

Online Appendix to

**Conditional Cooperation under Uncertainty:
The Social Description-Experience Gap**

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A Appendix

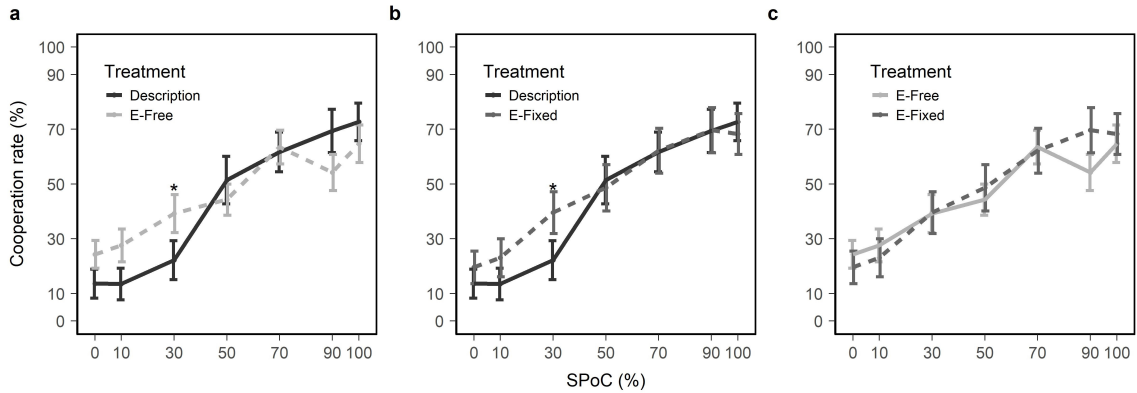
A.1 Cooperation rates in Stage 2

Table A1: Cooperation rates as a function of SPoC across treatments

SPoC	Description	E-Free	E-Fixed	p -value
0	10.4	20.2	15.6	0.002
10	13.6	23.4	21.0	0.005
30	21.9	32.4	28.6	0.009
50	51.6	42.5	41.3	0.031
70	62.4	55.1	58.3	0.163
90	65.2	61.8	61.6	0.592
100	66.3	63.4	64.1	0.732

Notes: *SPoC* (Subpopulation Probability of Cooperation) represents the probability of being matched with a cooperative agent in a given scenario. The reported p -values correspond to Pearson's χ^2 -tests comparing cooperation rates across all three treatments ($df = 2, N = 990$).

Figure A1: Cooperation rates as a function of *SPoC* across treatments: First scenario only



Notes: *SPoC* (Subpopulation Probability of Cooperation) represents the probability of being matched with a cooperative agent. The average cooperation rate is calculated using only the first scenario each subject encountered. Since scenarios were randomized for every subject, the number of observations is similar across *SPoC* levels: $N = [164, 134, 130, 151, 147, 128, 136]$ for $SPoC = [0, 0.1, 0.3, 0.5, 0.7, 0.9, 1]$, respectively. p -values correspond to Pearson's χ^2 -tests for binary comparisons. *** $P < 0.001$, ** $P < 0.05$, * $P < 0.1$. Error bars represent standard errors.

Figure A1 is similar to Figure 1, Panel B, except that it uses data from only the first scenario. We conduct this analysis to examine whether our main findings are influenced by order effects. By focusing exclusively on the first scenario that each subject encountered, we ensure that cooperative behavior is not affected by prior choices or previously received information. Despite the increased noise and reduced statistical power, we qualitatively replicate our key results. Specifically:

- Subjects' cooperation rate increase with the probability that a partner will cooperate across treatments (Result 1).
- When the probability of cooperation is low, subjects in the Experience treatments cooperate more than those in the Description treatment (Result 2).
- The similarity between E-Free and E-Fixed suggests that sampling bias does not drive this gap (Result 3).

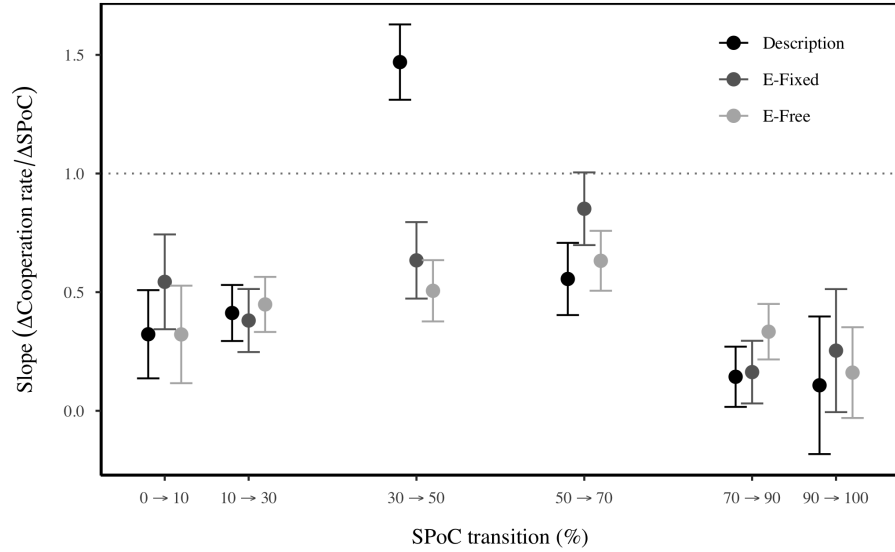
A.2 Switching from defection to cooperation

Figure A2 displays the slope of the cooperation response function for each transition from $SPoC_r$ to $SPoC_{r+1}$ across the three treatments. The slope is computed using Equation 3. Intuitively, a steeper slope reflects a stronger behavioral response to the transition between $SPoC$ levels.

$$slope(r, r + 1) = \frac{1}{n} \sum_{i=1}^n \frac{C_{i(r+1)} - C_{ir}}{SPoC_{r+1} - SPoC_r} \quad (3)$$

The only notable difference between treatments in reactions to changes in $SPoC$ levels occurs at $SPoC = 0.5$. Upon learning that the probability of being matched with a cooperative agent is 50%, subjects in Description switch from defecting to cooperating at disproportionately high rates.

Figure A2: Change in the cooperation rate over the change in SPoC



Notes: $X \rightarrow Y$ indicates the transition from $SPoC = X$ to $SPoC = Y$. The vertical axis shows the slope, calculated as the change in cooperation rate per unit increase in $SPoC$. The horizontal dotted line marks where the slope equals one. Error bars represent standard errors.

A.3 Matching protocol and payment

Subjects were randomly assigned to a treatment and given an index number within that treatment (e.g., 1, 2, 3, ...). They were then grouped into subpopulations of three members.

To illustrate the matching process, consider an example with six subjects assigned to two subpopulations:

$$A = \{1, 2, 3\} \quad \text{and} \quad B = \{4, 5, 6\}.$$

The matching algorithm proceeds as follows:

- Subjects 1 and 2 are matched to play a Stage 2 game.
- Subjects 4 and 5 are matched to play the Stage 3 game.
- Subjects 3 and 6 are matched across subpopulations to play the Stage 1 game.

If the number of subjects is not divisible by six, the following rules apply:

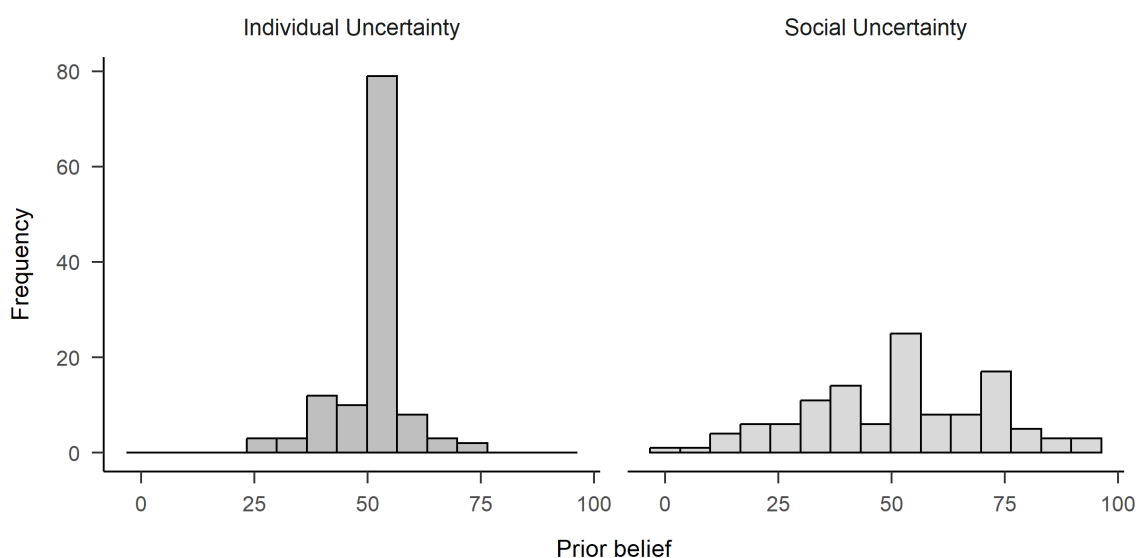
- If two subjects remain unmatched, they are paired to play the Stage 1 game.
- If one subject remains unmatched, they receive the maximum payoff (£3.75).

Matches for Stage 2 and Stage 3 are played with one player's action taken from Stage 2 or 3 and the other's from Stage 1. The assignment of which player uses their Stage 1 action is determined randomly for each pair.

In matches for the Stage 2 and Stage 3 games, one player's action is based on their decision(s) from that stage (either Stage 2 or Stage 3), while the other players' action is based on their Stage 1 decision. The assignment of which player uses their Stage 1 decision is determined randomly for each pair.

A.4 Prior beliefs in Study 2

Figure A3: Histograms of prior beliefs under Individual and Social Uncertainty



Notes: The histograms show the distribution of subjects' prior beliefs under Individual and Social Uncertainty in Study 2. Bin widths are identical across histograms.

B Instructions and experimental interface

Unless specified otherwise, all screens were encountered by subjects across all three treatments.

Figure B1: Welcome screen

Welcome

Thank you for accepting to participate in this study. You will be awarded £1.25 for your participation. You also have the opportunity to earn additional money, depending on your choices and the choices of other Prolific participants.

The study consists of three stages. In each stage, you will be provided 50 pence to interact with other participants. After you complete the study, one of your choices will be randomly selected in order to compute your additional earnings.

You cannot participate in this study more than once. You will receive your total payment within one week after the experiment.

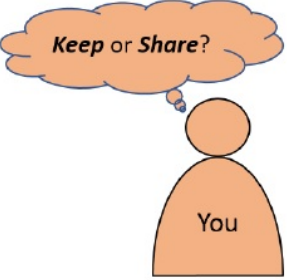
Figure B2: Stage 1/A

Stage 1


You have been randomly matched with another participant which we refer to as your “match”.

You and your match are each provided 50 pence for this stage.


You each have to decide whether to *Keep* or *Share* your 50 pence.



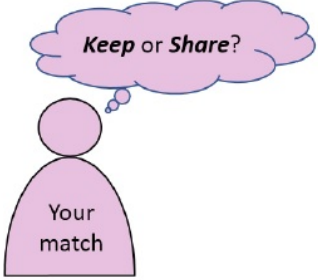
You



50 p



50 p



Your match

Figure B3: Stage 1/B

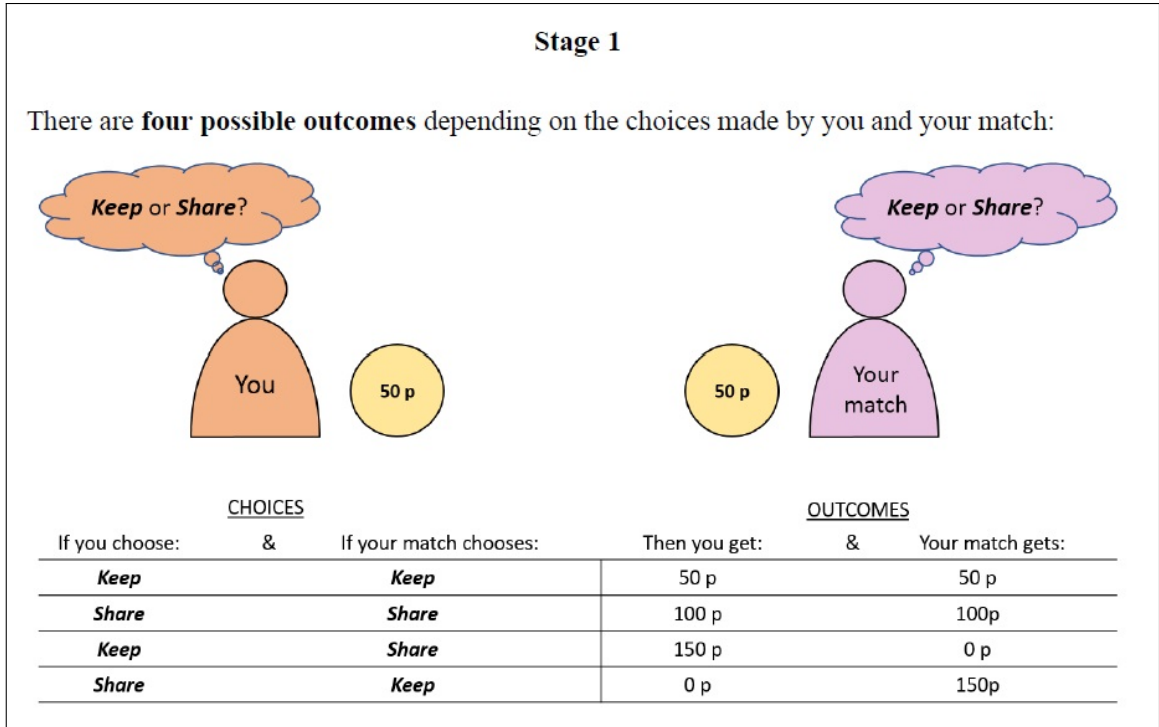


Figure B4: Stage 1: Decision

Your Decision for Stage 1

Now please make your decision:

KEEP
 SHARE

If you choose:	&	If your match chooses:	Then you get:	&	Your match gets:
<i>Keep</i>		<i>Keep</i>	50 p		50 p
<i>Share</i>		<i>Share</i>	100 p		100p
<i>Keep</i>		<i>Share</i>	150 p		0 p
<i>Share</i>		<i>Keep</i>	0 p		150p

Notes: This is the decision interface for Stage 1.

Figure B5: Stage 2/A

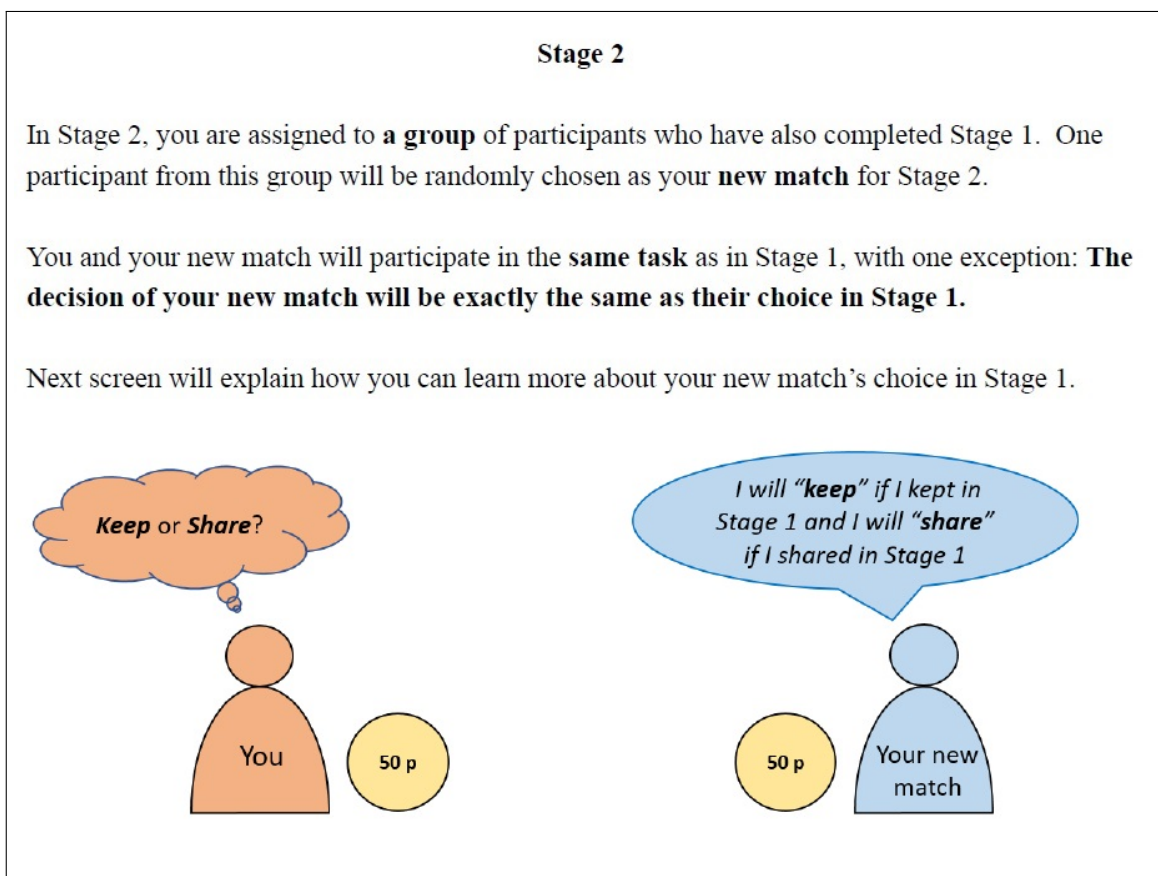


Figure B6: Stage 2/B: Description only

Stage 2

Before making your decision whether to keep or share your 50 pence with your new match, you will be given the opportunity to learn about the choices of your potential group members.

Suppose the deck below represents your actual group. Then the cards in the deck represent the Stage 1 choices of **each participant in your group including your new match** (but excluding your own choice).

The example below shows that 50% of the cards say "Keep" and 50% of the cards say "Share". Therefore, 50% of your group chose to "Keep" and 50% of your group chose to "Share". After you see the distribution of the two types of cards you will be asked to submit your decision.

The diagram illustrates the process of drawing cards from a deck. On the left is a deck of cards with a red patterned back. A dashed arrow points to the right, where two cards are shown. The first card is pink and labeled 'KEEP', with a blue person icon and a red curved arrow above it labeled '50%'. The second card is green and labeled 'SHARE', with a blue person icon and a red curved arrow above it labeled '50%'.

Notes: This screen was encountered only by subjects in Description. subjects in Experience saw instead the screen in the next Figure.

Figure B7: Stage 2/B: Experience only

The figure shows two screenshots of the Stage 2/B interface. The left screenshot shows a deck of cards with a red patterned back and a 'DRAW' button at the bottom right. The right screenshot shows the same deck of cards, but with a 'KEEP' card (pink with a blue person icon) drawn and a 'REPLACE' button at the bottom right. Both screenshots have a 'STOP EXPLORING AND CHOOSE' button in the top left corner.


Notes: These two screens were encountered only by subjects in E-Free. subjects in E-Fixed saw a similar demonstration but there was no "STOP EXPLORING AND CHOOSE" button on the top-left of the screen. Moreover, the "REPLACE" button was replaced with one that read "NEXT CARD" as in E-Fixed sampling was without replacement.

Figure B8: Stage 2/C

Stage 2

You will see **seven different decks of cards**.

Only **one** of the seven decks corresponds to the **actual group** you have been assigned to. The other six decks present hypothetical situations.



You do not know which deck describes your actual group. Therefore, you will make seven independent decisions to keep or share, one for each deck.

Only one of your seven decisions will be used to determine the outcome of Stage 2, which will be your decision for the deck that represents **the actual group** you are assigned to.

Hence, you should consider each deck independently of the other decks and make your decision assuming that the deck that you learn about in fact describes your actual group.

Figure B9: Stage 2/D

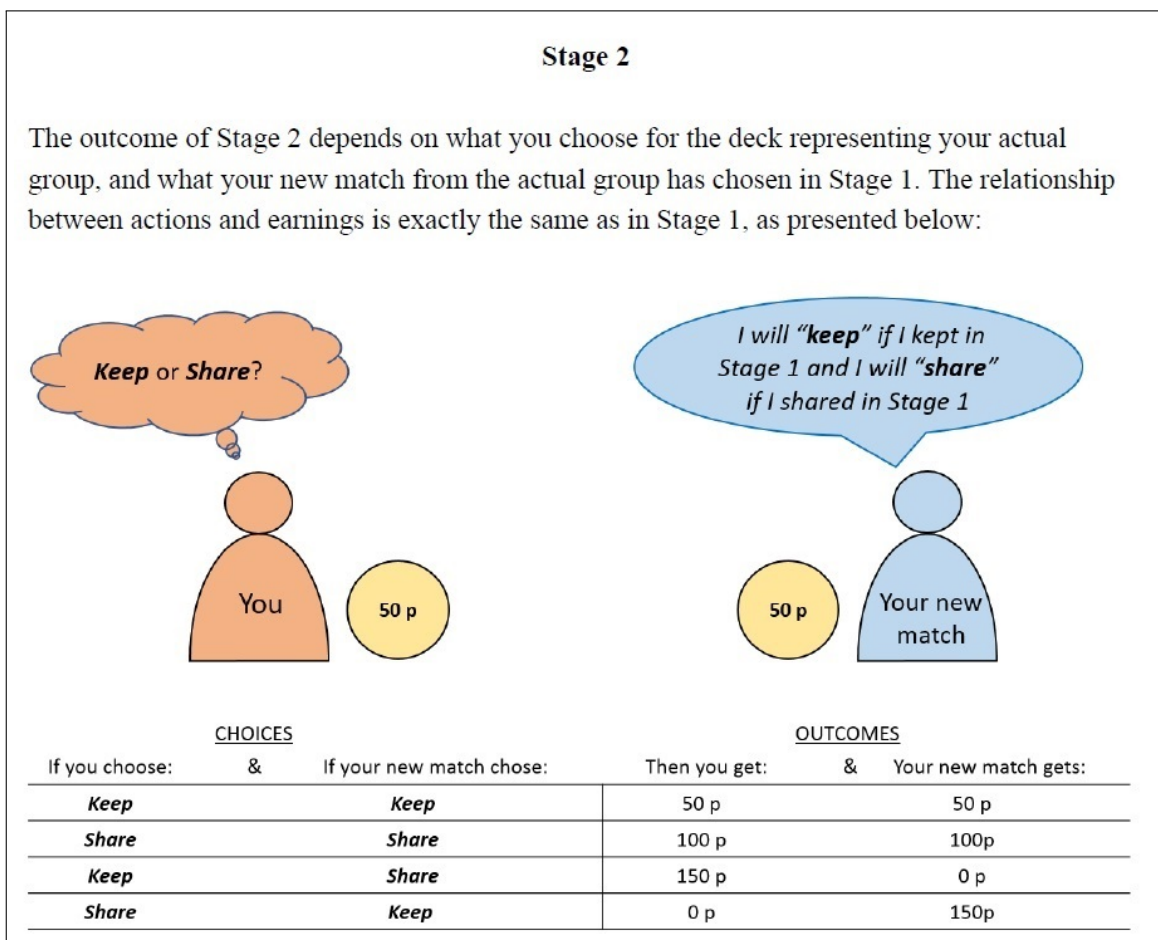


Figure B10: Stage 2: Decision

Your Decision

Please decide. Your decision will determine your earnings if your assigned group is actually represented by the deck that you just explored.

SHARE
 KEEP

If you choose:	&	If your new match chose:	&	Your new match gets:
Keep		Keep		50 p
Share		Share		100p
Keep		Share		0 p
Share		Keep		150p

Notes: This screen follows the screen where subjects learn about the distribution of each scenario. Examples of how this information is obtained for each scenario can be seen in Figure B6 for Description and Figure B7 for Experience.

Figure B11: Stage 3/A

Stage 3

You have been randomly matched with another participant which we refer to as your “Stage 3 match”.

You and your Stage 3 match are each provided 50 pence for this stage.

You and your Stage 3 match will participate in the **same task** as in the previous two stages. Similar to Stage 2, **the decision of your Stage 3 match will be exactly the same as their choice in Stage 1.**

You will make a new choice whether to *Keep* or *Share* your 50 pence **for each possible decision that your Stage 3 match could have made in Stage 1.**

The diagram illustrates the decision-making process in Stage 3/A. On the left, an orange figure labeled 'You' is shown with a thought bubble containing the text 'Keep or Share?'. Next to the figure is a yellow circle labeled '50 p'. On the right, a green figure labeled 'Your Stage 3 match' is shown with a speech bubble containing the text 'I will "keep" if I kept in Stage 1 and I will "share" if I shared in Stage 1'. Next to the figure is a yellow circle labeled '50 p'.

Figure B12: Stage 3/B

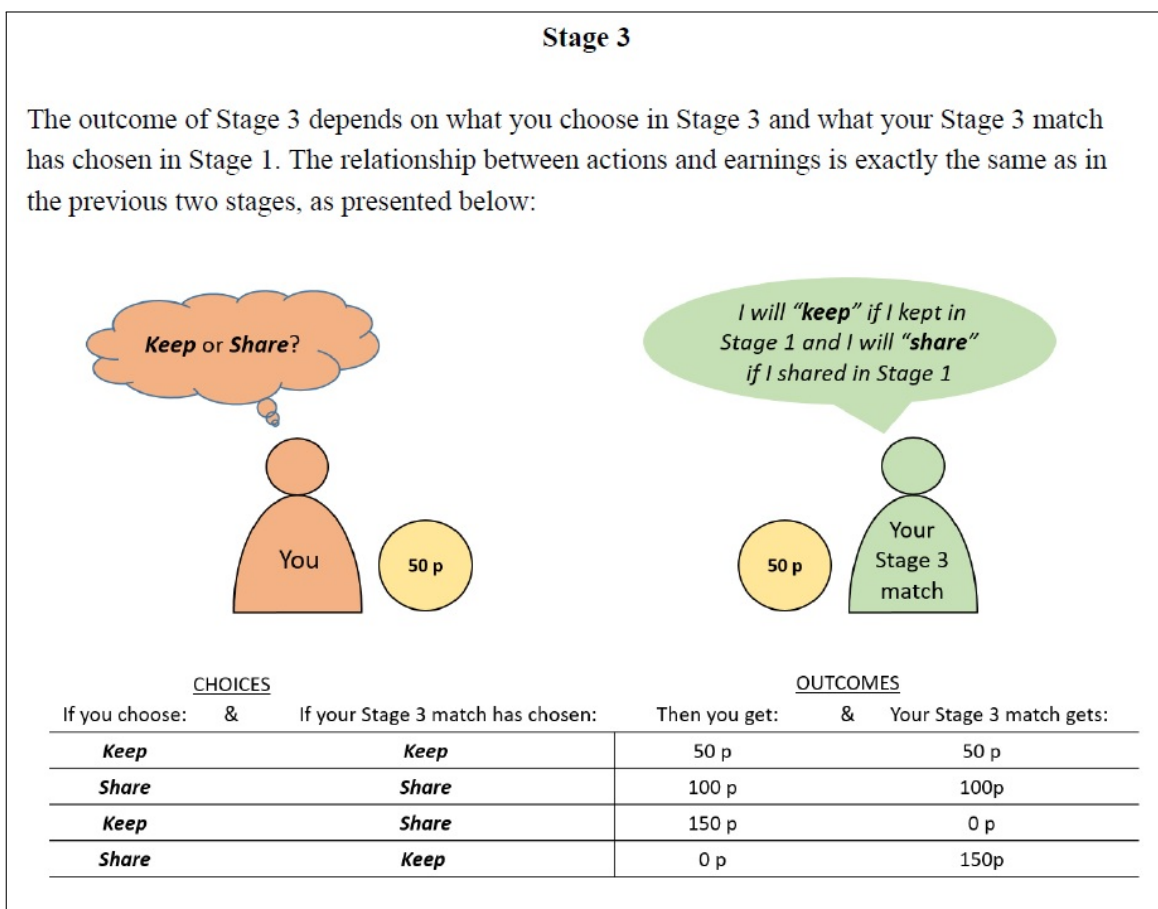


Figure B13: Stage 3/C

Stage 3

The outcome of Stage 3 depends on what you choose in Stage 3 and what your Stage 3 match has chosen in Stage 1. The relationship between actions and earnings is exactly the same as in the previous two stages, as presented below:

You
50 p

Your Stage 3 match
50 p

<u>CHOICES</u>		<u>OUTCOMES</u>	
If you choose:	& If your Stage 3 match has chosen:	Then you get:	& Your Stage 3 match gets:
<i>Keep</i>	<i>Keep</i>	50 p	50 p
<i>Share</i>	<i>Share</i>	100 p	100p
<i>Keep</i>	<i>Share</i>	150 p	0 p
<i>Share</i>	<i>Keep</i>	0 p	150p

Figure B14: Stage 3: Decision

Your Decisions for Stage 3

What is your decision if your Stage 3 match has chosen to **KEEP**?

What is your decision if your Stage 3 match has chosen to **SHARE**?

KEEP SHARE

KEEP SHARE

If you choose:	& If your Stage 3 match has chosen:	Then you get:	& Your Stage 3 match gets:
<i>Keep</i>	<i>Keep</i>	50 p	50 p
<i>Share</i>	<i>Share</i>	100 p	100p
<i>Keep</i>	<i>Share</i>	150 p	0 p
<i>Share</i>	<i>Keep</i>	0 p	150p