing to steal a million dollars. (H-)
- Even in an emergency I wouldn't feel like panicking. (E-)
- I tend to quickly agree with others. (A+)
- I like to talk with others. (X+)
- I like people with strange ideas. (O+)
- I remain unemotional even in situations where most people get very sentimental. (E-)

SM2-11.4 Screenshot HEXACO scales (page 1)

Figure SM2-54
HEXACO scales: Page 1 (Example)

SM2-12 CRT 2

If it takes 10 machines 10 minutes to make 10 widgets, how long would it take 1,000 machines to make 1,000 widgets?

- 10 minutes
- 1,000 minutes
- 100 minutes
- 1 minute
- 5 minutes
- None of the above

[*The first five options were presented in a random order.*]

SM2-13 General risk taking item

[*See Figure SM2-55.*]

Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks? Please choose an option on the scale, where the value 0 means: not at all willing to take risks and the value 10 means: very willing to take risks.

- 0 - not at all willing to take risks
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 - very willing to take risks

SM2-13.1 Screenshot

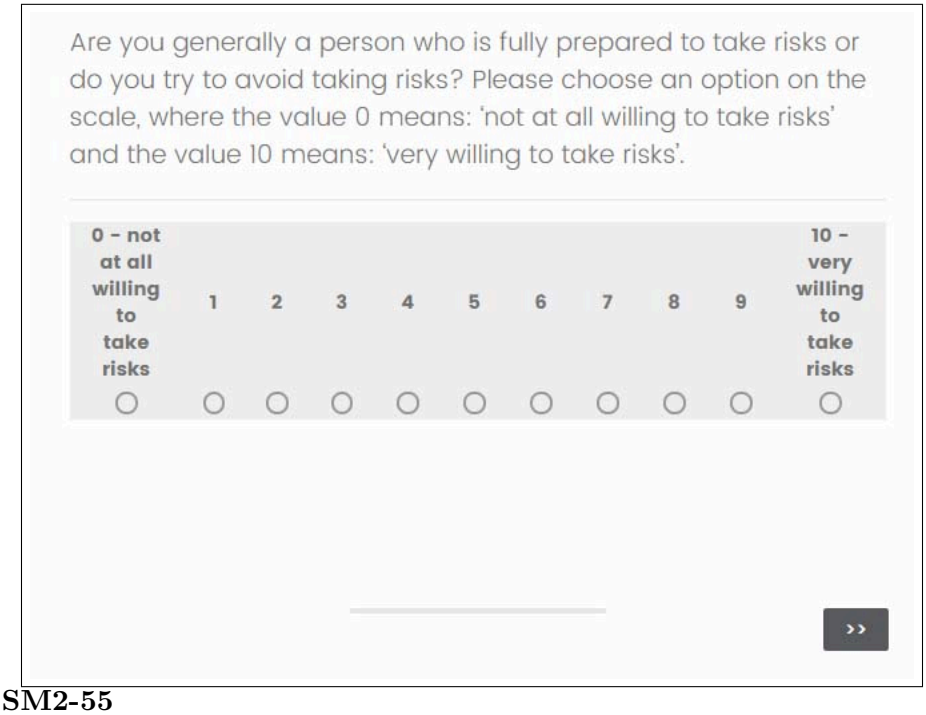


Figure SM2-55
General risk taking item

SM2-14 Trust and time preference

[*Both items' presentation was similar to the presentation of the risk item.*]

SM2-14.1 Trust item

How well does the following statement describe you as a person?

- 0 - Does not describe me at all
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 - Describes me perfectly

SM2-14.2 Time preference item

How willing are you to give up something that is beneficial for you today in order to benefit more from that in the future? Please indicate your answer on a scale from 0 (completely unwilling to do so,) to 10 ("very willing to do so.).

- 0 - Completely unwilling to do so
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 - Very willing to do so

SM2-15 Social value orientation: Slider scale

SM2-15.1 Instructions

In this task, imagine a situation in which you have been randomly paired with another person, whom we will refer to as the other. This other person is someone you do not know and would remain mutually anonymous. All of your choices would be completely confidential. All numbers in this task refer to imagined outcomes in dollar (55 in the example below refers to 55$). Note that this is the only task with imaginary outcomes.

You will be making a series of decisions about allocating resources between you and this other person. For each of the following questions, please indicate the distribution you prefer most in the situation by clicking on the rectangle with your preferred payoff allocations. You can only make one selection for each question. Your decisions will yield money for both yourself and the other person. In the example below, a person has chosen to distribute the payoff so that he/she receives 50 dollars, while the anonymous other person receives 40 dollars.

[*Image with an example*]

SM2-15.2 Items

SM2-15.2.1 Item 1/6

Decision 1/6: There are no right or wrong answers, this is all about personal preferences.
After you have made your decision, select the resulting distribution of money by clicking on the respective rectangle.
As you can see, your choices will influence both the amount of money you receive as well as the amount of money the other receives.

[*Options are presented in boxes with radio buttons. In each box a blue number at the top represents the decision maker's outcome, an orange number at the bottom represents the other person's outcome (as indicated by a label to the left of the boxes: "You Receive —- Other Receives". Below these box contents are represented as two numbers (other—self), such as 50—40 (50 for the other, 40 for the decision maker). Each item is presented on its own page.*]

- 85—85
- 76—85
- 68—85
- 59—85
- 50—85
- 41—85
- 33—85
- 24—85
- 15—85

SM2-15.2.2 Item 2/6

Decision 2/6: There are no right or wrong answers, this is all about personal preferences.
After you have made your decision, select the resulting distribution of money by clicking on the respective rectangle.
As you can see, your choices will influence both the amount of money you receive as well as the amount of money the other receives.

- 15—85

- 19—87
- 24—89
- 28—91
- 33—93
- 37—94
- 41—96
- 46—98
- 50—100

SM2-15.2.3 Item 3/6

Decision 3/6: There are no right or wrong answers, this is all about personal preferences.
After you have made your decision, select the resulting distribution of money by clicking on the respective rectangle.
As you can see, your choices will influence both the amount of money you receive as well as the amount of money the other receives.

- 100—50
- 98—54
- 96—59
- 94—63
- 93—68
- 91—72
- 89—76
- 87—81
- 85—85

SM2-15.2.4 Item 4/6

Decision 4/6: There are no right or wrong answers, this is all about personal preferences.
After you have made your decision, select the resulting distribution of money by clicking on the respective rectangle.
As you can see, your choices will influence both the amount of money you receive as well as the amount of money the other receives.

- 100—50
- 89—54
- 79—59
- 68—63
- 58—68
- 47—72
- 36—76
- 26—81
- 15—85

SM2-15.2.5 Item 5/6

Decision 5/6: There are no right or wrong answers, this is all about personal preferences.
After you have made your decision, select the resulting distribution of money by clicking on the respective rectangle.
As you can see, your choices will influence both the amount of money you receive as well as the amount of money the other receives.

- 50—100
- 56—94
- 63—88
- 69—81
- 75—75
- 81—69

- 88—63
- 94—56
- 100—50

SM2-15.2.6 Item 6/6

Decision 6/6: There are no right or wrong answers, this is all about personal preferences.
After you have made your decision, select the resulting distribution of money by clicking on the respective rectangle.
As you can see, your choices will influence both the amount of money you receive as well as the amount of money the other receives.

- 50—100
- 54—98
- 59—96
- 63—94
- 68—93
- 72—91
- 76—89
- 81—87
- 85—85

SM2-15.3 Screenshots

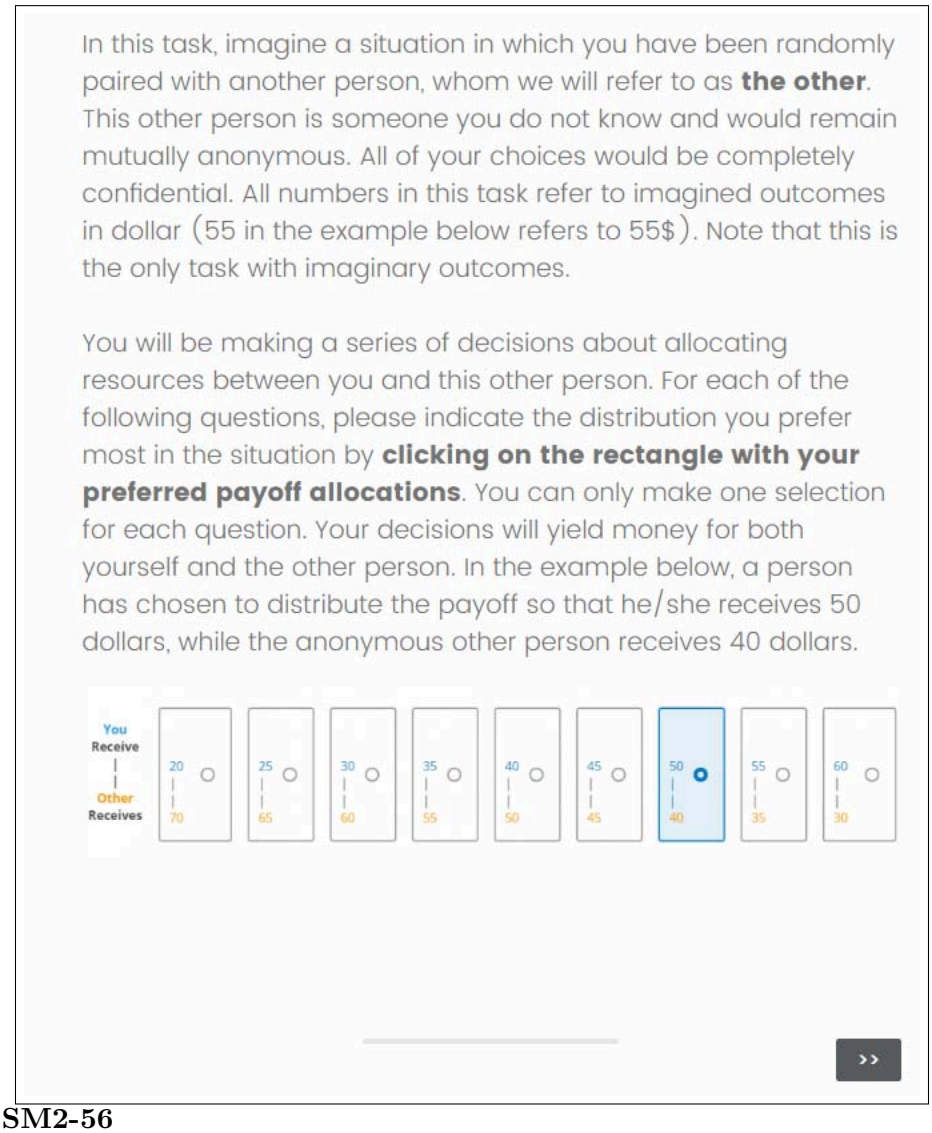


Figure SM2-56
SVO slider scale (instructions)

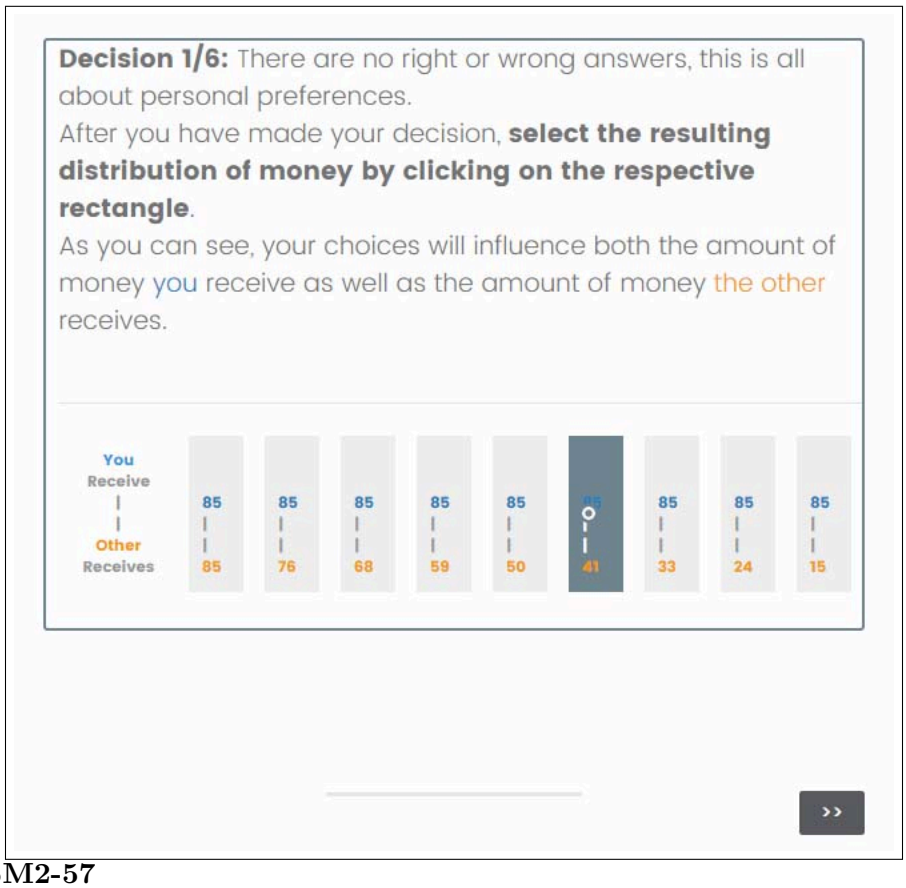


Figure SM2-57
SVO slider scale (item 1)

SM2-16 CRT 3

In a lake, there is a patch of lily pads.
Every day, the patch doubles in size.
If it takes 40 days for the patch to cover the entire lake, how long would it take for the patch to cover a quarter of the lake?

- 39 days
- 38 days
- 20 days
- 10 days
- 47 days
- 24 days
- None of the above

[*The first six options were presented in a random order.*]

SM2-17 Social and economic conservatism scale

How positive or negative do you feel about each issue on the scale of -100 to 100, where 0 represents very negative, and 100 represents very positive?

[*Responses are given on slider scales from very negative (-100) to very positive (+100).*]

- Right to abortion
- Welfare benefits
- Limited government
- Military and national security
- Religion
- Gun ownership
- Traditional marriage
- Traditional values
- Fiscal responsibility
- Business
- The family unit
- Patriotism

[*The twelve issues were presented in a random order. The original item "abortion" was changed to "right to abortion" to clarify what was to be evaluated.*]

SM2-17.1 Screenshot

Figure SM2-58
Social and economic conservatism scale

SM2-18 Psychological reactance scale

SM2-18.1 Page 1/2

Please read each statement and decide how much you agree or disagree with that statement.
Please answer every statement, even if you are not completely sure of your response.

[*Items were presented in a matrix and answered on a five-point scale: strongly disagree (1) —(2) — neither agree nor disagree (3) —(4)—strongly agree (5)*]

- 1. Regulations trigger a sense of resistance in me.
- 2. I find contradicting others stimulating.
- 3. When something is prohibited, I usually think "that's exactly what I am going to do."
- 4. I consider advice from others to be an intrusion.
- 5. I become frustrated when I am unable to make free and independent decisions.
- 6. It irritates me when someone points out things which are obvious to me.

SM2-18.2 Page 2/2

Please read each statement and decide how much you agree or disagree with that statement.
Please answer every statement, even if you are not completely sure of your response.

- 7. I become angry when my freedom of choice is restricted.
- 8. Advice and recommendations induce me to do just the opposite.
- 9. I resist the attempts of others to influence me.
- 10. It makes me angry when another person is held up as a model for me to follow.
- 11. When someone forces me to do something, I feel like doing the opposite.

SM2-18.3 Screenshot

Figure SM2-59
Psychological reactance scale (page 1 only)

SM2-19 Politics and religion

[*Each items was presented on its own page.*]

SM2-19.1 Voter registration

Are you currently registered to vote?

- Rather not say
- No
- Yes
- Not applicable

SM2-19.2 Presidential candidates

Please rate each candidate individually according to how you would feel if they were elected in 2020. [*Both candidates were rated on a scale from extremely unhappy (-100) via neutral (0) to extremely happy (100).*]

- Donald J. Trump
- Joe Biden

SM2-19.3 Conservatism item

When it comes to politics, do you usually think of yourself as extremely liberal, liberal, slightly liberal, moderate or middle of the road, slightly conservative, extremely conservative?

- extremely liberal
- liberal
- slightly liberal
- middle of the road
- slightly conservative
- conservative
- extremely conservative

SM2-19.4 Political party

Generally speaking, do you usually think of yourself as a Republican, a Democrat, an Independent, or what?

- Republican
- Democrat
- Independent
- Other

SM2-19.5 Religion

Do you consider religion to be an important part of your life?

- yes
- no

SM2-19.6 Screenshots

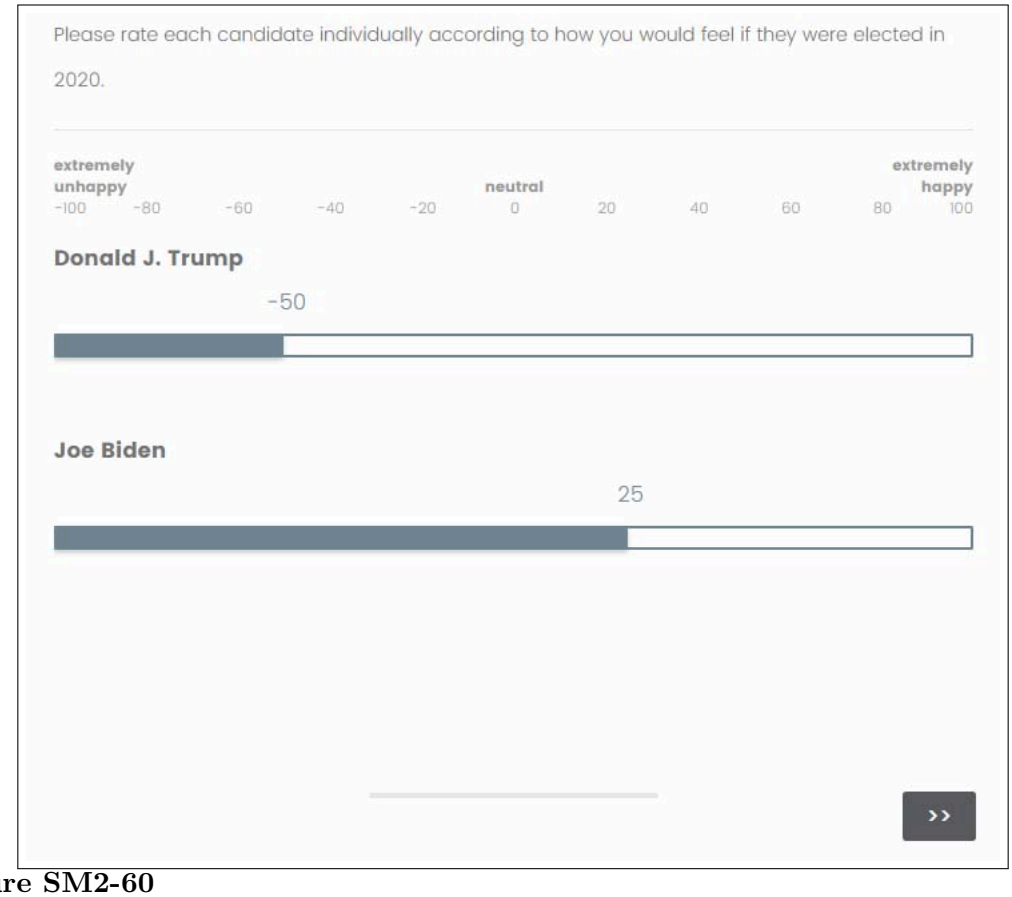


Figure SM2-60
Presidential candidates

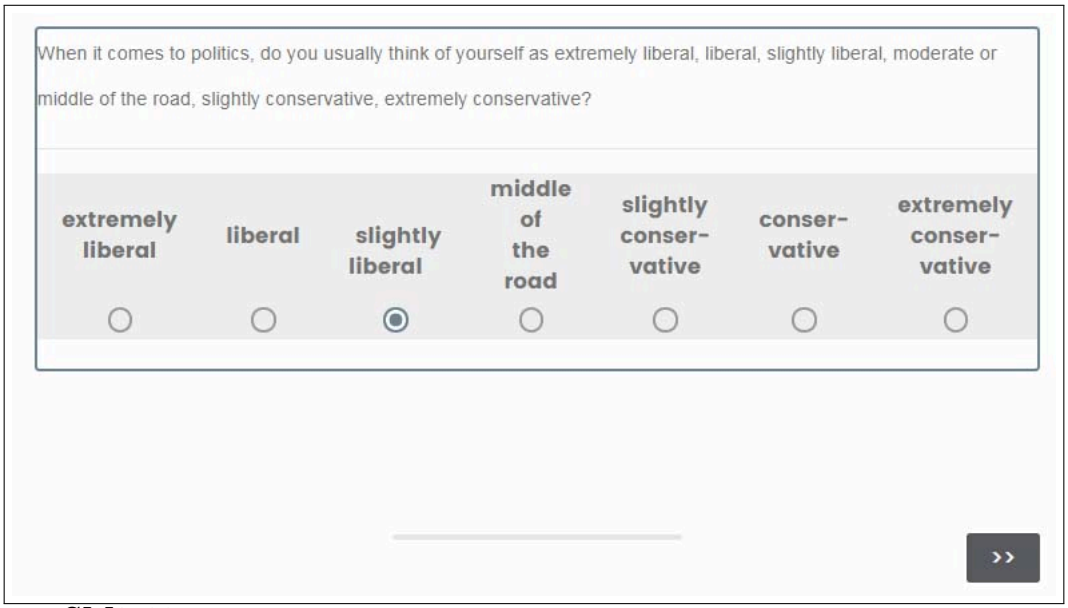


Figure SM2-61
Political position

SM2-20 CRT 4

If you're running a race and you pass the person in second place, what place are you in?

- First Place
- Second Place
- Third Place
- There is not enough information to tell.
- None of the above.

SM2-21 Demographics 2

What was your annual household income in 2019?
[*Numbers in brackets refer to the coded value.*]

- Less than $25,000 (*12500*)
- $25,000-$50,000 (*37500*)
- >$50,000-$100,000 (*75000*)
- >$100,000-$200,000 (*150000*)
- More than $200,000 (*300000*)

SM2-22 COVID-19 related items

[*See Figure SM2-62.*]

SM2-22.1 Employment and testing

Has the current coronavirus disease (COVID-19) affected your employment situation?

- I lost my job permanently.
- I lost my job temporarily.
- I lost some of my income.
- My employment situation has improved.
- There were no major consequences for my employment situation.

What is your current employment status?

- Employed full-time
- Employed part-time
- In full-time education
- Seeking opportunities/Unemployed
- Retired
- Other [*Text entry box*]

Have you at any point been tested for COVID-19?

- Yes, and there was at least one positive result.
- Yes, and all tests were negative.
- No.

SM2-22.2 Worry

[*See Figure SM2-63.*]

How worried are you about consequences of COVID-19 for your health on a scale from 0 (not worried at all) to 10 (extremely worried)?

- 0 - not worried at all
- 1
- 2
- 3
- 4
- 5
- 6
- 7

- 8
- 9
- 10 - extremely worried

How worried are you about consequences of COVID-19 for your finances?

- 0 - not worried at all
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 - extremely worried

How worried are you about consequences of COVID-19 for other people?

- 0 - not worried at all
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9

- 10 - extremely worried

How worried are you about consequences of COVID-19 for the economy?

- 0 - not worried at all
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 - extremely worried

How worried are you about consequences of COVID-19 for our democracy?

- 0 - not worried at all
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 - extremely worried

SM2-22.3 Compliance with measures

[*See Figure SM2-64.*]

Compared to other people who are similar to you in age and live in your area, do you follow guidelines (such as social distancing) more closely or less closely than others do?

- 0 - Much less closely
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 - Much more closely

Compared to other people in your region are you more willing or less willing to wear a protective mask?

- 0 - Much less willing
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 - Much more willing

Compared to other people in your region are you more willing or less willing to break rules to meet other people in person?

- 0 - Much less willing
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 - Much more willing

Compared to other people in your region are you more willing or less willing to donate time or money to support others who suffer from consequences of COVID-19?

- 0 - Much less willing
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 - Much more willing

Compared to other people in your region are you more willing or less willing to to be vaccinated if a vaccine is developed for COVID-19 that is considered medically safe?

- 0 - Much less willing

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 - Much more willing

Compared to other people in your region are you more willing or less willing to protest against restrictions and regulations that are introduced in reaction to COVID-19?

- 0 - Much less willing
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 - Much more willing

SM2-22.4 Tradeoffs and comments

[*See Figure SM2-65.*]

We need to accept that some members of vulnerable populations will die so that... [*Items were presented in a matrix and answered on a six-point scale: Strongly disagree—Disagree—Slightly disagree—Slightly agree—Agree—Strongly agree)*]

- ... we can live our lives without severe restrictions.
- ... we can attend large sports events again.
- ... children can attend school again.
- ... we can quickly return to work again.
- ... we can go on vacation again.
- ... we do not lose too many jobs.

Do you have any other comments regarding the current COVID-19 crisis? [*text entry box*]

SM2-22.5 Screenshots

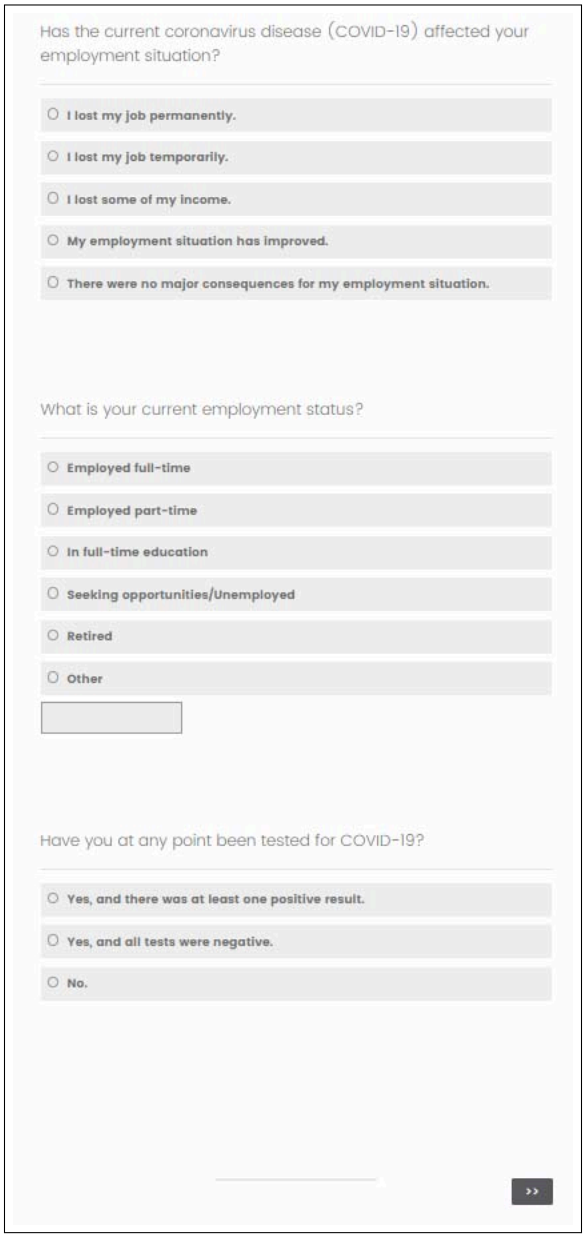


Figure SM2-62
COVID-19: Employment and testing

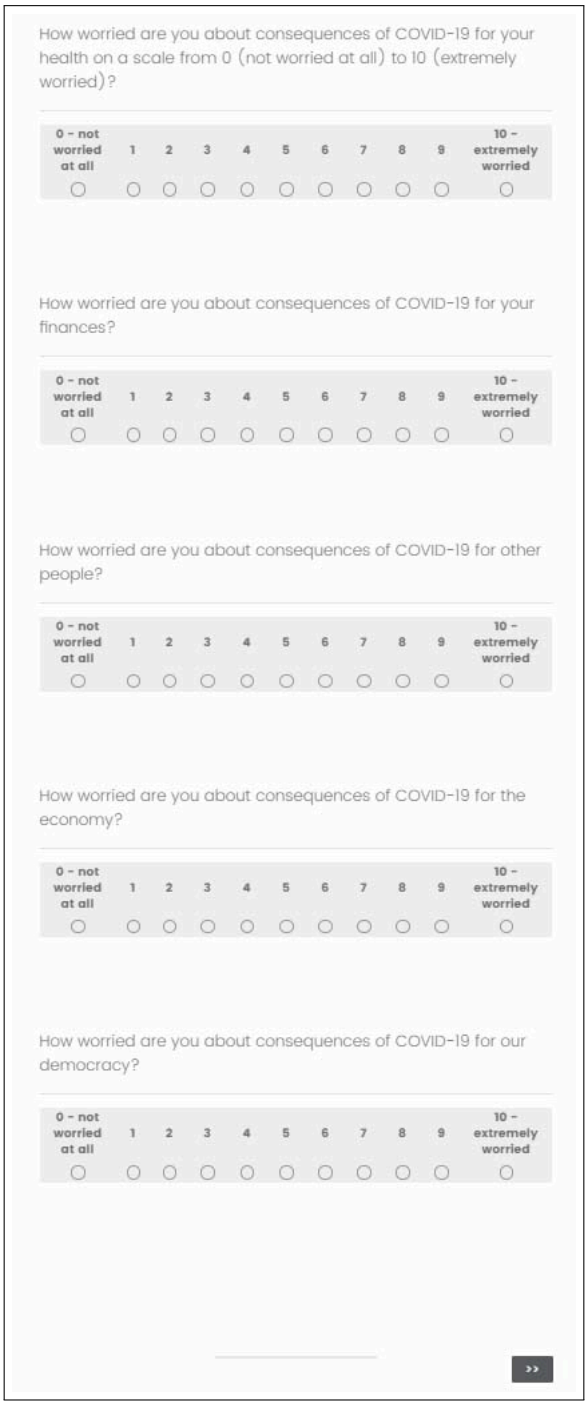


Figure SM2-63
COVID-19: Worries

Figure SM2-64
COVID-19: Compliance with measures

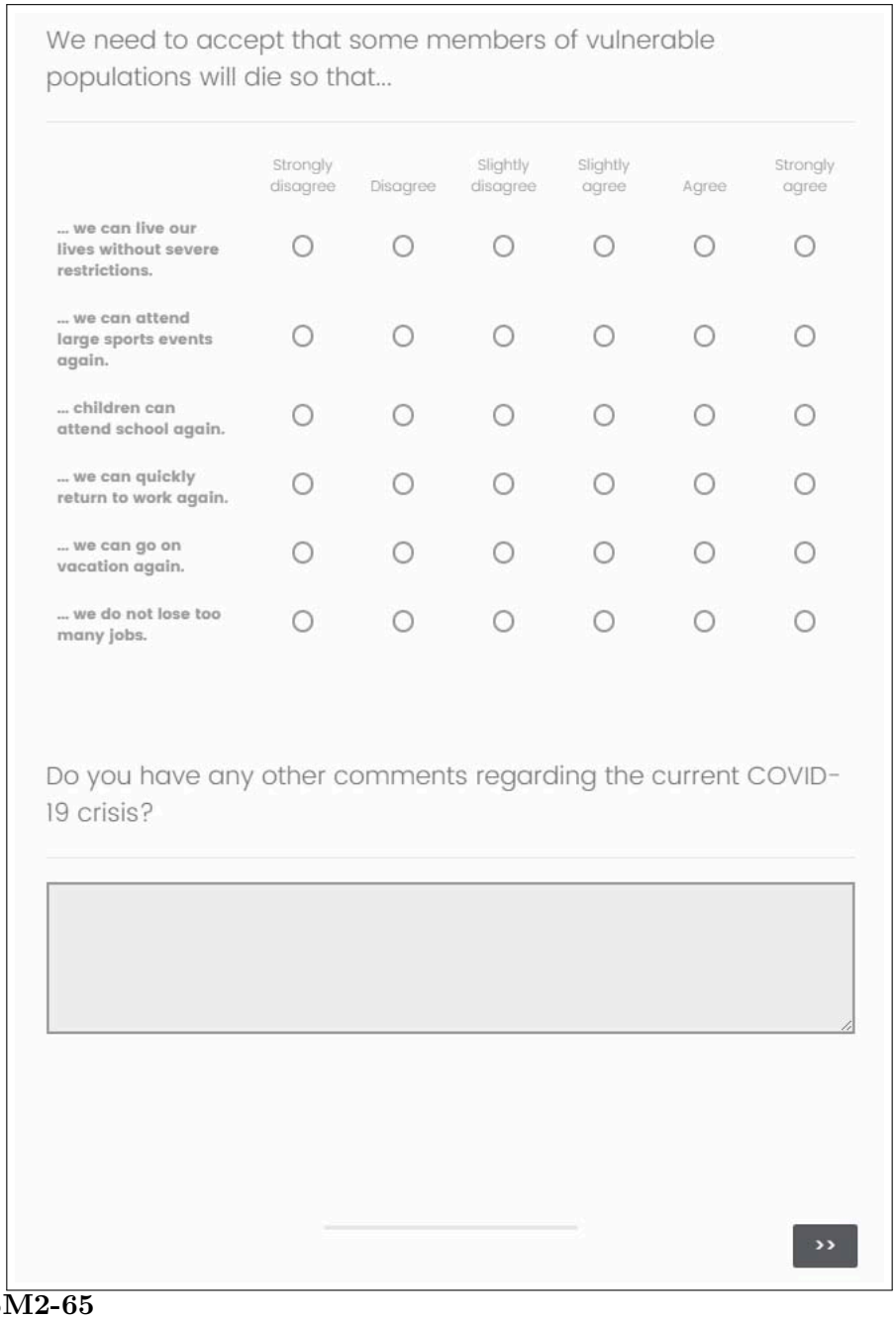


Figure SM2-65
COVID-19: Tradeoffs and comment

SM2-23 Final comment

Thank you. You have reached the end of the survey.
Before moving on, please feel free to comment on any aspect of this survey.

[*text entry box*]

SM2-23.1 Screenshot

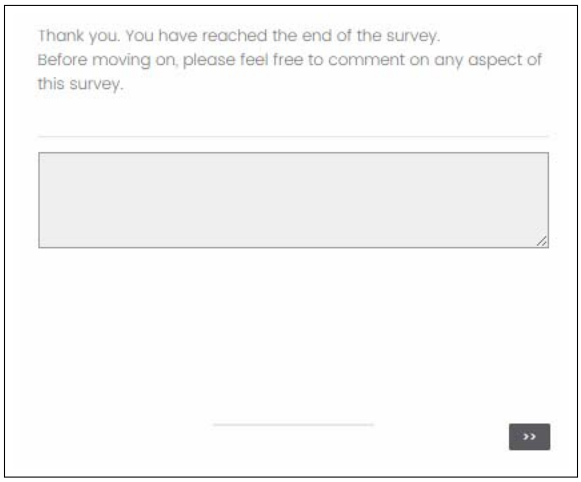


Figure SM2-66
Final comment

SM2-24 Computer code

SM2-24.1 Simulator code (embedded in Qualtrics)

[*Note that all pages have loaded jQuery, jQuery UI, and Bootstrap. To allow for compatibility between Qualtrics survey engine and jquery, the standard jquery symbol had to be modified: "var $j = jQuery.noConflict();"*]

```
1  Qualtrics.SurveyEngine.addOnReady(function()
2  {
3      this.hideNextButton();
4      var that=this;
5
6      $j.getScript("https://d3js.org/d3.v4.min.js");
7
8      $j("#Questions").append("<div id='my_dataviz'></div>");
9      $j("#Questions").append('<button id="myButton99" class="ui-button
           ui-widget ui-corner-all simbutton">99% H: 3 click(s)</button>');
10     $j("#Questions").append('<button id="myButton75" class="ui-button
           ui-widget ui-corner-all simbutton">75% H: 3 click(s)</button>');
11     $j("#Questions").append('<button id="myButton50" class="ui-button
           ui-widget ui-corner-all simbutton">50% H: 3 click(s)</button>');
12     $j("#Questions").append('<button id="myButton25" class="ui-button
           ui-widget ui-corner-all simbutton">25% H: 3 click(s)</button>');
13     $j("#Questions").append('<button id="myButton1" class="ui-button
           ui-widget ui-corner-all simbutton">1% H: 3 click(s)</button>');
```

```
14
15      var dataTry = [
16      {"x": 0, "y": 0, "CI_left": 100, "CI_right": 100},
17      {"x": 1, "y": 0, "CI_left": 100, "CI_right": 100},
18      {"x": 2, "y": 0, "CI_left": 100, "CI_right": 100},
19      {"x": 3, "y": 0, "CI_left": 100, "CI_right": 100},
20      {"x": 4, "y": 0, "CI_left": 100, "CI_right": 100},
21      {"x": 5, "y": 0, "CI_left": 100, "CI_right": 100},
22      {"x": 6, "y": 0, "CI_left": 100, "CI_right": 100},
23      {"x": 7, "y": 0, "CI_left": 100, "CI_right": 100},
24      {"x": 8, "y": 0, "CI_left": 100, "CI_right": 100},
25      {"x": 9, "y": 0, "CI_left": 100, "CI_right": 100},
26      {"x": 10, "y": 0, "CI_left": 100, "CI_right": 100},
27      {"x": 11, "y": 0, "CI_left": 100, "CI_right": 100},
28      {"x": 12, "y": 0, "CI_left": 100, "CI_right": 100},
29      {"x": 13, "y": 0, "CI_left": 100, "CI_right": 100},
30      {"x": 14, "y": 0, "CI_left": 100, "CI_right": 100},
31      {"x": 15, "y": 0, "CI_left": 100, "CI_right": 100},
32      {"x": 16, "y": 0, "CI_left": 100, "CI_right": 100},
33      {"x": 17, "y": 0, "CI_left": 100, "CI_right": 100},
34      {"x": 18, "y": 0, "CI_left": 100, "CI_right": 100},
35      {"x": 19, "y": 0, "CI_left": 100, "CI_right": 100},
36      {"x": 20, "y": 0, "CI_left": 100, "CI_right": 100},
37      {"x": 21, "y": 0, "CI_left": 100, "CI_right": 100},
38      {"x": 22, "y": 0, "CI_left": 100, "CI_right": 100},
39      {"x": 23, "y": 0, "CI_left": 100, "CI_right": 100},
40      {"x": 24, "y": 0, "CI_left": 100, "CI_right": 100},
41      {"x": 25, "y": 0, "CI_left": 100, "CI_right": 100}
42      ];
43
44      var margin = {top: 35, right: 50, bottom: 40, left: 60},
45      width = 600 - margin.left - margin.right,
46      height = 420 - margin.top - margin.bottom;
47
48      // append the svg object to the body of the page
49      svg = d3.select("#my_dataviz")
50          .append("svg")
51          .attr("width", width + margin.left + margin.right)
52          .attr("height", height + margin.top + margin.bottom)
53          .append("g")
54          .attr("transform",
55            "translate(" + margin.left + "," + margin.top + ")");
56
57      var x = d3.scaleLinear()
58          .domain([0,25])
59          .range([ 0, width ])   ;
60      svg.append("g")
61          .attr("transform", "translate(0," + height + ")")
62          .attr("class", "axis")
63          .call(d3.axisBottom(x));
64
65      // Add Y axis
66      var y = d3.scaleLinear()
67          .domain([0, 100])
68          .range([ height, 0 ]);
```

```
69
70      svg.append("g")
71          .attr("class", "axis")
72          .attr("transform", "translate("+width+",0)")
73          .call(d3.axisRight(y));
74
75      svg.append("path")
76          .datum(dataTry)
77          .attr("fill", "#cce5df")
78          .attr("stroke", "none")
79          .attr("d", d3.area()
80          .x(function(d) { return x(d.x) })
81          .y0(function(d) { return y(d.CI_right) })
82          .y1(function(d) { return y(d.CI_left) })
83               )
84
85      svg
86          .append("path")
87          .datum(dataTry)
88          .attr("class", "mainline")
89          .attr("fill", "none")
90          .attr("stroke", "steelblue")
91          .attr("stroke-width", 1.5)
92          .attr("d", d3.line()
93          .x(function(d) { return x(d.x) })
94          .y(function(d) { return y(d.y) })
95               )
96
97      svg.selectAll("dot")
98          .attr("class", "maindots")
99          .data(dataTry)
100         .enter().append("circle")
101         .attr("r", 4)
102         .attr("cx", function(d) { return x(d.x); })
103         .attr("cy", function(d) { return y(d.y); })
104         .attr('class', 'maincircle'  )
105         .attr('class', function(d,i){ if (i==25){ return 'maincircle
               lastcircle'}else{return 'maincircle'}; } )
106         .on("mouseover", function(d) {
107             div.transition()
108                 .duration(100)
109                 .style("opacity", .9);
110             div .html("After R"+d.x + ":<br/>"  + d.y)
111                 .style("left", (d3.event.pageX) + "px")
112                 .style("top", (d3.event.pageY - 28) + "px");
113             })
114         .on("mouseout", function(d) {
115             div.transition()
116                 .duration(1200)
117                 .style("opacity", 0);
118         });
119
120       svg.append("text")
121         .attr("transform",
122             "translate(" + (width/2) + " ," +
```

```
123                             (height + margin.top + 5) + ")")
124          .style("text-anchor", "middle")
125          .attr("class", "axislabel")
126          .text("After round");
127
128       svg.append("text")
129          .attr("transform",
130              "translate(" + (width-120) + " ," +
131                             (margin.top + height- 50) + ")")
132          .style("text-anchor", "middle")
133          .attr("class", "resultlabel")
134          .text("No data yet.");
135
136        svg.append("text")
137          .attr("transform", "rotate(-90)")
138          .attr("y", -20 )
139          .attr("x",0 - (height / 2))
140          .attr("dy", "1em")
141          .style("text-anchor", "middle")
142          .attr("class", "axislabel")
143          .text("Number of purple players");
144
145
146      svg.append("text")
147          .attr("x", (width / 2))
148          .attr("y", 0 - (margin.top / 2))
149          .attr("text-anchor", "middle")
150          .style("font-size", "22px")
151          .style("font-family", "Arial")
152          .style("text-decoration", "underline")
153          .text("Simulation: no data")
154          .attr("class","diaglabel");
155
156
157
158
159
160      function redrawGraph(dataTry){
161
162           svg
163              .select(".mainline")
164              .datum(dataTry)
165              .transition()
166              .duration(750)
167              .attr("d", d3.line()
168              .x(function(d) { return x(d.x) })
169              .y(function(d) { return y(d.y) })
170                   )
171
172          svg.selectAll(".maincircle")
173              .data(dataTry)
174              .transition()
175              .duration(750)
176              .attr("r", 4)
177              .attr("cx", function(d) { return x(d.x); })
```

```
178             .attr("cy", function(d) { return y(d.y); }) ;
179
180         };
181
182     // START SIMULATION
183
184      function shuffle(array) {
185         var currentIndex = array.length, temporaryValue, randomIndex;
186
187
188         while (0 !== currentIndex) {
189             randomIndex = Math.floor(Math.random() * currentIndex);
190             currentIndex -= 1;
191             temporaryValue = array[currentIndex];
192             array[currentIndex] = array[randomIndex];
193             array[randomIndex] = temporaryValue;
194         }
195
196         return array;
197     }
198
199
200
201     runSimulation = function(percentageRisky,roundPerc){
202         var i;
203         var population;
204         var playerRisky;
205         var Numbers100;
206         var riskPerc;
207         Numbers100=[];
208         population=[];
209
210         playerRisky=[];
211         var roundPerc;
212
213         var initRiskArr=[];
214
215         for (i = 0; i < 8; i++) {
216             initRiskArr.push(1);
217         };
218         for (i = 0; i < 92; i++) {
219             initRiskArr.push(0);
220         };
221
222         shuffleRiskArr=shuffle(initRiskArr);
223
224
225         for (i = 0; i < 100; i++) {
226             population.push(shuffleRiskArr[i]);
227             Numbers100.push(i);
228         };
229
230         roundPerc.push( population.reduce((a,b) => a+b,0) );  // add sum
                of numbers in matrix
231             // determine player types
```

```
232         for (i = 0; i < percentageRisky; i++) {
233             playerRisky.push(1);    // 1 denotes risky
234         };
235         for (i = percentageRisky; i < 100; i++) {
236             playerRisky.push(0);
237         };
238
239         //population in round 1 is set up, player types are set up
240
241         var r;
242         for (r = 0; r < 25; r++) {  //
243             randPerm=shuffle(Numbers100); //
244             for (i = 0; i < 50; i++) { //50 matches
245                 if((   (population[randPerm[i*2]]>0) && (population[
                        randPerm[i*2+1]]==0) )||( (population[randPerm[i*2]]
                        ==0)&&(population[randPerm[i*2+1]]>0))){ //if one is
                        purple, one is blue
246                     if ( (playerRisky[randPerm[i*2]]>0)&&(playerRisky[
                            randPerm[i*2+1]]>0) ){
247                         riskPerc=0.25;
248                     }else{
249                         if ( (playerRisky[randPerm[i*2]]==0)&&(
                                playerRisky[randPerm[i*2+1]]==0)  ){
250                             riskPerc=0.05;
251                         }else{
252                             riskPerc=0.15;
253                         }
254                     }
255                     if (Math.random()<riskPerc){
256                         population[randPerm[i*2]]=1;
257                         population[randPerm[i*2+1]]=1;
258                     };
259                 }
260             }
261             roundPerc.push( population.reduce((a,b) => a+b,0) );
262          }
263     };// end function runSimulation
264
265
266     $j("#myButton").button();
267     $j("#myButton").attr("width","200px");
268     $j("#myButton").attr("height","200px");
269     $j("#myButton").attr("stroke","red");
270
271
272
273     var clicks99=3;
274     var clicks75=3;
275     var clicks50=3;
276     var clicks25=3;
277     var clicks1=3;
278
279
280     var count99=0;
281     var count75=0;
```

```
282     var count50=0;
283     var count25=0;
284     var count1=0;
285
286     var countObject=[];
287     var saveDate=Date.now();
288
289     $j("#myButton99").click(function (){
290         var roundPerc=[];
291         var r=0;
292         runSimulation(99,roundPerc);
293         for (r = 0; r < 26; r++) {
294             dataTry[r].y=roundPerc[r];
295         };
296         redrawGraph(dataTry);
297         if (clicks99>0){
298             clicks99=clicks99-1;
299             if (clicks99==0){
300                 $j("#myButton99").html("99% H");
301             }else{
302                 $j("#myButton99").html("99% H: "+clicks99+" click(s)");
303             };
304         };
305
306         $j(".diaglabel").html("Simulation: 99% choose H");
307         $j(".resultlabel").html(dataTry[25].y+"% are purple after the
                game.");
308         count99=count99+1;
309         Qualtrics.SurveyEngine.setEmbeddedData("count99",count99);
310         addObj={'button': 99, 'result:':dataTry[25].y, 'time': 1/100*
                Math.round( (Date.now()-saveDate)/10) };
311         countObject.push(addObj);
312         Qualtrics.SurveyEngine.setEmbeddedData("countObject",
                JSON.stringify(countObject));
313
314         if( (clicks99<1)&&(clicks75<1)&&(clicks50<1)&&(clicks25<1)&&(
                clicks1<1)){
315             that.showNextButton();
316         };
317     });
318
319     $j("#myButton75").click(function (){
320         var roundPerc=[];
321         var r=0;
322         runSimulation(75,roundPerc);
323         for (r = 0; r < 26; r++) {
324             dataTry[r].y=roundPerc[r];
325         };
326         redrawGraph(dataTry);
327         if (clicks75>0){
328             clicks75=clicks75-1;
329             if (clicks75==0){
330                 $j("#myButton75").html("75% H");
331             }else{
332                 $j("#myButton75").html("75% H: "+clicks75+" click(s)");
```

```
333             };
334         };
335         $j(".diaglabel").html("Simulation: 75% choose H");
336         $j(".resultlabel").html(dataTry[25].y+"% are purple after the
                game.");
337         count75=count75+1;
338         Qualtrics.SurveyEngine.setEmbeddedData("count75",count75);
339         addObj={'button': 75, 'result:':dataTry[25].y, 'time': 1/100*
                Math.round( (Date.now()-saveDate)/10) };
340         countObject.push(addObj);
341         Qualtrics.SurveyEngine.setEmbeddedData("countObject",
                JSON.stringify(countObject));
342
343         if( (clicks99<1)&&(clicks75<1)&&(clicks50<1)&&(clicks25<1)&&(
                clicks1<1)){
344             that.showNextButton();
345         };
346     });
347
348     $j("#myButton50").click(function (){
349         var roundPerc=[];
350         var r=0;
351         runSimulation(50,roundPerc);
352         for (r = 0; r < 26; r++) {
353             dataTry[r].y=roundPerc[r];
354         };
355         redrawGraph(dataTry);
356         if (clicks50>0){
357             clicks50=clicks50-1;
358             if (clicks50==0){
359                 $j("#myButton50").html("50% H");
360             }else{
361                 $j("#myButton50").html("50% H: "+clicks50+" click(s)");
362             };
363         };
364         $j(".diaglabel").html("Simulation: 50% choose H");
365         $j(".resultlabel").html(dataTry[25].y+"% are purple after the
                game.");
366         count50=count50+1;
367         Qualtrics.SurveyEngine.setEmbeddedData("count50",count50);
368         addObj={'button': 50, 'result:':dataTry[25].y, 'time': 1/100*
                Math.round( (Date.now()-saveDate)/10) };
369         countObject.push(addObj);
370         Qualtrics.SurveyEngine.setEmbeddedData("countObject",
                JSON.stringify(countObject));
371
372         if( (clicks99<1)&&(clicks75<1)&&(clicks50<1)&&(clicks25<1)&&(
                clicks1<1)){
373             that.showNextButton();
374         };
375     });
376
377     $j("#myButton25").click(function (){
378         var roundPerc=[];
379         var r=0;
```

```
380         runSimulation(25,roundPerc);
381         for (r = 0; r < 26; r++) {
382             dataTry[r].y=roundPerc[r];
383         };
384         redrawGraph(dataTry);
385         if (clicks25>0){
386             clicks25=clicks25-1;
387             if (clicks25==0){
388                 $j("#myButton25").html("25% H");
389             }else{
390                 $j("#myButton25").html("25% H: "+clicks25+" click(s)");
391             };
392 
393         };
394         $j(".diaglabel").html("Simulation: 25% choose H");
395         $j(".resultlabel").html(dataTry[25].y+"% are purple after the
                game.");
396         count25=count25+1;
397         Qualtrics.SurveyEngine.setEmbeddedData("count25",count25);
398         addObj={'button': 25, 'result:':dataTry[25].y, 'time': 1/100*
                Math.round( (Date.now()-saveDate)/10) };
399         countObject.push(addObj);
400         Qualtrics.SurveyEngine.setEmbeddedData("countObject",
                JSON.stringify(countObject));
401 
402         if( (clicks99<1)&&(clicks75<1)&&(clicks50<1)&&(clicks25<1)&&(
                clicks1<1)){
403             that.showNextButton();
404         };
405     });
406 
407     $j("#myButton1").click(function (){
408         var roundPerc=[];
409         var r=0;
410         runSimulation(1,roundPerc);
411         for (r = 0; r < 26; r++) {
412             dataTry[r].y=roundPerc[r];
413         };
414         redrawGraph(dataTry);
415         if (clicks1>0){
416             clicks1=clicks1-1;
417             if (clicks1==0){
418                 $j("#myButton1").html("1% H");
419             }else{
420                 $j("#myButton1").html("1% H: "+clicks1+" click(s)");
421             };
422         };
423         $j(".diaglabel").html("Simulation: 1% choose H");
424         $j(".resultlabel").html(dataTry[25].y+"% are purple after the
                game.");
425         count1=count1+1;
426         Qualtrics.SurveyEngine.setEmbeddedData("count1",count1);
427         addObj={'button': 1, 'result:':dataTry[25].y, 'time': 1/100*
                Math.round( (Date.now()-saveDate)/10) };
428         countObject.push(addObj);
```

```
429         Qualtrics.SurveyEngine.setEmbeddedData("countObject",
                JSON.stringify(countObject));
430
431         if( (clicks99<1)&&(clicks75<1)&&(clicks50<1)&&(clicks25<1)&&(
                clicks1<1)){
432             that.showNextButton();
433         };
434     });
435
436
437     var div = d3.select("body").append("div")
438         .attr("class", "tooltip")
439         .style("opacity", 0);
440
441
442     $j("path.mainline ").css({
443         "fill": "none", "stroke": "#ed3700"
444     }
445     );
446
447
448     $j(".maincircle").css({
449         "stroke": "black","fill":"black","r":"3"
450     }
451     );
452
453     $j(".lastcircle").css({
454         "stroke": "black", "fill":"purple","r":"5"
455     }
456     );
457
458
459     /* AXES */
460     /* ticks */
461     $j(".axis line").css({
462         "stroke": "#706f6f","stroke-width": "0.5", "shape-rendering": "
                crispEdges"
463     }
464     );
465
466     /* axis contour */
467     $j(".axis path").css({
468         "stroke": "#706f6f","stroke-width": "0.7", "shape-rendering": "
                crispEdges"
469     }
470     );
471
472 /* axis text */
473     $j(".axis text").css({
474         "fill": "#2b2929","font-family": "Arial", "font-size": "120%"
475     }
476     );
477
478     $j(".axislabel").css({
479         "fill": "#2b2929","font-family": "Arial", "font-size": "100%"
```

```
480     }
481     );
482
483     $j(".resultlabel").css({
484         "fill": "#2b2929","font-family": "Arial", "font-size": "100%","
                fill":"purple"
485     }
486     );
487
488     $j(".simbutton").css({
489         "background":"black","color":"white", "width":"250px"
490     }
491     );
492
493     $j("div.tooltip").css({
494         "position": "absolute",
495         "text-align": "center",
496         "font-family": "Arial",
497         "width": "60px",
498         "height": "28px",
499         "padding": "2px",
500         "font": "12px sans-serif",
501         "background": "purple",
502         "color": "white",
503         "border": "0px",
504         "border-radius": "8px",
505         "pointer-events": "none"
506     }
507     );
508
509 });
```