Supporting Material
(not for publication)

1. Measuring cooperation

The mean cooperation rate for economy $k=1,..,n$ is measured by coding a cooperative action as 1 (0 otherwise). Define the action $a_{it}^k=0,1$ of subject $i=1,..4$ in period $t=1,..,T^k$ of the economy k; average cooperation in economy k is $c_k = \frac{1}{4T^k}\sum\sum a_{it}^k$ between zero and one, and across economies is $c = \frac{1}{n}\sum_{k=1}^{n} c_k$. Thus, although economies have different length T^k, they are given equal weight in our measure c of average cooperation. In economy k the coordination on cooperation rate is $cc_k = \frac{1}{T^k}\sum_{t=1}^{T^k}\prod_{i=1}^{4} a_{it}^k$; the average across economies is $cc = \frac{1}{n}\sum_{k=1}^{n} cc_k$. The duration of each supergame 1 through 5 for each session is reported below:

Treatments		1	2	3	4	5	Total
Baseline	Session 1	24	19	47	25	14	129
	Session 2	13	11	7	41	53	125
Pledge	Session 1	47	2	10	3	13	75
	Session 2	3	7	2	42	25	79

2. **Treatment effects on cooperation**

	[1] Average cooperation rates *Tobit regression*	[2] Average cooperation in period 1 *Logit regression, marginal effects*	[3] Coordination on cooperation *Tobit regression*
Pledge (dummy)	0.413***	0.099	0.612**
	(0.143)	(0.102)	(0.276)
Cycle dummies			
Cycle 2	0.124**	-0.073	0.318***
	(0.053)	(0.081)	(0.014)
Cycle 3	0.378***	-0.011	0.511***
	(0.061)	(0.031)	(0.075)
Cycle 4	0.456***	0.068	0.582***
	(0.138)	(0.076)	(0.139)
Cycle 5	0.566***	0.099	0.730***
	(0.166)	(0.111)	(0.216)
Cycle dummies x Pledge			
Cycle 2 x Pledge	-0.510***	-0.186*	-1.217***
	(0.183)	(0.108)	(0.060)
Cycle 3 x Pledge	-0.531***	-0.152	-1.323**
	(0.192)	(0.111)	(0.540)
Cycle 4 x Pledge	-0.441*	-0.178	-1.113***
	(0.229)	(0.124)	(0.307)
Cycle 5 x Pledge	-0.786***	-0.228	-1.024***
	(0.295)	(0.161)	(0.326)
Length of the current cycle	-0.010**	-0.002	-0.003
	(0.004)	(0.002)	(0.002)
Length of the previous cycle	0.008***	0.004***	0.012***
	(0.001)	(0.001)	(0.004)
Constant	0.434***		-0.668**
	(0.120)		(0.293)
N	400.000	400.000	100.000
Log-likelihood	-367.978	-306.751	-244.116

Notes: * *Standard errors in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%. Standard errors are robust for clustering at the session level. In models [1] and [2], the unit of observation is the subjects, in a cycle. In model [3] the unit of observation is the economy in a cycle.*

Table A1: treatment effects on cooperation

Table A1, column [1] reports the results from a tobit regression that explains the individual choice to cooperate (1) or not (0) using treatment dummies and other regressors that control for fixed effects (cycles, duration of the current and previous cycle). The availability of structured communication in the *Pledge* treatment is associated with an initial *increase* in the cooperation rate for the representative subject, but this effect vanishes in later cycles: cooperation rates significantly increase in the *Baseline*, but not in the *Pledge* treatment. The other columns consider cooperation in period 1 and a measure of coordination on cooperation.

3. **Effect on cooperation of manifesting a cooperative intention**

Dependent variable: cooperation marginal effects from probit regressions	*Pledge*
msg_sent (*=1 if subject Sent cooperative message Y*)	0.558***
	(0.043)
msg_observed (*=1 if subject observed 2 or 3 cooperative messages*)	0.088*
	(0.047)
(msg_sent.) x (msg_observed)	0.313***
	(0.035)
cycle 2	-0.135*
	(0.072)
cycle 3	0.001
	(0.007)
cycle 4	-0.221**
	(0.105)
cycle 5	0.028***
	(0.005)
Duration of previous cycle	-0.004**
	(0.002)
communication (1 in periods 1, 5, 9,..)	0.087**
	(0.040)
Pseudo R-squared	0.335
Observations	2880

Table A2: Effect of signaling cooperative intentions on cooperation

Notes: *We regress the binary choice of cooperation/defection on three main regressors, as well as standard control variables (duration of the previous cycle, cycle and period dummies, individual fixed effects, and a dummy for periods in which communication was possible). The first regressor is a dummy that takes value 1 when the subject signaled her intention to cooperate (i.e., sent a message Y "for herself") and 0 otherwise. The second regressor is also a dummy, which takes value 1 in periods when communication was possible and the subject observed at least two cooperative messages from others. The third regressor is an interaction term between the first two. Standard errors robust for clustering at the session level are reported in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%. Individual fixed effects.*

In the probit regression reported in Table A2, we explain the cooperation actions (0=defect, 1=cooperate) using as independent variables the messages made public in the economy, controlling for period effects, cycle order and duration.

Instructions (Pledge treatment)

<u>Overview</u>

This is an experiment in decision-making. Purdue University has provided funds for this research. The instructions are simple. If you follow them carefully and make good decisions, you can earn an appreciable amount of money. These earnings will be paid to you in cash at the end of the experiment.

We ask that you not talk with one another for the duration of the experiment. Please turn off your cell-phones. Do not use e-mail.

During the course of this experiment, you will be called upon to make decisions in several periods. The experiment is divided into **five** sequences of periods and each sequence is referred to as a **cycle**.

- At the beginning of a cycle, each participant in this room will be randomly assigned to a **set**.

- In each set there will be **four** persons**.**

- For the whole duration of a cycle, you will interact exclusively with the three other participants in that set and nobody else.

- You will never meet again these participants in the following cycles.

In each **period** of a cycle:

- In each period you will be matched to one other participant selected at random from the set you are assigned to. We will refer to this person as "**your match**."

- You will not be informed of the identity of your match. Hence, you do not know when you have already interacted with that person in previous periods of the same cycle.

- You and your match will interact according to the rules described in the upper portion of your screen. The rules will be explained in a moment.

- After each period you will be re-matched to a participant chosen at random from the set you are assigned to. There is one chance out of three that you will be matched with any given person in your set.

Period

Period: 3 Your ID: 10

Action stage:

you don't know the ID of ~~your match~~

Choice of your match

	Y	Z
Y	You get 25, your match gets 25	You get 5, your match gets 30
Z	You get 30, your match gets 5	You get 10, your match gets 10

Your choice

Please enter your choice

○ Y
○ Z

Monitoring action:

○ monitor
◉ don't monitor

Submit

Suggestions

	You	Your match	Everyone else
Yours -->	Y	Y	Y
	Z	Z	
	Y		

Your set

Summary of Results in cycle 1

Persons in your set: ID10 (you) , ID13, ID4, ID7

Period	ID10	Your match	Other person	Other person	Differences in choices discovered	Your match ID	Your earnings
1	Y	Y Z	Z Z	Y Y	1	unknown unknown unknown	25 5

History of choices of your previous matches

Interaction rules

In a period you can make either of two choices, Y or Z. In addition, you can "monitor" or "not monitor" the people in your set. The points you earn in this **action stage** depend upon both the choice you make and the choice made by others in that period. We now focus on the choice of either Y or Z, by you and your match. Later we explain the "monitor" choice. As the payoff table on your screen (above) indicates, there are four possible outcomes:

1. If you and your match choose Y then: you both earn **25** points.

2. If you choose Y and your match chooses Z then: you earn **5** points and your match earns **30** points.

3. If you choose Z and your match chooses Y then: you earn **30** points and your match earns **5** points.

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4. If you both choose Z then: you both earn **10** points.

In each period you can also select either **"monitor**" or **"not monitor."** This choice will become clear in a moment once you have learnt about the **suggestion stage**. **Through a suggestion you will be able to tell other people, without any commitment nor cost, if you suggest to choose Y or Z.**

A. If you select "**monitor**," you will pay a fee of **1** point.
   The consequence is this: **anyone** in your set (including you) who made a choice Y or Z that is different than her suggestion Y or Z will lose **10** points.

   Example: suppose this period you select to monitor. If someone in your set choose Y this period but had previously suggested Z, then she loses 10 points. Basically, your request to monitor compares the Y/Z choices of everyone in your set with their individual Y/Z suggestions. In the example, if someone suggests Y for herself and then does indeed choose Y, she never lose points because of monitoring. Also, if someone makes no suggestion for herself, she never loses points because of monitoring.
   As a result of monitoring either 0, 1, 2, 3, or 4 people may lose 10 points each.

B. If you select "**not monitor**," you will not pay any fee.
   There are two important things to know.
   First, even if you select "not monitor," someone else might monitor you. In that case, you lose 10 points if your Y/Z choice is different than your suggestion for yourself.
   Second, if more than one person selects to monitor, you still lose 10 points and not more.

To make one of the choices, click the button next to either Y or Z. You may change your mind at any time prior to clicking the "Submit" button by simply clicking on the button next to Y or Z. You are free to choose Y or Z in every period. In addition, to make the other choice, click the button next to either monitor or not monitor. You are free to choose monitor or not monitor in every period. When you are satisfied with both your Y/Z choice and your monitoring action, click the "Submit" button.

In addition to the action stage described above, **there will be a suggestion stage before period one and then every four periods**. In the suggestion stage you will have an opportunity to exchange suggestions about choices with everyone in your set. You are free to skip the suggestion stage entirely by clicking the "No Suggestion" button.

The suggestion stage gives you the opportunity to suggest choice Y or Z for any person in your set. Suggestions concern choices for you, for your match, and for everyone else in your set. To share your suggestion, click the "Submit suggestion" button. Your suggestion is shared with everyone in your set. All suggestions from people in your set will be displayed in a table in the middle of the screen.

In the action stage, you are always free to choose Y or Z regardless of suggestions made by you or others in the suggestion stage. After all choices and suggestions for the period have been made, the results of the period will appear on your screen.

Your results →

Period 2 Results

Your choice:	Y
Choice of your match:	Y
Outcome:	25
Monitoring fee:	-1
Loss from being monitored:	0
Your period earnings:	24

Random number →

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The cycle: will continue

[Continue]

Suggestions

	You	Your match	Everyone else
Yours →	Y		
	Y	Y	
	Z	Z	Z

Summary of Results in cycle 2

Persons in your set: ID7 (you), ID4, ID10, ID13

Period	ID7	Your match	Other person	Other person	Differences in choices discovered	Your match ID	Your earnings
1	Y	Z	Z	Y	1	unknown	4
2	Y	Z	Z	Z	0	unknown	24

The result screen (above) will display the number of points you have earned for the period as well as **the choices of all four persons in your set**. The first column of the 'Summary of Results' table contains your past choices. The second column concerns the choices of your previous matches. The third and fourth columns list the choices of the other two persons in your set. Notice that **choices in the column labeled "Your match" were most likely made by different persons in different periods. The same can be said for the two columns labeled "Other person".**

You will also learn the outcome from monitoring. If the "Differences in choices discovered" column is empty in a given period then you know that no one selected "monitor." Instead, if a number 0, 1, 2, 3, or 4 is present, then you know that someone chose "monitor," and the number indicates how many people made choices that differed from their suggestions. Keep in mind that the way people are ordered in the Summary of Results table is generally different than in the Suggestion table. Please record your results for the period on your RECORD SHEET under the appropriate headings.

At this stage a ball will be drawn from an urn containing one hundred balls numbered from 1 to 100. Each ball is equally likely to be selected. The computer program will randomly draw a ball and show the number on the result screen (above). If this random number is less than or equal to 95, then the cycle will continue into the next period. If this number is greater than 95, then the cycle ends. Therefore, **after**

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each period there is a 95% chance that there will be another period of interactions in the cycle and a 5% chance that the cycle will end.

Suppose that a number less than or equal to 95 has been drawn. Then you press the "Continue" button to proceed. You will face the same decisional situation as in the previous period, but **with a person selected at random from the set of participants you were assigned to**. Remember that there are four participants in each set.

Before making your choice, you may review all the outcomes in previous periods of the cycle by scrolling down the "Summary of Results" table. The table shows your past choices and the past choices of all persons in your set. You then choose either Y or Z and either "monitor" or "not monitor." All choices for this period are recorded and added to the Summary of Results table in the lower portion of your screen. You then record the outcome and your point earnings for the period.

If the number drawn is greater than 95 then the cycle ends. When a cycle ends, you will be notified in a new screen. There will be a total of five cycles. The rules in the following cycles are the same as in the first, but you will interact with different persons. More precisely, after each cycle, new sets of persons will be formed. This assignment does not depend on actual choices. **A participant will never interact with a person for more than one cycle.**

Earnings

The points you earned in each period are added up. For every 10 points that you earn you will receive 13 cents ($.13). Therefore, the more points you earn the more money you earn. You will be paid your earnings in cash and in private at the end of today's session.

<u>Final Comments</u>

First, do not discuss your choices or your results with anyone at any time during the experiment.

Second, your ID# is private. Do not reveal it to anyone.

Third, since there is a 95% chance that at the end of a period the cycle will continue, you can expect, on average, to interact for 20 periods in a given cycle. However, since the stopping decision is made randomly, some cycles may be much longer than 20 periods and some others may be much shorter.

Fourth, remember that after each period you will be matched randomly to someone in the set you were assigned to. As there are four people in the set, the probability of you being matched with the same person in two consecutive periods of a cycle is 1/3. You are not told the identity of your match.

Fifth, before period one and then every four periods there will be a suggestion stage. In that stage you have an opportunity to suggest choices to people in your set. In the action stage everyone is free to choose Y or Z independently from any suggestion and everyone has an opportunity to "monitor" others in the set.

Sixth, the rules are the same in all five cycles. After a cycle, you will never meet again the same participants.

<u>Questions?</u>

Now is the time for questions. Does anyone have any questions before we begin?

QUIZ

1. The total number of **cycles** is _____

2. You are at the beginning of the cycle. How many **periods** do you expect the cycle will last, on average? _____

3. You are in period 15 of the cycle. How many additional **periods** do you expect, on average? _____

4. The number of **participants** in the experiment (total in the room) is_____

5. In a given **cycle** with how many participants could you interact with (i.e. number of people in a set)? _____

6. If you select to monitor, how many participants do you actually monitor? _____

7. Other than your match, will you know at the end of the period the actions taken by people **in your set**? _____

8. Will you know at the end of the period the actions taken by participants **outside your set**? _____

9. Before choosing an action, will you know the **ID** of your match? _____

10. If ID 5 is in your set this cycle, is there any chance that ID 5 will be your match in future cycles? _____

11. How many points do you earn if both you and your match choose **Y** and nobody monitors? _____

12. In the action stage, you chose **Z** and "monitor." Your match chose **Y.** How many points do you earn? _____

13. In the suggestion stage you suggested Y for yourself. In the action stage, you chose **Z** and "not monitor." Your match chose **Y** and "monitor." How many points do you earn? _____

12. If the experiment lasts 100 periods and everybody always chooses **Y** and nobody monitors (see question 11), how many dollars are you going to earn? _____

15. How many points do you earn if you and your match choose **Z** and nobody monitors? _____

16. If the experiment lasts 100 periods and everybody always chooses **Z** and nobody monitors (see question 15), how many dollars are you going to earn? _____