

Performance Pay and Multi-dimensional Sorting – Productivity, Preferences and Gender

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Web Appendix

In the following we present the English translation of the German instructions. The following first page of the instructions was handed out on paper:

Instructions: Introduction

You are now taking part in an economic experiment. During the experiment you can earn money by receiving **points**. The number of points that you receive during the experiment depends on your decisions.

All points that you earn in the experiment will be exchanged into Euros at the end of the experiment. The exchange rate is:

10 Points = 17 Cent

At the end of the experiment you will receive the amount of money that you have earned during the experiment in cash.

The experiment consists of six **parts** and a **questionnaire**. Each part will be introduced on a screen with the header „Instructions“. These instructions will explain in detail what the respective part of the experiment is about. Please follow the instructions carefully. If you have any questions please let us know by raising your hand. Your question will then be answered at your cubicle.

In this experiment you will often have to solve multiplication problems. You must solve the problems **without any helping device**, i.e., devices such as paper and pencil, pocket calculators or cell phones, are not allowed. **If you use any helping device, you will be immediately excluded from the experiment and from all payments.** The experiment does not begin before all helping devices are completely removed.

Please note that communication between participants is strictly prohibited during the experiment. In addition we would like to point out that you may only use the computer functions which are required for the experiment. Communication between participants and unnecessary interference with computers will lead to exclusion from the experiment.

Please raise your hand once you have read these instructions.

Further instructions were presented on screens at the beginning of each step of the experiment. We show only the most important screens.

1. Instructions:

In this part you are asked to calculate one problem as fast as you can.

The problem concerns the multiplication of a one-digit and a two-digit number (as for example 4×12).

Compute this problem as fast as you can!

Subsequently, please type in your solution as fast as you can into the input box and click the OK button with your mouse.

You enter your solution on the input screen.

You will be introduced to this screen after you have clicked "CONTINUE".

CONTINUE

1. Instructions (continued):

Below you see an example of an input screen.

You can see the multiplication problem (How much is 4×12 ?) displayed. Next to the display, there is an input box and an OK button.

If you enter a wrong result and confirm your entry by clicking "OK", the wrong result in the input box will be highlighted.

In this case, you can simply revise your result by overwriting the highlighted number in the input box.

You do not have to delete the highlighted number first in order to enter a new result.

The time will not be stopped until the correct result has been entered and confirmed by clicking "OK". Then the experiment continues.

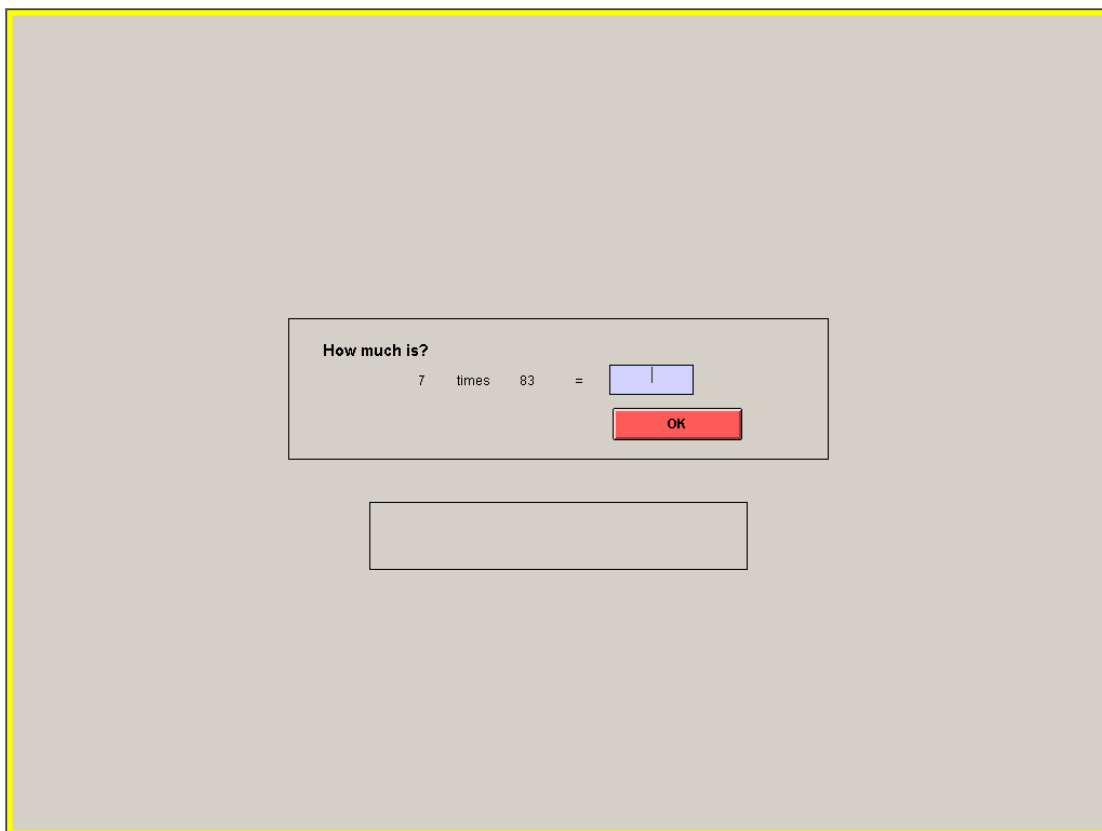
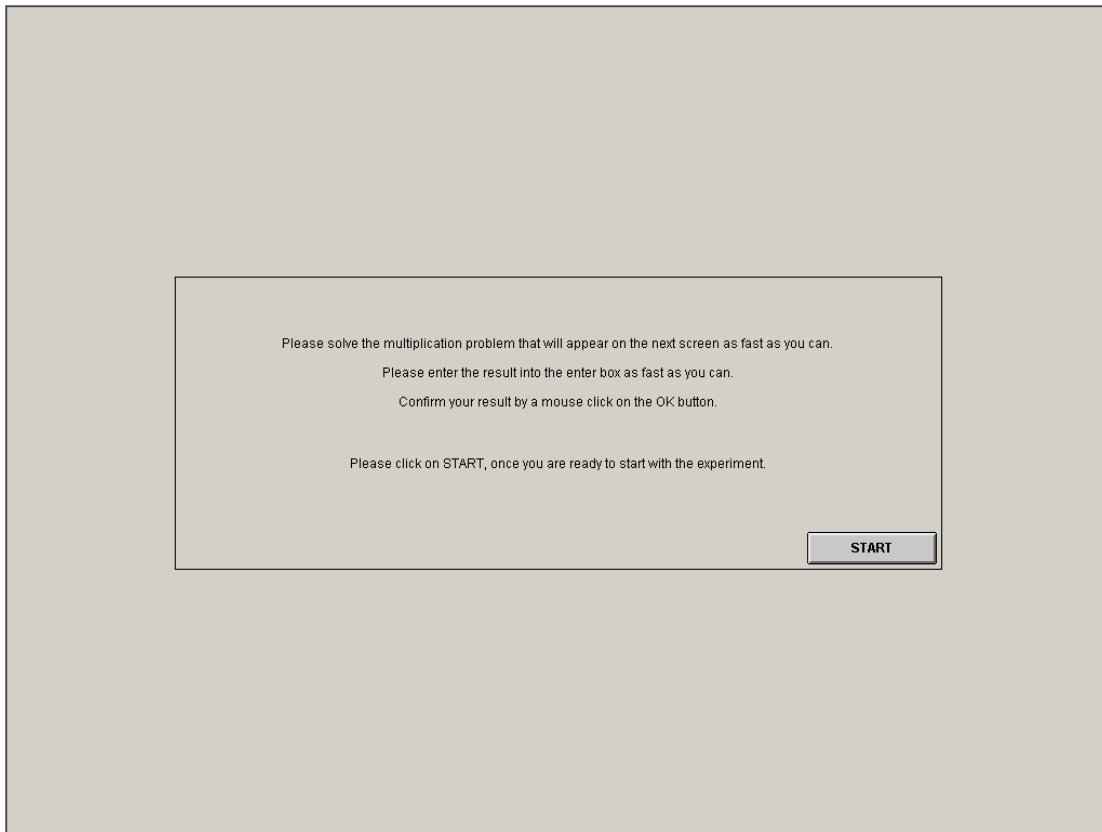
Please compute the solution for the example below, enter the result in the input box, and click the OK button with your mouse.

How much is?

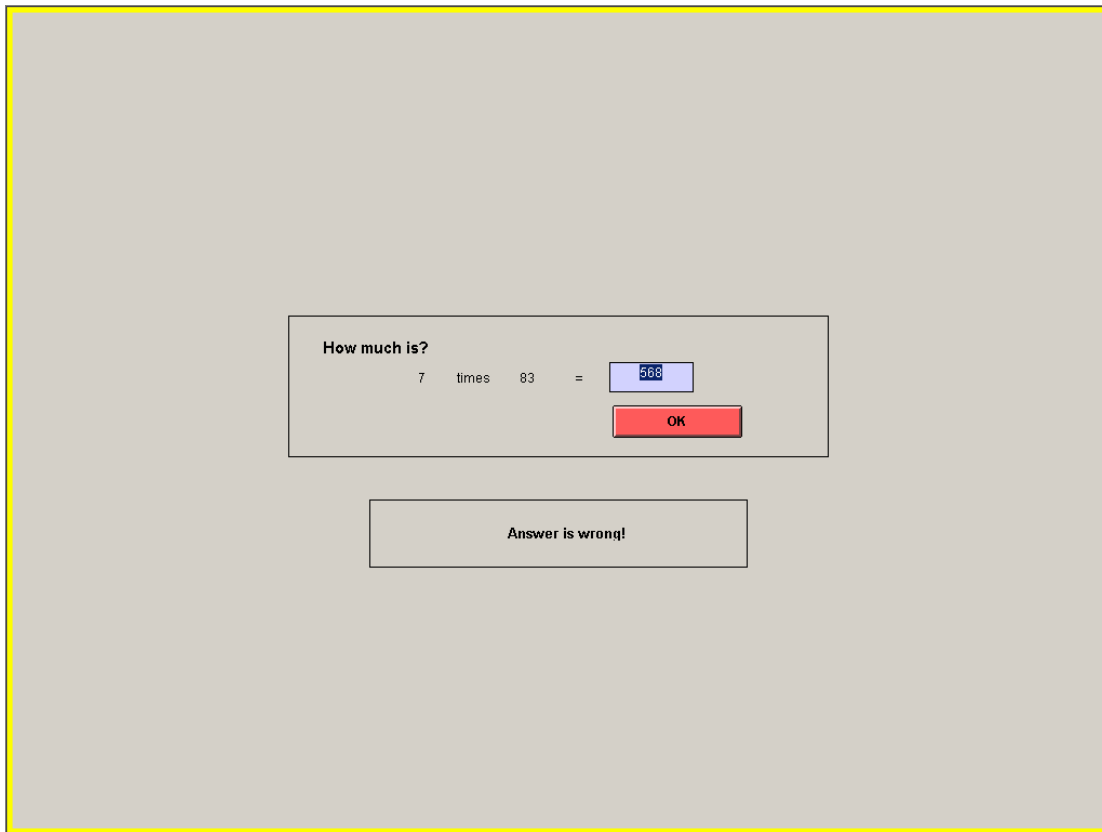
4 times 12 =

OK

After subjects had entered the correct answer “48”, the next screen appeared:



If subjects entered a wrong answer, the following screen appeared:



The screens for step 2 of the experiment were as follows:

2. Instructions:

In this part, the task is again to solve one multiplication problem as fast as possible.

The problem concerns again the multiplication of a one-digit and a two-digit number.

This time you can earn money: The faster you come up with the correct answer, the more money you can earn.

In particular, the procedure is as follows: Once you have clicked on START, the same screen as in the previous task will appear.

You will then have 30 seconds to solve the problem, enter the solution into the input box and confirm your entry by clicking the OK button with your mouse.

The seconds remaining will be displayed in the upper right corner of the screen.

5 points will be deducted from your 150 points for each second that you need to solve the problem.

For example, if you need 17 seconds, you will receive $150 - 85 = 65$ points. If you need 6 seconds, you will receive $150 - 30 = 120$ points, etc.

The time keeps on running if you enter a wrong number.

Once you have entered the correct answer and confirmed it by clicking the OK button, the countdown stops and the time remaining on the clock will be recorded.

Please click START once you are ready to solve the problem.

Remaining time [sec]: 30

How much is?

6 times 74 =

The important screens for step 3 were as follows:

3. Instructions:

In this part, the task is again to solve multiplication problems involving a one-digit and a two-digit number.

Again, you can earn money. This time the rules are as follows:

For each multiplication problem that you solve correctly, you will receive 10 points.

During a period of 5 minutes of time you can solve as many problems as you want to.

The input screen is again identical to the input screens in the previous tasks.

The input screen will inform you in addition about the number of problems you have solved correctly.

The time remaining in seconds will be displayed in the upper right corner of the screen.

A new problem will not appear on the screen until you have entered the correct answer to the problem that is currently displayed on the screen and have confirmed your result by clicking the Ok button with your mouse.

After you have entered a number on the input screen, a text message will indicate whether your answer was correct and whether a new problem is being displayed.

Once the Ok button has been clicked, the number that has been entered on the input screen will be highlighted in blue and remains displayed in the input box.

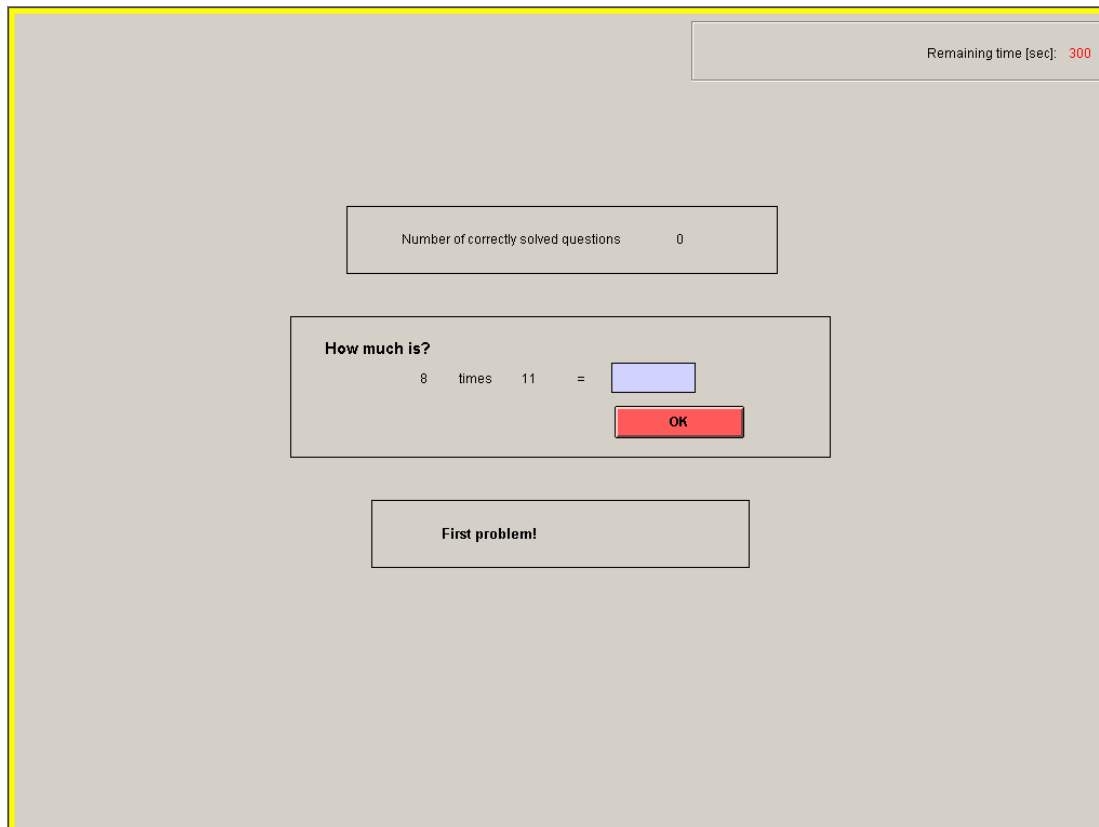
In order to enter the solution to a new problem or to revise your answer, you do not have to delete the highlighted number. Instead, you can simply overwrite this number.

Please click "START", once you are ready to start solving problems.

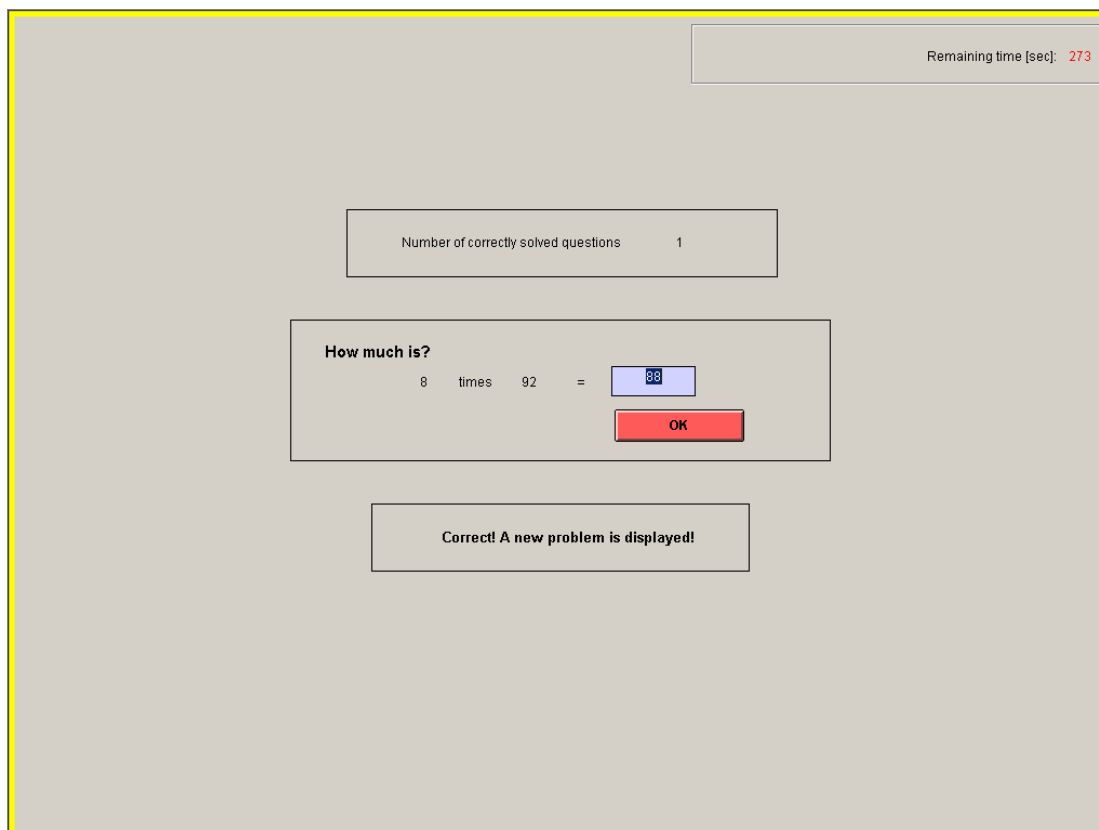
START

Remaining time [sec]: 9

Calculating will start after a countdown of 10 seconds.
The remaining time until the task will start is displayed in the upper right corner.



If the correct answer “88” had been typed in and confirmed, the next screen appeared:



Subjects were informed about whether they had solved their problems correctly or not.

After the working period of five minutes, the following screen was displayed to elicit self-reported effort (step 4) as well as subjects' relative self-assessment (step 5):

Please answer the following questions.

How much effort did you exert solving the questions during the previous 5 minutes? none at all very much

How stressed did you feel? not at all very much

How exhausted did you get? not at all very much

You have correctly solved 0 problems during the period of five minutes.
Your payment (in points) will be 0 times 10: 0

Apart from you, 19 other participants have computed problems. The problems were identical for all participants.
What do you think: How many of the other 19 participants have solved more problems correctly than you have?
Your payment will be higher, the better your estimate.
If your estimate is exactly correct, you will receive 100 points.
If your estimate deviates from the correct number by plus or minus 1, you will receive 50 points.
If your estimate deviates from the correct number by more than plus or minus 1, you will receive 0 points.

How many of the other 19 participants have, according to your estimation, solved more problems correctly than you have?

At the end of the experiment you will be informed about how good your assessment was.
Please click "CONTINUE" and wait for the experiment to proceed.

CONTINUE

The next two screens are the screens for the sorting decision (step 6). We show the screens for the piece-rate treatment. The screens for the tournament and the revenue-sharing treatments were similar.

4. Instructions:

In the following part, you will have 10 minutes of time to solve as many multiplication problems as you want to.

Again, you can earn money in this part of the experiment.

You can determine the payment mode yourself. In particular, you can choose between two alternative payment modes.

Fixed Payment: You will receive 400 points independent of the number of problems you solve.

Variable Payment: You will receive 10 points for each problem that you solve correctly.

Please note: The problems that will appear in the next 10 minutes will be of a similar degree of difficulty as the problems that were displayed in the previous task.

Again the task is to multiply a one-digit and a two-digit number.

You can make your decision between the fixed and the variable payment mode on the next screen.

Please click "CONTINUE" to make your decision between the fixed and variable payment mode.

The time you have for solving problems will be 10 minutes in this task.

Which payment alternative do you choose?

<p>Fixed Payment: You will receive 400 points independent of the number of problems that you solve correctly (regardless of whether you solve, e.g., 0 or, for example, 17 or 152 problems).</p> <p><input type="button" value="Fixed Payment"/></p>	<p>Variable Payment: You will receive 10 points for each problem that you solve correctly during the 10 minutes of time.</p> <p><input type="button" value="Variable Payment"/></p>
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Next, subjects had to indicate their “hypothetical” sorting decision for different levels of the fixed payment (step 7). In case the subject had opted for the variable payment, the screen looked like this:

You have chosen the variable payment.

You will therefore receive 10 points for every correctly solved problem.

Imagine that the fixed payment would have been 450 points. Would you have chosen the variable payment in this case as well? YES NO

Imagine that the fixed payment would have been 500 points. Would you have chosen the variable payment in this case as well? YES NO

Imagine that the fixed payment would have been 550 points. Would you have chosen the variable payment in this case as well? YES NO

Imagine that the fixed payment would have been 600 points. Would you have chosen the variable payment in this case as well? YES NO

Imagine that the fixed payment would have been 650 points. Would you have chosen the variable payment in this case as well? YES NO

Imagine that the fixed payment would have been 700 points. Would you have chosen the variable payment in this case as well? YES NO

Imagine that the fixed payment would have been 750 points. Would you have chosen the variable payment in this case as well? YES NO

Imagine that the fixed payment would have been 800 points. Would you have chosen the variable payment in this case as well? YES NO

After you have clicked "START", you will have ten minutes to solve as many problems as you want.

Please click "START", once you are ready to start solving problems.

START

In case the subject had opted for the fixed payment, the screen looked like this:

You have chosen the fixed payment.

You will therefore receive 400 points.

If you had chosen the variable payment, you would have received 10 points for every correct answer.

Imagine that the fixed payment would have been 350 points. Would you have chosen the fixed payment in this case as well? YES NO

Imagine that the fixed payment would have been 300 points. Would you have chosen the fixed payment in this case as well? YES NO

Imagine that the fixed payment would have been 250 points. Would you have chosen the fixed payment in this case as well? YES NO

Imagine that the fixed payment would have been 200 points. Would you have chosen the fixed payment in this case as well? YES NO

Imagine that the fixed payment would have been 150 points. Would you have chosen the fixed payment in this case as well? YES NO

Imagine that the fixed payment would have been 100 points. Would you have chosen the fixed payment in this case as well? YES NO

Imagine that the fixed payment would have been 50 points. Would you have chosen the fixed payment in this case as well? YES NO

Imagine that the fixed payment would have been 0 points. Would you have chosen the fixed payment in this case as well? YES NO

After you have clicked "START", you will have ten minutes to solve as many problems as you want.

Please click "START", once you are ready to start solving problems.

START

The input screens for solving the problems during the 10-minute working time (step 8) were the same as in step 3. After the working time of ten minutes, self-reported efforts were elicited in step in exactly the same way as in step 4.

The screens for the trust game screens (step 10) looked as follows:

5. Instructions:

In this part of the experiment you will be randomly matched by the computer with one of the other 19 participants to form a group of two. Every participant receives an initial endowment of 120 points. In every group of two there are two roles: a sender and a receiver, each of which is assigned to one of the two group members.

The experiment consists of two stages:

In the **first** stage the sender can transfer an amount to the receiver. The amount transferred can be a multiple of 20 between 0 and 120 points, i.e., 0, 20, 40, 60, 80, 100 or 120 points. The amount that is transferred will be tripled by the experimenter.

Examples: If the sender transfers 60 points, the receiver receives 180 points.
If the sender transfers 10 points, the receiver receives 30 points. If the amount sent is 0, the receiver receives 0 points, etc.

At the end of the first stage the receiver has an amount at his disposal equal to the sum of his initial endowment and the tripled amount of the sender's transfer.

In the **second** stage the receiver can now send back an amount to the sender. This back transfer will not be tripled. The back transfer has to be an amount between 0 and 480. The back transfer determines the final payoffs.

The payoff functions are therefore:

For the sender: $120 - \text{amount sent} + \text{back transfer}$
For the receiver: $120 + 3 * \text{amount sent} - \text{back transfer}$

Example: The sender transfers 40 points.
At the end of the first stage the sender therefore has $120 - 40 = 80$ points and the receiver $120 + 3 * 40 = 240$ points.
In the second stage the receiver chooses a back transfer of 50 points.
The resulting payoffs in this case are: For the sender: $120 - 40 + 50 = 130$ points. For the receiver: $120 + 3 * 40 - 50 = 190$ points.

At the end of this part of the experiment the computer randomly determines whether you will be sender or receiver. Because you do not know yet whether you will be sender or receiver, you will now have to make a decision for each of the two roles. To do so you will have to make a decision on two separate screens: First as a receiver, then as a sender.

Please click "CONTINUE" to make your decisions.

Suppose you are in the role of the receiver!

Because you do not know yet which amount the sender will send you,
you have to decide for every possible amount sent which amount you want to transfer back.
The back transfer is an amount between 0 and 480 points.

Suppose...	The respective amounts of points at the end of the first round are...	How many points do you send back?
the sender transfers 0 points	120 points for the sender and 120 points for you	<input type="text"/>
the sender transfers 20 points	100 points for the sender and 180 points for you	<input type="text"/>
the sender transfers 40 points	80 points for the sender and 240 points for you	<input type="text"/>
the sender transfers 60 points	60 points for the sender and 300 points for you	<input type="text"/>
the sender transfers 80 points	40 points for the sender and 360 points for you	<input type="text"/>
the sender transfers 100 points	20 points for the sender and 420 points for you	<input type="text"/>
the sender transfers 120 points	0 points for the sender and 480 points for you	<input type="text"/>

Please click "CONTINUE"!

CONTINUE

Suppose you are in the role of the sender!

Please indicate the amount you want to transfer.
You can either transfer 0 points, 20 points, 40 points, 60 points, 80 points, 100 points, or 120 points.
Please click the amount that you want to transfer and confirm your choice by clicking "OK"!

- How much do you want to send to the receiver?
- 0 points
 - 20 points
 - 40 points
 - 60 points
 - 80 points
 - 100 points
 - 120 points

OK

The next screen informed subjects about their role in the trust game, about the respective decisions, and about payoffs. In case the subject was a sender, the screen looked like this:

The random draw determined that you act as a sender.

You transfer (points):	120
The player matched to you sends the following number of points back to you:	0
Your payoff is therefore 120 Punkte - 120 points + 0 points, i.e.:	0
The payoff (in points) of the other player is:	480

Please click "CONTINUE" to proceed with the experiment.

In case the subject was a receiver, the screen looked like this:

The random draw determined that you act as a receiver.

Your sender sends you:	120
You make the following back transfer to the sender:	0
Your payoff is therefore $120 + (120 \text{ points} * 3) - 0$ points, i.e.:	480
The payoff of the other player is (in points):	0

Please click "CONTINUE" to proceed with the experiment.

The next two screens concern the elicitation of risk attitudes with simple lotteries.

6. Instructions:

This part concerns the choice between a **lottery** and a **safe payment**.

On the following screen, 15 situations will be displayed. The lottery is the same in each situation, but the safe payment varies.

In the lottery you get 400 points with 50 percent probability and 0 points with 50 percent probability (determined by a random draw of the computer).

The following screen will present the 15 situations. Please decide in each situation whether you opt for the lottery or for the safe payment.

Once you have made your choice in each situation, the computer will randomly draw one situation.

In accordance with your choice in that situation you will either take part in the lottery or you will receive the safe payment.

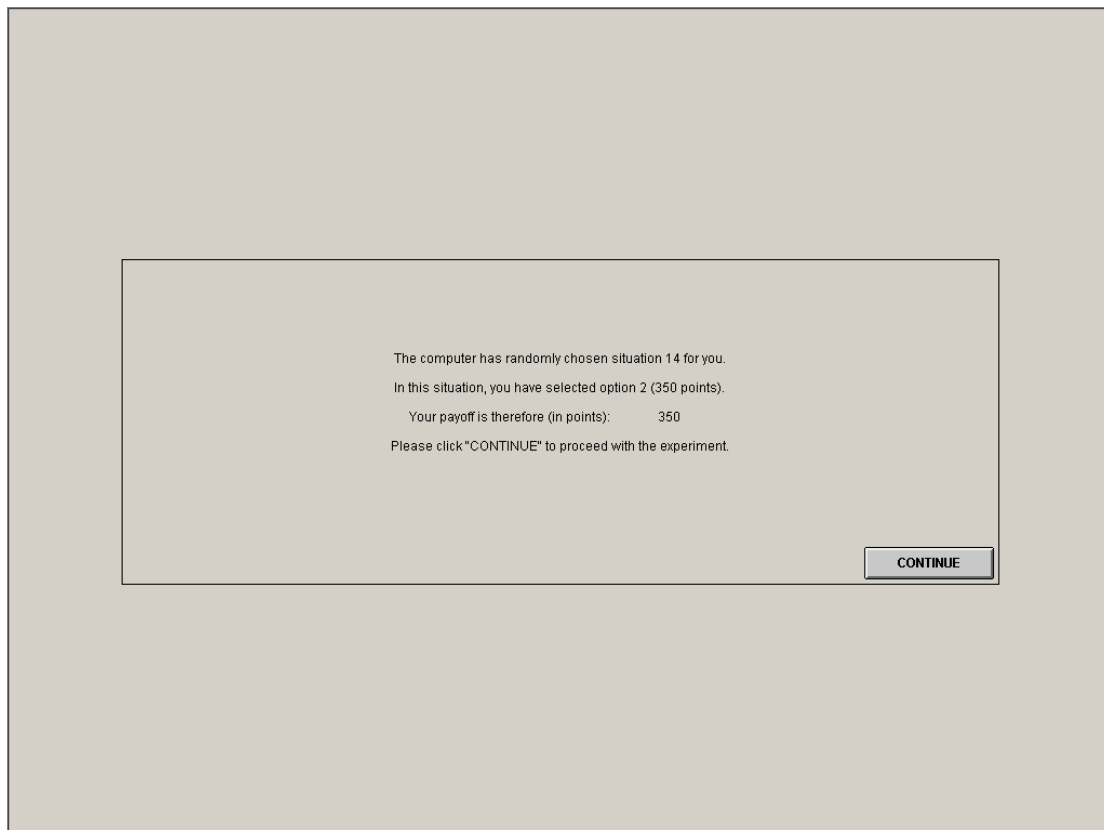
Please click "CONTINUE" in order to make your decisions.

Please decide in each situation, whether you opt for the lottery or for the safe payment.

Situation	Lottery	Safe payment	Your choice
1	50% chance to get 400 points and 50% chance to get 0 points	25 points	lottery <input type="radio"/> safe payment <input type="radio"/>
2	50% chance to get 400 points and 50% chance to get 0 points	50 points	lottery <input type="radio"/> safe payment <input type="radio"/>
3	50% chance to get 400 points and 50% chance to get 0 points	75 points	lottery <input type="radio"/> safe payment <input type="radio"/>
4	50% chance to get 400 points and 50% chance to get 0 points	100 points	lottery <input type="radio"/> safe payment <input type="radio"/>
5	50% chance to get 400 points and 50% chance to get 0 points	125 points	lottery <input type="radio"/> safe payment <input type="radio"/>
6	50% chance to get 400 points and 50% chance to get 0 points	150 points	lottery <input type="radio"/> safe payment <input type="radio"/>
7	50% chance to get 400 points and 50% chance to get 0 points	175 points	lottery <input type="radio"/> safe payment <input type="radio"/>
8	50% chance to get 400 points and 50% chance to get 0 points	200 points	lottery <input type="radio"/> safe payment <input type="radio"/>
9	50% chance to get 400 points and 50% chance to get 0 points	225 points	lottery <input type="radio"/> safe payment <input type="radio"/>
10	50% chance to get 400 points and 50% chance to get 0 points	250 points	lottery <input type="radio"/> safe payment <input type="radio"/>
11	50% chance to get 400 points and 50% chance to get 0 points	275 points	lottery <input type="radio"/> safe payment <input type="radio"/>
12	50% chance to get 400 points and 50% chance to get 0 points	300 points	lottery <input type="radio"/> safe payment <input type="radio"/>
13	50% chance to get 400 points and 50% chance to get 0 points	325 points	lottery <input type="radio"/> safe payment <input type="radio"/>
14	50% chance to get 400 points and 50% chance to get 0 points	350 points	lottery <input type="radio"/> safe payment <input type="radio"/>
15	50% chance to get 400 points and 50% chance to get 0 points	375 points	lottery <input type="radio"/> safe payment <input type="radio"/>

Please click "OK" once you have made your choice for all situations.

Subjects were informed about the outcome of the lottery experiment on the following screen:



Finally subjects answered a set of questions, including questions about risk attitudes, personality as well as math and high-school grades. They were then also informed about all outcomes and the resulting final payoffs.