Supplementary Material

Questionnaires which were administered in the current study but the outcome of which was not analyzed:

Staircase Risk Elicitation Task: Falk, A., Becker, A., Dohmen, T., Huffman, D., & Sunde, U. (2016). The preference survey module: A validated instrument for measuring risk time, and social preferences. *Working Paper*.

State and Trait Anxiety Inventory: Spielberger, C. D., Gorusch, R. L., & Lushene, R. E. (1970). *Manual for the state-trait anxiety inventory.* Palo Alto, CA: Consulting Psychologists Press.

Emotional Distress and Empathic Concern Scales: Batson, D. C., Sager, K., Garst, E., Kang, M., Rubchinsky, K., & Dawson, K. (1997). Is Empathy-Induced Helping Due to Self-Other Merging? *Journal of Personality and Social Psychology, 73*(3), 495-509.

Table S1. Main models of physiological responses: heart rate (HR) and skin conductance levels (SCL)

	SCL		HR	
	χ^2(df)	*p*	χ^2(df)	*p*
Threat condition	64.27(2)	<.001	0.33(2)	.85
Trial	391.10(1)	<.001	105.38(1)	<.001
Block	3.70(1)	.05	3..53(1)	.06
Threat condition x Trial	3.72(2)	.16	10.13(2)	.006
Threat condition x Block	2.89(2)	.23	2.38(2)	.30
Trial x Block	34.16(1)	<.001	25.25(1)	<.001
Threat condition x Trial x Block	2.28(2)	.32	4.94(2)	.084

Table S2. Main models of the contributions and free-riding decisions in the public goods game

	Individual contributions		Free-riding decisions	
	χ^2(df)	*p*	χ^2(df)	*p*
Threat condition	1.97(2)	.37	1.29(2)	.52
Trial	80.78(1)	<.001	66.23(1)	<.001
Block	1.11(1)	.29	1.01(1)	<.31
Threat condition x Trial	6.18(2)	.045	5.58(2)	.06
Threat condition x Block	12.42(2)	.002	6.77(2)	.03
Trial x Block	0.76(1)	.38	0.16(1)	.69
Threat condition x Trial x Block	15.77(2)	<.001	0.67(2)	.72

Table S3. Contributions and free-riding decisions in the second decision-making block of the public goods game

	Individual contributions		Free-riding decisions	
	χ^2(df)	*P*	χ^2(df)	*p*
Threat condition	4.42(2)	.11	1.35(2)	.51
Trial	30.29(1)	<.001	31.39(1)	<.001
Threat condition x Trial	12.25(2)	.002	1.65(2)	.44

Table S4. Free-riding decisions as a function of threat condition and SVO (social value orientation) in the first decision making block

	χ^2(df)	*p*	**Estimate**	**OR**	**CI [95%]**
Threat condition	15.59(2)	<0.01			
SVO angle	7.71(1)	.005			
Threat condition x SVO angle	12.09(2)	.002			
Threat vs. Safe SVO angle			-0.38	0.68	[0.47, 0.89]
Threat vs. Mild SVO angle			-0.52	0.60	[0.42, 0.87]
Mild vs. Safe SVO angle			0.13	1.14	[0.81, 1.81]

Table S5. Interaction between physiological responses: heart rate (HR), skin conductance levels (SCL), and threat conditions, and their effects on contributions to the group pool (in the first decision making block)

	With HR responses while controlling for SCL		With SCL responses while controlling for HR	
	χ^2(df)	*p*	χ^2(df)	*p*
Threat condition	4.43(2)	.12	4.40(2)	.11
HR	0.34(1)	.56	0.54(1)	0.46
SCL	3.08(1)	.08	0.92(1)	.34
Threat condition x HR	0.82(2)	.66		
Threat condition x SCL			0.90(2)	.64

Table S6. Free-riding decisions as a function of SVO (social value orientation) and heart rate changes in threat vs. safe condition (in the first decision making block)

	Estimate	**SE**	χ^2	*p*
Intercept	-0.017	0.03		
Baseline-corrected HR (threat-safe)	-0.02	0.02	1.40	0.24
SVO angle	-0.02	0.02	1.94	0.16
HR x SVO angle	-0.008	0.02	0.26	0.61

Table S7. The effects of self and other participants' contributions on N-1 trial on contributions in the subsequent, N trials (for the first decision making block)

	Contributions on N trial	
	χ^2(df)	*p*
Self-contributions N-1 trial	55.95(1)	<.001
Others' contributions N-1 trial	184.03(1)	<.001
Threat condition	0.07(2)	.97
Self-contributions N-1 x Others' contributions N-1	1.28(1)	.26
Self-contribution N-1 x Threat condition	4.31(2)	.11
Others' contributions N-1 x Threat condition	3.12(2)	.21
Self-contributions N-1 x Others' contributions N-1 x Threat condition	0.64(2)	.73

Table S8. Contributions to the group pool, including trials on which shocks were delivered (in the first decision block)

	Individual contributions	
	χ^2(df)	*p*
Threat condition	2.29(2)	.32
Trial	92.64(1)	<.001
Block	1.55(1)	.21
Threat condition x Trial	9.64(2)	.008
Threat condition x Block	13.94(2)	<.001
Trial x Block	0.86(1)	.35
Threat condition x Trial x Block	19.63(2)	<.001

Threat and cooperation

Task instructions

Instructions

In this task, you are part of a group of 3 participants.

The other two participants are present in the room, but you will not meet them, nor will you learn about their identity. Likewise, the other participants will not learn about your identity. Everything what you do in this study will be completely anonymous to them.

Each of you will make decisions that influence the earnings of yourself and the earnings of other group members.

On the next page, you will learn about the rules of the task.

Next

Instructions

The task consists of multiple blocks.

Each block consists of 10 rounds.

In each round, you and the other group members will each receive 10 Monetary Units – we will refer to these as MU.
The conversion rate of MU to euro is: 100MU = €8.00.

In each round, you have to decide how many of your MU you want to invest into a group pool. All other group members will make the same decision about their MU at the same time as you do.

The MU that you do not invest into the group pool will remain yours to keep.

The MU that you invest into the group pool, instead, will be multiplied by 1.5 and divided equally among all three group members. In other words, for each MU that you invest into the group pool, you and each other group member will receive 0.5 MU in return.

You are free to keep or invest any integer amount from 0 to 10 MU in each round.

The same rules apply to the other group members.

After every group member made their decision, you will see how much they invested, earned and kept in their personal pools.

You will have max. 10 seconds to make a contribution decision, and 10 seconds to evaluate the results of each round.

Back

Next

Example 1

The following examples demonstrate the rules of the task. The examples serve illustrative purposes only.

Each group member has an endowment of 10 MU.
Each group member contributes 6 MU to the group pool. Hence, the three group members, invested a total of 18 MU into the group pool.

The total earnings from the group pool amounts to 27 MU (= 18MU x 1.5).
From the group pool, each participant receives an equal share of 9 MU (= 27 MU / 3).
At the end of a round, each participant earns 13 MU (= 4 MU which were not invested + 9 MU from the group pool).

	You:	Group member 2:	Group member 3:
contributions	6	6	6

↓ ↓ ↓

Total contribution to the group pool:
18

Group earnings:
27

↓ ↓ ↓

	You:	Group member 2:	Group member 3:
group share	9	9	9
kept	4	4	4
earnings	13	13	13

Back Next

Example 2

Participant 1 invests 6 MU to the group pool. Participants 2 and 3 each invests 0 MU to the group pool. Hence, the three group members invested a total of 6 MU to the group pool.

The total earnings from the group pool amounts to 9 MU (= 6 MU x 1.5).
From the group pool, each participant receives an equal share of 3 MUs (= 9 MU / 3).
At the end of this round, participant 1 earns 7 MU (4 MU which were not invested + 3 MU from the group pool), whereas participants 2 and 3 each earn 13 MU(10 MU kept + 3 MU from the group pool).

	You:	Group member 2:	Group member 3:
contributions	6	0	0

↓ ↓ ↓

Total contribution to the group pool: 6

Group earnings: 9

↓ ↓ ↓

	You:	Group member 2:	Group member 3:
group share	3	3	3
kept	4	10	10
earnings	7	13	13

Back Next

Instructions

Sometimes during the task, you may receive an electric shock or a mild sensory stimulation to your fingers.

When the icons of the group members are **RED**, you and other group members may receive an unpleasant electric shock at the same time to your fingers.

When the icons of the group members are **YELLOW**, you may receive a mild sensory stimulation at the same time to your fingers..
This sensation will not be unpleasant.

When the icons of the group members are **GREEN**, you will not receive electric shocks, nor any other stimulation to your fingers.

Back Next

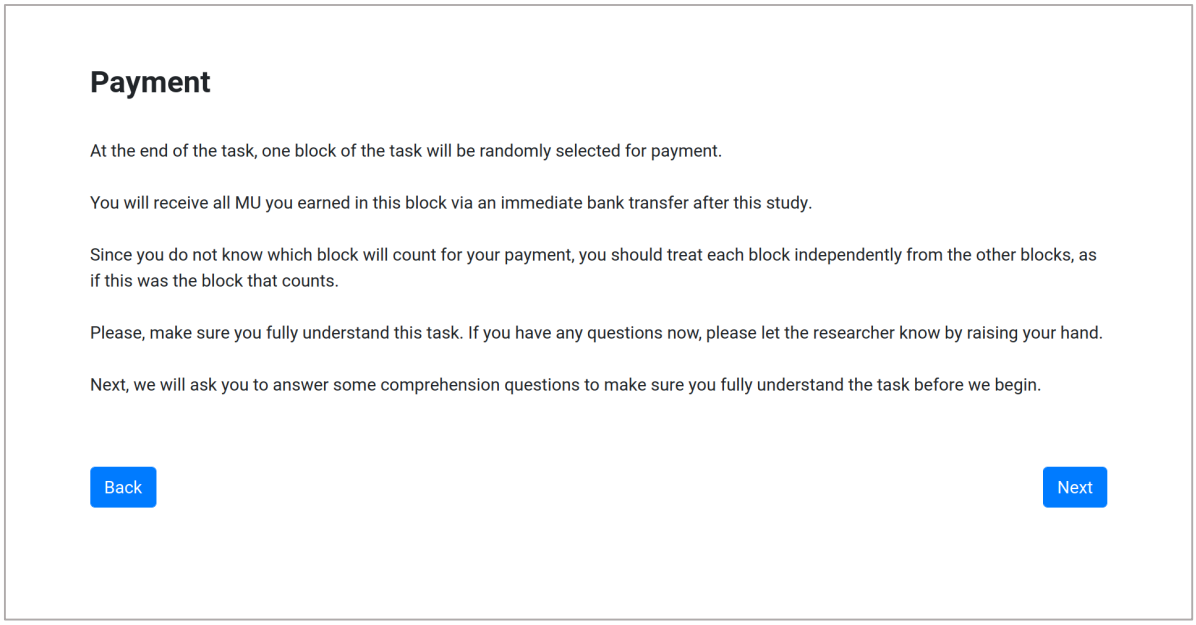
Instructions

Always make a contribution decision, and confirm it by pressing the **SUBMIT** button.
Each time, you will have 10 seconds to make this decision.

If you do not make a decision (i.e., if you leave the contribution field empty), the computer will make a random contribution for you (from 0 to 10 MU). However, your total earnings from that round will be 0.

This will also happen if you do not confirm your decision with the SUBMIT button.

Back Next


Payment
At the end of the task, one block of the task will be randomly selected for payment.
You will receive all MU you earned in this block via an immediate bank transfer after this study.
Since you do not know which block will count for your payment, you should treat each block independently from the other blocks, as if this was the block that counts.
Please, make sure you fully understand this task. If you have any questions now, please let the researcher know by raising your hand.
Next, we will ask you to answer some comprehension questions to make sure you fully understand the task before we begin.
Back
Next

Comprehension questions (1)

Please, answer the following questions to demonstrate your comprehension of the task. You can continue with the task. after you answer these questions correctly.

How much I earn in this task depends only on my decisions.

- ○ correct
- ○ incorrect

How much I earn in this task may depend on the decisions of other group members.

- ○ correct
- ○ incorrect

When the participants' icons are red, I and other group members may receive electric shocks at any point when the icons are displayed.

- ○ correct
- ○ incorrect

When the participants' icons are green, I and other group members will never receive electric shocks nor mild sensory stimulation.

- ○ correct
- ○ incorrect

When the participants' icons are yellow, I and other group members may receive a mild sensory stimulation at any point when the icons are displayed.

- ○ correct
- ○ incorrect

Next

Comprehension questions (2)

Please calculate the earnings for the following hypothetical scenario:

In a given round:
group member 1 invested 4 MU (and, hence, kept 6 MU)
group member 2 invested 4 MU (and, hence, kept 6 MU)
group member 3 invested 4 MU (and, hence, kept 6 MU)

Hence, together, there is 12 MU in the group pool.
The group pool is then multiplied by 1.5 and divided equally among all group members.



	You:	Group member 2:	Group member 3:
contributions	4	4	4

Total contribution to the group pool:
12

Group earnings:
18

	You:	Group member 2:	Group member 3:
group share	[Q1]	[Q1]	[Q1]
kept	6	6	6
earnings	[Q2]	[Q2]	[Q2]

[Q1]: How many MU each group member would receive from the group pool?

- ○ 4
- ○ 6
- ○ 12
- ○ 18

[Q2]: How many MU would every group member earn in this round?

- ○ 4
- ○ 6
- ○ 12
- ○ 18

Next

Comprehension questions (3)

Please calculate the earnings for the following hypothetical scenario (2):

In a given round:

group member 1 invested 3 MU (and, hence, kept 7 MU)
group member 2 invested 5 MU (and, hence, kept 5 MU)
group member 3 invested 8 MU (and, hence, kept 2 MU)

Hence, together, there is 16MU in the group pool.
The group pool is then multiplied by 1.5 and divided equally among all group members.

	You:	Group member 2:	Group member 3:
contributions	3	5	8

↓ ↓ ↓

Total contribution to the group pool: 16

Group earnings: 24

↓ ↓ ↓

	You:	Group member 2:	Group member 3:
group share	[Q1]	[Q1]	[Q1]
kept	7	5	2
earnings	[Q2]	[Q3]	[Q4]

[Q1]: How many MU each group member would receive from the group pool?

- ○ 6
- ○ 8
- ○ 16
- ○ 24

How many MU each group member would earn in this round?

[Q2] Group member 1:

- ○ 10
- ○ 13
- ○ 15
- ○ 26

[Q3] Group member 2:

- ○ 10
- ○ 13
- ○ 15
- ○ 26

[Q4] Group member 3:

- ○ 10
- ○ 13
- ○ 15
- ○ 26

Next

Decision making task

You have answered all the comprehension questions correctly.

Press the 'Start the task' button to begin the task.

Start the task