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Intelligence Disclosure and Cooperation in Repeated Interactions

Abstract

We investigate in a laboratory setting whether revealing information on intelligence affects behavior in games with repeated interactions. In our experimental design we communicate information on the cognitive ability of both players. We use three stage games: Prisoners' Dilemma (PD) and two versions of Battle of Sexes (BoS), with high and low payoff inequality. We find that the information affects strategic behavior significantly in two distinct ways. In PD, disclosure markedly hampers cooperation, as higher intelligence players are less cooperative once they are made aware that they play against someone of lower ability than themselves in the disclosure treatment. Similarly, in BoS with low payoff inequality, disclosure disrupts coordination on outcomes with positive payoffs, as higher intelligence players try to force their most preferred outcome onto the less intelligent. However, in BoS with high payoff inequality, this pattern of behavior dramatically changes. Disclosure does not significantly affect coordination rates. Differently from the low payoff inequality game, coordination is achieved more often on outcomes that favour less intelligent players. We conjecture that when coordination becomes more difficult, because of the high inequality between payoffs, intelligence and inequality together form a coordination device.

JEL-Codes: C730, C910, C920, D830.

Keywords: repeated prisoners dilemma, cooperation, intelligence, IQ.

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1 Introduction

How does knowledge of cognitive skills of the others affect cooperation in repeated interactions? This question is of primary importance to evaluate the relevance of experiments on strategic interactions. In the laboratory, subjects typically interact anonymously, thus, such information is hidden. On the other hand, in many real life interactions, individuals will often have some information or form some impression on the characteristics of the person they are dealing with, in particular regarding cognitive skills and personality. This knowledge could significantly be affecting choices and behavior.

When no information on the cognitive skills of others is revealed, there is a systematic relationship between cognitive skills and strategic behaviour under repeated interactions; this topic has now been widely investigated (Alaoui and Penta, 2015; Brocas and Carrillo, 2021; Burks et al., 2009; Gill and Prowse, 2016; Jones, 2008; Proto et al., 2019, forthcoming). Thus, as part of this general research agenda, a natural question arises: should more intelligent players trust the less intelligent ones *when they know that their opponent is less intelligent than they are*, and vice versa. Understanding how information on an opponent's ability affects behavior is useful in applications to social interactions, which are seldom completely anonymous. But this understanding can also have theoretically interesting implications: players may have an incentive to signal their cognitive skills, or not, in order to affect the beliefs and decisions of others. This paper considers whether and in which direction the provision of information on the relative level of intelligence affects behavior.

The theoretical literature is mostly silent about the effect of information of varying levels of cognitive skills of interacting players. Most of classic game theory results hold under the assumption of *common knowledge of rationality*.[1] Introducing different cognitive skills of players opens the question of what would be a meaningful definition of common knowledge of rationality. In the current paper, we analyze the effect of disclosing the cognitive skills of the two players in repeated interactions. In other words, disclosing the relative rationality of each player within a given pair of players.

[1]For example Aumann (1995) shows that backward induction outcome is reached under common knowledge of rationality in extensive form games of perfect information.

There are laboratory experiments showing that the identity of the partner can affect strategic behaviour. In particular, Eichberger et al. (2008) introduce the notion of lack of confidence in probability judgements in a static game and show that playing against a granny, a game theorist or other subjects generate different levels of strategic ambiguity in a static game and experimental subjects play accordingly. Palacios-Huerta and Volij (2009) show that laboratory subjects play more in accordance to sub-game perfect Nash equilibrium when matched with professional chess players than when they play among each other. Knowing the level of intelligence of the partner is also important in order to convey information about the likely nature of mistakes in cooperation. Proto et al. (forthcoming) show that players become less lenient or even non-cooperative when partners are more likely to commit mistakes. On the other hand, Fudenberg et al. (2012) show that subjects become more lenient as the probability that their partners make involuntary mistakes increases.

The effect of intelligence disclosure on behavior is potentially complex. On the one hand, higher intelligence is linked to higher cooperation (see e.g. Proto et al., 2019) making it tempting to conclude that the less intelligent should place their trust in the more intelligent in situations where cooperation is possible. However, the less intelligent might potentially be suspicious of the more intelligent, who might use their cognitive skill advantage for their own benefit. This consideration would lead to reduced trust from less to more intelligent; at least in cases where the less intelligent are not at the lower end of the distribution, otherwise they may not be able to think and adapt their behaviour strategically as Gill and Prowse (2016) show. At the same time, individuals of higher intelligence may worry that those of lower intelligence cannot correctly understand the game. This could stem from either a belief that the less intelligent are not able to fully comprehend the long-run benefits of cooperation, or even that they are more likely to commit mistakes that would disrupt cooperation.

Accordingly, we investigate the effect of intelligence disclosure on behavior in two common games of cooperation and coordination across three conditions, designed to enlighten the role of these different factors. Specifically, we use a repeated Prisoners' Dilemma game, in which subjects are faced with the temptation to renege on cooperation; and a Battle of Sexes that doesn't entail the aforementioned temptation, but allows players to exploit others through enforcing their own preferred outcome. We adopt two Battle of Sexes game versions, with two different payoff matrices: one where the non-zero payoff outcomes entail more inequality, hence making coordination naturally more difficult and one with less inequality in the non-zero payoff outcomes.

We find that disclosure significantly affects behavior as subjects try to use the disclosed information in adjusting their actions. In the Prisoners' Dilemma, disclosure hampers cooperation in the early stages. With intelligence disclosure the odds of cooperation are reduced by approximately 70%. This happens because higher intelligence players try to obtain higher earnings through not cooperating when intelligence differences are disclosed. They eventually learn in their later interactions that this strategy is not optimal and revert to cooperation levels similar to those observed when intelligence is not disclosed. Overall, this change in behavior of higher intelligence players results in lower intelligence subjects suffering more with disclosure as they more often receive the sucker payoff.

A similar disruption of cooperation occurs in the Battle of Sexes with low inequality. Disclosure reduces the odds of coordination by almost 20% as higher intelligence players try to force their preferred outcome. However, in the Battle of Sexes with high inequality, this pattern of behavior dramatically changes. Disclosure does not significantly disrupt coordination. Interestingly, with disclosure, coordination is more often on the lower intelligence player's preferred outcome, implying that the higher intelligence players concede more often. We conjecture that the difference in intelligence and higher inequality in payoffs together serve as a coordination device. In an environment with high payoff inequalities where coordination is naturally more difficult, players coordinate to the non-zero outcomes with the higher intelligence player receiving the lower payoff.

The remainder of the paper is organized as follows. Section 2 describes our experimental design. Section 3 presents our experimental results, for the Prisoners' Dilemma, the Battle of the Sexes with low inequality and the Battle of the Sexes with high inequality. Section 4 offers a short discussion and conclusions. The online supplementary material includes all experimental details and documents and some summary statistics.

2 Experimental Design

2.1 Overview

In our experiment subjects play repeated games in a between-subjects design. While playing these games, subjects are either informed or not of the approximate ability of the person they are playing against. Subjects perform a cognitive ability test and are subsequently asked to play either a Prisoner's Dilemma game or one of two variants of a Battle of Sexes game depending on the condition.[2] We vary whether the subjects, while interacting, are given some information on their own and their partner's test scores, the *Disclosure* condition, or not, the *No-disclosure* condition. To avoid any form of deception, prior to the cognitive ability task, subjects are warned that their score may anonymously be shown to other subjects at a later point in the session. Overall, we have a 2×3 factor design resulting in 6 treatments summarised in table 1.

Table 1: **Summary of treatments.**

	Disclosure	*No-disclosure*
Prisoners' Dilemma	1) PD Discl.	4) PD No Discl.
Battle of Sexes (low ineq.)	2) BoSLI Discl.	5) BoSLI No Discl.
Battle of Sexes (high ineq.)	3) BoSHI Discl.	6) BoSLI No Discl.

2.2 Session Timeline

In the first part of the session subjects perform tasks which elicit their cognitive ability and risk preferences. Subjects first complete a Raven Advanced Progressive Matrices (APM) test of 36 matrices. They have a maximum of 30 minutes for all 36 matrices. The subjects are initially shown an example of a matrix with the correct answer provided below for 30 seconds. Then, for each item a 3×3 matrix of images is displayed on the subjects' screen; the image in the bottom right corner is missing. The subjects are asked to complete the pattern, choosing one out of 8 possible choices presented on the screen. The 36 matrices are presented in order

[2]The Prisoners' dilemma payoffs are the same as the ones adopted in Dal Bó and Fréchette (2011); Proto et al. (2019, forthcoming).

of progressive difficulty, just as they are sequenced in Set II of the APM. Subjects are allowed to switch back and forth through the 36 matrices during the 30 minutes and change their answers. They are rewarded with 1 Euro per correct answer from a random choice of three out of the 36 matrices. The Raven test is a non-verbal test commonly used to measure reasoning ability and general intelligence. Matrices from Set II of the APM are appropriate for adults and adolescents of above average intelligence. This test was among others implemented in Gill and Prowse (2016) and Proto et al. (2019, forthcoming) and has been found to be relevant in determining behaviour in cooperative or coordinating games. During the session we never mention that the task is a test of intelligence or cognitive ability. For risk attitude elicitation, subjects complete an incentivised Holt-Laury task (Holt and Laury, 2002).

Subjects are then asked to play an induced infinitely repeated game. Depending on the condition, subjects played a Prisoner's Dilemma (PD) game, a Battle of Sexes with lower inequality (BoSLI) game or a Battle of Sexes with higher inequality (BosHI) game. The respective stage games are presented in table 2. Payoffs reported are in terms of experimental units; each experimental unit corresponds to 0.003 Euros and subjects receive the sum of all earnings earned across all their interactions.

Table 2: **Stage Games.**

(a) PD

	C	D
C	48,48	12,50
D	50, 12	25,25

(b) BoSLI

	W	B
B	48,25	0,0
W	0, 0	25,48

(c) BoSHI

	W	B
B	48,12	0,0
W	0,0	12,48

Note: C: Cooperate, D: Defect; B: Best-outcome action, W: Worst-outcome action

As standard in experimental tests of repeated games, we reproduce the conditions of an infinite repetition of the stage game by introducing random termination through continuation probability δ, with $\delta = 0.75$. We use a pre-drawn realisation of the random numbers to ensure all sessions across all treatments are faced with the same experience in terms of length of play at each decision point.[3] We define each repeated game played a *supergame* and refer to the round within a specific supergame as a *period*. We define as *round* the overall count of number of times the stage game has been played across supergames during the session. The length of play of the repeated game is until the completion of the 26th supergame (which entailed 92 rounds, i.e. repetitions of the stage game). This rule is not disclosed to the subjects.

The matching of partners is done within each session under an anonymous and random re-matching protocol. Subjects play as partners for as long as the random continuation rule determines that the particular partnership is to continue. Once a match is terminated, the subjects are again randomly and anonymously matched, and start playing the game again according to the respective continuation probability. Each decision round for the game is terminated when every subject in the session has made their decision. After all subjects make their decisions, a screen appears that reminds them of their own decision, indicates their partner's decision, as well as the experimental units they earn for that particular round.

After completing the repeated game, subjects are asked to respond to a standard Big Five personality questionnaire[4] together with some demographic questions. No monetary payment is offered for this section of the session and the subjects are informed of this. All the instructions are included in the supplementary material.[5]

2.3 Disclosure of intelligence

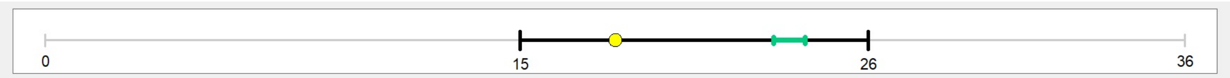
In the disclosure condition, while subjects play either the PD, BoSLI or BosHI (depending on the treatment), they receive information about their own Raven test score as well as their partner's approximate Raven test score. The information is approximate because it is offered through a line graph like the one in figure 1. The grey range depicts the overall possible test scores ranging from 0 to 36, while the black line indicates the range of actual scores in the session; this information is necessary to offer an idea of the typical range of scores subjects

[3]This pre-drawn realisation is the same as the one used in Proto et al. (forthcoming). In table O.4 in the supplementary material we list the length of each supergame.

[4]We use the 44-item version that was developed by John et al. (1991), and was further investigated by John et al. (2008).

[5]This is appended at the end of this manuscript.

Figure 1: **Disclosure of Raven scores.** An example of how the own raven score and partner's raven score was disclosed to subjects.



obtain. The yellow circle indicates the score of the subject, while the green range indicates the range within which the partner's score lies. We choose to display the green range, instead of a specific point on the line, to prevent (as far as possible) the identification of a partner from previous supergames. This range indicates two points on the line, one of which is the true partner's score. Subjects are not explicitly told how many points are contained within the green range, they only see the range as depicted in figure 1. For each supergame, the partner's score would either be the higher or lower point on the green range. This is kept constant within a supergame but then randomly determined across supergames. In order to allow for clear identification of score differences we ensure that in all matches there is at least one score point difference, which means that the yellow circle never coincides with the green range.[6] This rule is also applied in the no-disclosure condition matching protocol. Other than this restriction, matching is done completely randomly. In the no-disclosure condition, the area where the figure of intelligence disclosure should be is left blank.

2.4 Implementation Details

The recruitment was conducted through the Alfred-Weber-Institute (AWI) Experimental Lab subject pool based on the ORSEE (Greiner, 2015) and SONA recruitment software for the sessions taking place in the Heidelberg Lab. For the sessions that were administered in the Frankfurt Lab, recruitment was conducted through the Frankfurt Laboratory for Experimental Economic Research (FLEX) subject pool based on the ORSEE recruitment software. A total of 430 subjects participated in the experimental sessions. They earned on average around 12 Euros each. The software used for the entire experiment was *Z-Tree* (Fischbacher, 2007).

We conducted 6 sessions for the PD condition consisting of a total of 100 subjects, 10

[6] In cases where there is exactly a one point difference between own and partner score, to ensure distinct positions of the yellow circle and green range, the position of the green range is specified non-randomly to extend away from the yellow circle.

sessions for the BoSLI condition consisting of a total of 170 subjects and 8 sessions for the BosHI condition consisting of 160 subjects. The dates of the sessions and the number of subjects per session, are reported in tables O.1, O.2 and O.3 in the supplementary material.

3 Experimental Evidence

3.1 Prisoner's Dilemma

We first consider behavior in the PD treatments. In figure 2 we present the evolution of average payoff across the two disclosure treatments. It is evident that disclosure leads to lower average payoff in the first half of the session, while this difference somewhat disappears in the second half.

There is widespread evidence that in the repeated Prisoner's Dilemma game subjects overwhelmingly play 3 simple strategies: Always Defect, Tit-for-Tat and Grim Trigger (e.g. Dal Bó and Fréchette, 2018, 2019; Proto et al., 2019). Given the widespread use of these strategies, first period choices are very indicative to identify if in each supergame a subject is playing a cooperative strategy or not. For this reason, we focus on first period choices, that have the advantage of not being affected by the past choices in a supergame.[7]

Figure 3 indicates that disclosure significantly reduces first period cooperation rates in the first half of the session. At the 10th supergame played, we observe a difference of around 15 percentage points in first period cooperation rates between the disclosure and non-disclosure treatments. This observation is corroborated by econometric analysis. In table 3, we report regression results for the effect of disclosure on first periods cooperation rates. Note that across all our specifications, we report our logit estimation results in terms of odds ratios. As argued in detail in the online appendix of Proto et al. (2019), in such a panel data environment expressing results in odds ratios makes interpretation easier and more precise. Column 3 shows a significant negative effect of disclosure in first periods cooperation in the first half

[7]In table A.1 in the appendix, we present an econometric analysis of cooperative choices of second periods onward across all supergames. In column 2, where we focus on the pairs where the intelligence difference is above the median difference, disclosure leads to more cooperation after a unilateral deviation from mutual cooperation (i.e. after (D, C) or (C, D)). In other words, given high intelligence differences which are disclosed we observe more leniency.

– the odds of cooperation are reduced by 65% in the disclosure treatment compared to the no-disclosure treatment. This effect remains when estimating the same specification for the whole session as well (column 5), where we observe a reduction of just over 70% of the odds of cooperation in the disclosure treatment. Columns 2, 4 and 6 show that the negative effect of disclosure is significantly stronger when intelligence differences between players are high and this is disclosed. That is, whenever partners have a larger difference in their cognitive abilities and this is common knowledge, interactions are significantly less likely to be initiated with a cooperative choice.

In table 4, we analyse cooperative choices separately for when a subject is of higher intelligence than their partner and for when a subject is of lower intelligence than their partner. The results of the former, reported in columns 1 to 3, offer evidence that the negative effect of disclosure is driven by subjects of higher intelligence in a given pair. Subjects of higher intelligence than their partner initiate supergames significantly less often with cooperation under disclosure. This effect is substantial; looking at the third column of table 4, we find that the odds of cooperation are reduced by over 75% when the subject has a higher score than their partner and this is disclosed. The lower cooperative choices in the first periods under disclosure of higher intelligence subjects might stem from two opposing expectations. They might anticipate the lower intelligence subjects to be less cooperative, hence, by choosing to be less cooperative they protect themselves from only earning the *sucker* payoff of 12. Conversely, the higher intelligence subjects might anticipate that the lower intelligence would be unconditional cooperators, thus, by defecting they aim to earn the *temptation* payoff of 50.

In order to understand if either of the two above possible expectations are justified, we test whether the lower intelligence subjects change their behaviour under disclosure. Columns 4 to 6 of table 4 suggest that lower intelligence subjects do not play in a significantly different manner across disclosure treatments. In table 5 we analyse payoffs in first periods separately for subjects of higher intelligence than their partner and vice versa. Subjects of lower intelligence than their partner, earn significantly lower payoffs under disclosure (columns 4 to 6); whereas there is no significant effect for the higher intelligence subjects in the pair (columns 1 to 3). Consistently, in table 6 we find that the lower intelligence subjects in the pair face an

80% increase in the odds of receiving the sucker payoff in the disclosure treatment across the whole session (column 4). Overall, these results suggest that higher intelligence subjects play less cooperative strategies more often under disclosure, while the lower intelligence do not significantly adapt their behavior whether intelligence is disclosed or not.

We can summarize the results in this part by: *in the Prisoners' Dilemma disclosure has a negative effect on cooperation. Higher intelligence subjects are less cooperative under disclosure, while lower intelligence subjects do not appear to generally change their behavior under disclosure. Overall, this results in the lower intelligence subjects receiving the "sucker" payoff more often under disclosure.*

3.2 Battle of Sexes with Low Inequality

We now focus on the behavior in the Battle of Sexes with low inequality treatments. In figure 4 we depict the evolution of coordinating to one of the positive payoff outcomes across the two disclosure treatments. Disclosure hampers coordination, at least in the first half of the session, as we see a difference of approximately 10 percentage points between the disclosure and no-disclosure treatments. The regression analysis reported in table 7 supports this conclusion. We find a significant negative effect of disclosure on coordination (column 3) and this difference remains significant throughout the whole session (column 5). Overall, the odds of coordination are reduced by 17% in the disclosure treatment.

Table 8 reports the results of a regression analysis on the likelihood that a subject makes their preferred choice (i.e. choice of B for both the row and column players in table 2b). The results suggest that disclosure significantly increases the probability of higher intelligence subjects to play their preferred choice. The odds of higher intelligence subjects going for their preferred choice are increased by 31.5% when in the disclosure treatment compared to the no-disclosure treatment. This is what potentially drives the lower coordination rates observed under disclosure (figure 4 & table 7): disclosure increases the probability for the higher intelligence subjects to force onto their partner their preferred outcome. In table 9, we report estimations on the likelihood of achieving one's preferred outcome, separately for subjects of higher and lower intelligence in a pair. We find that with disclosure there is significantly less coordination on the preferred outcome of the lower intelligence subject in a pair. The odds of coordinating to the preferred outcome of the lower intelligence subject in a pair under disclosure are reduced by just over 20%. Accordingly, disclosure results in a significantly negative impact on payoffs for lower intelligence subjects as we note from table 10, where we analyse the effect of disclosure on payoffs, separately for the higher and lower intelligence subject in a pair.

We can summarize the results in this part by: *in the BoS with low inequality, disclosure has a negative effect on overall coordination. Higher intelligence subjects are more tempted to play their preferred choice and more often force coordination onto their preferred outcome under disclosure. Overall, this negatively affects earnings, but is dis-proportionally more harmful for the lower intelligence subjects.*

3.2.1 Battle of Sexes with High Inequality

We now turn to the Battle of Sexes with high inequality. Figure 5 presents the evolution of coordination across the two disclosure treatments, where we find no clear difference between the two. Table 11 corroborates this observation, there is no statistically significant effect of disclosure on coordination.

Similar to the previous sub-section, in table 12, we analyse a subject's likelihood to make their preferred choice, once again separately for the higher and lower intelligence subjects in a given pair. We find an important difference to the behaviour observed in the Battle of Sexes with low inequality. Higher intelligence subjects do not make their preferred choices more often under disclosure in the BoSHI, in contrast to what we observe in the BoSLI. This change in behaviour becomes more evident when analysing coordination onto one's preferred outcome. In table 13, we estimate the likelihood of coordination to a subject's preferred outcome separately for subjects of higher and lower intelligence than their partner. We find that higher intelligence subjects are significantly less likely to achieve coordination on their own preferred outcome under disclosure, while, on the other hand, lower intelligence subjects appear to significantly more often manage to coordinate on their preferred outcome. These are substantial effects; the higher intelligence subject in a given pair faces an approximate 20% reduction in the odds of reaching their preferred outcome under disclosure, while the lower intelligence subject in a pair enjoys a 37% increase in the odds of reaching their preferred outcome under disclosure. In other words, subjects coordinate on the preferred outcome inversely to the level of cognitive skills. This is in contrast to what we find in the BoSLI (see table 9).

The change in outcomes for the lower and higher intelligence subjects is further evident from the results in table 14. We find that the lower intelligence subjects earn higher payoffs under disclosure, while the contrary is true for higher intelligence subjects.

We can summarize the results in this part by: *in the BoS with high inequality disclosure has no effect on overall coordination. Higher intelligence subjects concede their preferred choice more often in order to enable coordination. Overall, lower intelligence subjects benefit from disclosure by earning higher payoffs.*

3.2.2 Comparison within the two Battle of Sexes Conditions

To complete the analysis for our Battle of Sexes treatments, we directly compare the two Battle of Sexes conditions. First, we study the evolution of preferred outcome coordination in figure 6. The figure contrasts whether the higher intelligence subject in a given pair achieves their preferred outcome or not depending on the game version (blue for BoSLI and red for BoSHI) and on whether intelligence was disclosed (right panel) or not (left panel). Focusing first on the left panel of figure 6, there is no clear difference between the two game versions on whether coordination is on the preferred outcome of the higher intelligence player in a pair under no disclosure. In the disclosure treatments, the outcomes are clearly different depending on the game version (right panel). With disclosure, in the BoSLI, the higher intelligence player in a pair is increasingly enjoying coordination on their preferred outcome, while the converse happens in the BoSHI.

We formalise this discussion using regression analysis that we report in table 15. In the first column, we note the overall conclusion that disclosure is in general harmful for coordination. Similarly, higher inequality in the non-zero outcome payoffs has a significantly negative effect on coordination. However, the interaction between disclosure and higher inequality result in a significantly positive effect on coordination. Having both disclosure and higher payoff inequality translates to 33% increase in the odds of coordination. Thus, disclosure and high payoff inequality seem to form a coordination device. As already seen in the previous analysis, this coordination is more often on the preferred outcome of the lower intelligence subject in a given pair. This is also clear in columns 3 and 5 of table 15, where we find a significant positive effect for the interacted term, *Disclosure*High Ineq.*, on payoff. The effect being considerably larger for subjects of lower intelligence than their partner.

We can summarize the results in this section as follows: *Disclosure is harmful for overall coordination in the Battle of Sexes. In the presence of both intelligence disclosure and high inequality in non-zero payoff outcomes, coordination is enhanced and mostly benefiting lower intelligence subjects.*

4 Concluding Remarks

In this paper we have shown, using laboratory evidence, that disclosure of own and partner's cognitive skills in a repeated game affects cooperation and coordination. These results are of primary importance because subjects typically interact anonymously in laboratory experiments, hence, information on cognitive skill is not available. Instead, in many real life interactions, individuals will often have some information and form some belief on the characteristics of the person they are dealing with, in particular on cognitive skills and personality.

In our design we communicate both own and partner's intelligence scores, and study behaviour across three repeated games that entail different possible motivations. The first, a Prisoner's Dilemma game, entails a trade-off between an instantaneous gain from deviating from mutual cooperation but a long-term loss of future cooperating outcomes. We also study behavior in two versions of the Battle of Sexes game. The Battle of Sexes does not entail the aforementioned trade-off, but allows players to increase their payoffs by forcing their own preferred outcome. In one version of the Battle of Sexes game the non-zero payoff outcomes of the stage game involve relatively low inequality in payoffs, while in the second there is higher inequality.

We find that disclosure results in disrupting cooperation in the Prisoner's Dilemma game.

Access to intelligence information leads higher intelligence subjects to be less cooperative, while subjects of lower intelligence do not appear to significantly adjust their behavior. This results in a detrimental effect on the payoffs of the lower intelligence subjects as they more often end up with the sucker payoff.

The effect of disclosure is more nuanced in the Battle of Sexes games. On the one hand, we find clear evidence that disclosure hampers coordination. This is more evident in the Battle of Sexes with low payoff inequality, where higher intelligence subjects try to force their own preferred outcome. This attempt is not successful in the initial stages, and results in lower coordination with disclosure. In the second half of interactions, overall coordination reaches similar levels to the no-disclosure treatment. Coordination is less often on the preferred outcome of the lower intelligence subjects, resulting in lower payoffs for them.

On the other hand, in the Battle of Sexes with higher inequality, we do not find disclosure having a significant effect on coordination. In fact, the underlying process seems to operate in the opposite direction, as we find that coordination is more often on the preferred outcome of the lower intelligence subjects under disclosure. This results in higher payoffs for the lower intelligence subjects. A possible explanation of this difference in the outcomes is that the higher level of payoff inequality makes the difference between the two non-zero payoff outcomes more salient. This provides a more clear coordination device to the parties who then naturally decide to coordinate by allowing the player of lower relative intelligence to receive the higher payoff, perhaps as a form of compensation due to the inequality aversion often observed in the laboratory experiments (e.g. Bolton and Ockenfels, 2000; Fehr and Schmidt, 1999).

5 Figures and Tables

Figure 2: **Prisoner's Dilemma: Evolution of average payoff in the two disclosure treatments.** The data have been collected during 6 separate sessions (three for each treatment) for a total of 100 subjects. The bands represent the 95% confidence intervals.

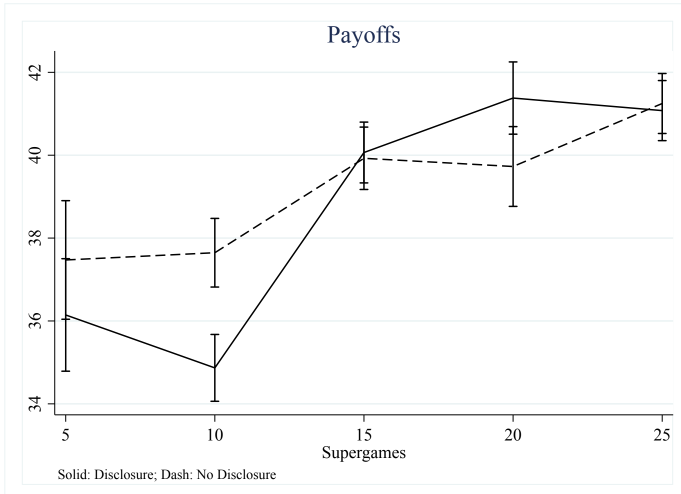


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Figure 3: **Prisoner's Dilemma: Evolution of 1^{st} periods cooperation rate in the two disclosure treatments.** The data have been collected during 6 separate sessions (three for each treatment) for a total of 100 subjects. The bands represent the 95% confidence intervals.

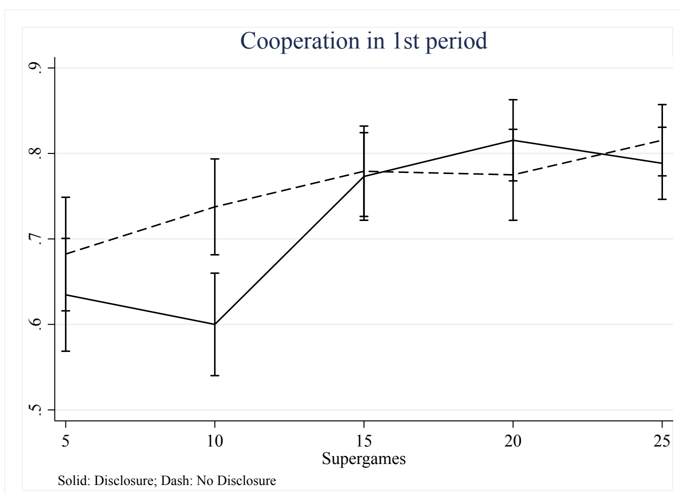

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Figure 4: **Battle of Sexes (low ineq.): Evolution of coordination.** The data have been collected during 10 separate sessions (five for each treatment) for a total of 170 subjects. The bands represent the 95% confidence intervals.

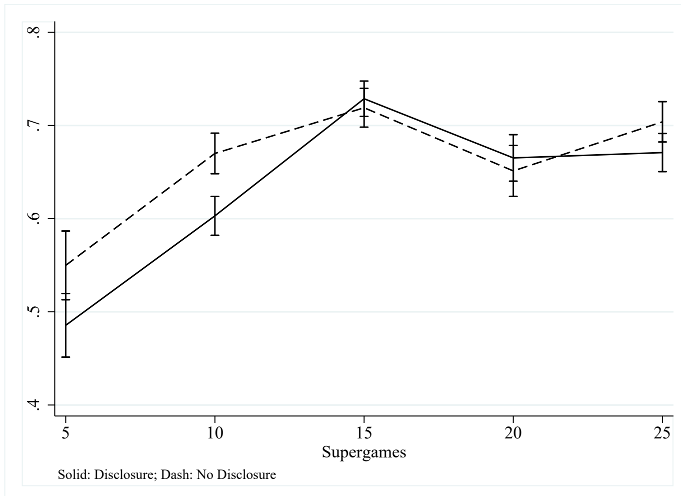

Figure 5: **Battle of Sexes (high ineq.): Evolution of coordination.** The data have been collected during 8 separate sessions (four for each treatment) for a total of 160 subjects. The bands represent the 95% confidence intervals.

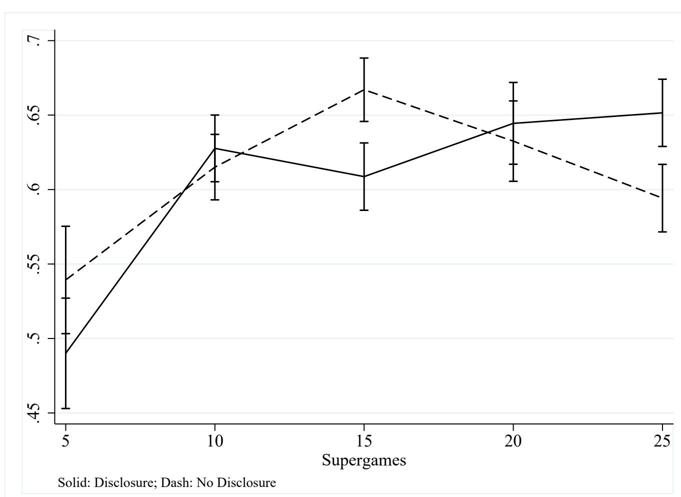

Figure 6: **Battle of Sexes: Coordination on Preferred Outcome by Disclosure, Rel. Intelligence, and Game Version.** The bands represent the 95% confidence intervals.

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Table 3: **Prisoner's dilemma: Effect of disclosure on cooperative choice in 1^{st} periods.** The dependent variable is the choice of cooperation in the first periods of all supergames. The dummy *High IQ difference* is equal to 1 for pairs with an IQ difference between the two players above the median difference and zero otherwise. Columns 1 and 2: Logit estimator with errors clustered at the session level; estimation for *only* first round. Columns 3 to 6: Panel logit estimator with random effects and errors clustered at the individual level; estimated either for *only* first half (3 & 4) or whole session (5 & 6). Controls for trend, gender, Big 5 personality traits, risk aversion, size of session, average length of past supergames, and average profit before t are included in the regressions but omitted from the table. **The coefficients are expressed in Odds Ratios**. Clustered Std errors in brackets; * $p - value < 0.1$, ** $p - value < 0.05$, *** $p - value < 0.01$.

	Round 1 Cooperate b/se	Round 1 Cooperate b/se	1st Half Cooperate b/se	1st Half Cooperate b/se	All Cooperate b/se	All Cooperate b/se
choice						
Disclosure	0.62440	1.43428	0.35085**	0.53079	0.28823**	0.44533
	(0.3040)	(0.5040)	(0.1790)	(0.2803)	(0.1650)	(0.2628)
Disclosure*High IQ diff.		0.05700***		0.39061**		0.39233**
		(0.0488)		(0.1781)		(0.1472)
High IQ diff.		8.05132***		1.46999		1.37190
		(4.8101)		(0.5148)		(0.3686)
Own IQ	1.06087	1.09186**	1.11807**	1.11684**	1.13449**	1.13299**
	(0.0423)	(0.0449)	(0.0542)	(0.0536)	(0.0625)	(0.0623)
Partner IQ	1.01809	1.02797	0.98115	0.97927	1.01076	1.00887
	(0.0490)	(0.0451)	(0.0174)	(0.0174)	(0.0161)	(0.0153)
N	100	100	1200	1200	2500	2500

Table 4: **Prisoner's dilemma: Effect of disclosure on cooperative choice in 1^{st} periods by IQ differences.** The dependent variable is the choice of cooperation in the first periods of all supergames. Columns 1 to 3 present the results for only subjects of higher IQ than their partner, in columns 4 to 6 the opposite is true. Columns 1 and 4: Logit estimator with errors clustered at the session level; estimation for *only* first round. Other columns: Panel logit estimator with random effects and errors clustered at the individual level; estimated either for *only* first half (2 & 5) or whole session (3 & 6). Controls for trend, gender, Big 5 personality traits, risk aversion, size of session, average length of past supergames, and average profit before t are included in the regressions but omitted from the table. **The coefficients are expressed in Odds Ratios**. Clustered Std errors in brackets; * $p-value < 0.1$, ** $p-value < 0.05$, *** $p-value < 0.01$.

	Own IQ > Partner IQ			Own IQ < Partner IQ		
	Round 1 b/se	1st Half b/se	All b/se	Round 1 b/se	1st Half b/se	All b/se
choice						
Disclosure	0.24238	0.35075*	0.22357**	1.49939	0.37145	0.33987
	(0.2200)	(0.2112)	(0.1572)	(0.7223)	(0.2334)	(0.2336)
Own IQ	1.01143	1.16666*	1.13508	0.92484	1.10676	1.13101
	(0.1474)	(0.0958)	(0.1032)	(0.0914)	(0.0793)	(0.0931)
Partner IQ	1.13538	1.01357	1.06277	1.11757	0.94184	0.99051
	(0.1252)	(0.0345)	(0.0421)	(0.1254)	(0.0365)	(0.0274)
N	50	600	1250	50	600	1250

Table 5: **Prisoner's dilemma: Effect of disclosure on individual payoff in 1^{st} periods by IQ differences.** The dependent variable is the payoff in the first periods of all supergames. Columns 1 to 3 present the results for only subjects of higher IQ than their partner, in columns 4 to 6 the opposite is true. Columns 1 and 4: OLS estimator with errors clustered at the session level; estimation for *only* first round. Other columns: GLS estimator with random effects and errors clustered at the individual level; estimated either for *only* first half (2 & 5) or whole session (3 & 6). Controls for trend, gender, Big 5 personality traits, risk aversion, size of session, average length of past supergames, and average profit before t are included in the regressions but omitted from the table. Clustered Std errors in brackets; * $p-value < 0.1$, ** $p-value < 0.05$, *** $p-value < 0.01$.

	Own IQ > Partner IQ			Own IQ < Partner IQ		
	Round 1	1st Half	All	Round 1	1st Half	All
	b/se	b/se	b/se	b/se	b/se	b/se
Disclosure	1.79814	–1.76131	0.12307	–8.59176	–1.97464	–2.07966**
	(3.0269)	(1.5439)	(1.1740)	(4.4290)	(1.3705)	(0.9093)
Own IQ	0.98496	–0.34453	0.01620	0.43341	0.03174	0.06211
	(0.5686)	(0.2789)	(0.1835)	(0.6723)	(0.1260)	(0.1059)
Partner IQ	–0.67171*	0.25620	0.18790	0.47930	0.65581***	0.55393***
	(0.3292)	(0.2103)	(0.1440)	(0.4363)	(0.1950)	(0.1612)
N	50	600	1250	50	600	1250

Table 6: **Prisoner's dilemma: Effect of disclosure on being the sucker in 1^{st} periods by IQ differences.** The dependent variable is receiving the sucker payoff of 12 in the first periods of all supergames. Columns 1 and 2 present the results for only subjects of higher IQ than their partner, in columns 3 and 4 the opposite is true. GLS estimator with random effects and errors clustered at the individual level; estimated either for *only* first half (1 & 3) or whole session (2 & 4). Controls for trend, gender, Big 5 personality traits, risk aversion, size of session, average length of past supergames, and average profit before t are included in the regressions but omitted from the table. **The coefficients are expressed in Odds Ratios**. Clustered Std errors in brackets; * $p-value < 0.1$, ** $p-value < 0.05$, *** $p-value < 0.01$.

	Own IQ > Partner IQ		Own IQ < Partner IQ	
	1st Half	All	1st Half	All
	b/se	b/se	b/se	b/se
sucker				
Disclosure	1.00709	0.83081	1.29562	1.80933**
	(0.2758)	(0.2028)	(0.4601)	(0.5445)
Own IQ	1.10838**	1.03088	0.97848	0.96086
	(0.0508)	(0.0336)	(0.0352)	(0.0350)
Partner IQ	0.94550**	0.96341*	0.90283***	0.90893***
	(0.0270)	(0.0215)	(0.0356)	(0.0330)
N	600	1250	600	1250

Table 7: **Battle of Sexes (low ineq.): Effect of disclosure on coordination.** The dependent variable is coordination to a non-zero payoff outcome. The dummy *High IQ difference* is equal to 1 for pairs with an IQ difference between the two players above the median difference and zero otherwise. Columns 1 and 2: Logit estimator with errors clustered at the session level; estimation for *only* first round. Columns 3 to 6: Panel logit estimator with random effects and errors clustered at the individual level; estimated either for *only* first half (3 & 4) or whole session (5 & 6). Controls for trend, gender, Big 5 personality traits, risk aversion, size of session, average length of past supergames, and average profit before t are included in the regressions but omitted from the table. **The coefficients are expressed in Odds Ratios**. Clustered Std errors in brackets; * $p-value < 0.1$, ** $p-value < 0.05$, *** $p-value < 0.01$.

	Round 1	Round 1	1st Half	1st Half	All	All
	b/se	b/se	b/se	b/se	b/se	b/se
coordboseq						
Disclosure	0.53161	0.54306	0.79400**	0.89042	0.83117**	0.92827
	(0.2060)	(0.2791)	(0.0819)	(0.1269)	(0.0687)	(0.1040)
Disclosure*High IQ diff.		1.10915		0.77792		0.79672*
		(0.7260)		(0.1273)		(0.0978)
High IQ diff.		1.64836		1.05284		1.11937
		(0.7870)		(0.1266)		(0.0960)
Own IQ	1.02319	1.02664	0.99763	0.99720	1.01580**	1.01607**
	(0.0339)	(0.0344)	(0.0079)	(0.0079)	(0.0070)	(0.0070)
Partner IQ	1.01556	1.02312	1.00064	0.99992	1.01734***	1.01741***
	(0.0324)	(0.0334)	(0.0078)	(0.0077)	(0.0057)	(0.0057)
N	170	170	7990	7990	15470	15470

Table 8: **Battle of Sexes (low ineq.): Effect of disclosure on the subject's preferred choice.** The dependent variable is the subject making preferred choice. Columns 1 to 3 present the results for only subjects of higher IQ than their partner, in columns 4 to 6 the opposite is true. Columns 1 and 4: Logit estimator with errors clustered at the session level; estimation for *only* first round. Other columns: Panel logit estimator with random effects and errors clustered at the individual level; estimated either for *only* first half (2 & 5) or whole session (3 & 6). Controls for trend, gender, Big 5 personality traits, risk aversion, size of session, average length of past supergames, and average profit before t are included in the regressions but omitted from the table.. **The coefficients are presented in Odds Ratios**. Std errors clustered at the individual levels in brackets; * $p-value < 0.1$, ** $p-value < 0.05$, *** $p-value < 0.01$.

	Own IQ > Partner IQ			Own IQ < Partner IQ		
	Round 1	1st Half	All	Round 1	1st Half	All
	b/se	b/se	b/se	b/se	b/se	b/se
preferredchoice						
Disclosure	5.69298***	1.28724*	1.31538**	1.95104*	0.95155	0.91620
	(1.4054)	(0.1946)	(0.1838)	(0.6998)	(0.1387)	(0.1069)
Own IQ	1.03646	1.01054	1.00284	0.91414*	0.96503*	0.97250*
	(0.0644)	(0.0213)	(0.0188)	(0.0479)	(0.0182)	(0.0140)
Partner IQ	0.93779	0.98870	0.99137	1.15278**	1.02069	1.01048
	(0.0483)	(0.0113)	(0.0061)	(0.0746)	(0.0143)	(0.0128)
N	85	3995	7735	85	3995	7735

Table 9: **Battle of Sexes (low ineq.): Effect of disclosure on coordinating to subject's preferred outcome.** The dependent variable is coordination to the subject's preferred outcome. Columns 1 to 3 present the results for only subjects of higher IQ than their partner, in columns 4 to 6 the opposite is true. Columns 1 and 4: Logit estimator with errors clustered at the session level; estimation for *only* first round. Other columns: Panel logit estimator with random effects and errors clustered at the individual level; estimated either for *only* first half (2 & 5) or whole session (3 & 6). Controls for supergame, period, gender, Big 5 personality traits, risk aversion, size of session, average length of past supergames, and average profit before t are included in the regressions but omitted from the table. **The coefficients are presented in Odds Ratios**. Std errors clustered at the individual levels in brackets; * $p - value < 0.1$, ** $p - value < 0.05$, *** $p - value < 0.01$.

	Own IQ > Partner IQ			Own IQ < Partner IQ		
	Round 1	1st Half	All	Round 1	1st Half	All
	b/se	b/se	b/se	b/se	b/se	b/se
preferredoutcome						
Disclosure	2.63422***	1.05993	1.08699	0.50296	0.80448	0.78849**
	(0.4649)	(0.1988)	(0.1712)	(0.2573)	(0.1241)	(0.0820)
Own IQ	0.89751	0.99944	0.99565	0.97824	0.97587	0.98308
	(0.1246)	(0.0269)	(0.0206)	(0.0881)	(0.0195)	(0.0139)
Partner IQ	1.01795	1.00876	1.00944	1.12129	1.01491	1.01006
	(0.1118)	(0.0131)	(0.0077)	(0.1256)	(0.0193)	(0.0154)
N	45	2538	5127	45	2538	5127

Table 10: **Battle of Sexes (low ineq.): Effect of disclosure on payoffs.** The dependent variable is subject payoff. Columns 1 to 3 present the results for only subjects of higher IQ than their partner, in columns 4 to 6 the opposite is true. Columns 1 and 3: OLS estimator with errors clustered at the session level; estimation for *only* first round. Other columns: Panel GLS estimator with random effects and errors clustered at the individual level; estimated either for *only* first half (2 & 5) or whole session (3 & 6). Controls for supergame, period, gender, Big 5 personality traits, risk aversion, size of session, average length of past supergames, and average profit before t are included in the regressions but omitted from the table. Std errors clustered at the individual levels in brackets; * $p-value < 0.1$, ** $p-value < 0.05$, *** $p-value < 0.01$.

	Own IQ > Partner IQ			Own IQ < Partner IQ		
	Round 1	1st Half	All	Round 1	1st Half	All
	b/se	b/se	b/se	b/se	b/se	b/se
Disclosure	–3.29837	–1.84508	–1.37495	–8.26683**	–2.04956	–1.68081*
	(1.8884)	(1.2039)	(0.9108)	(3.5781)	(1.3171)	(0.9565)
Own IQ	0.31016	–0.10197	0.03739	0.19946	0.03290	0.11076
	(0.9702)	(0.1789)	(0.1306)	(0.6547)	(0.1563)	(0.1269)
Partner IQ	–0.08602	0.07073	0.22890***	0.52987	–0.05462	0.07973
	(0.6914)	(0.1337)	(0.0887)	(0.8478)	(0.1688)	(0.1399)
N	85	3995	7735	85	3995	7735

Table 11: **Battle of Sexes (high ineq.): Effect of disclosure on coordination.** The dependent variable is coordination to a non-zero payoff outcome. The dummy *High IQ difference* is equal to 1 for pairs with an IQ difference between the two players above the median difference and zero otherwise. Columns 1 and 2: Logit estimator with errors clustered at the session level; estimation for *only* first round. Columns 3 to 6: Panel logit estimator with random effects and errors clustered at the individual level; estimated either for *only* first half (3 & 4) or whole session (5 & 6). Controls for trend, gender, Big 5 personality traits, risk aversion, size of session, average length of past supergames, and average profit before t are included in the regressions but omitted from the table. **The coefficients are expressed in Odds Ratios**. Clustered Std errors in brackets; * $p-value < 0.1$, ** $p-value < 0.05$, *** $p-value < 0.01$.

	Round 1	Round 1	1st Half	1st Half	All	All
	b/se	b/se	b/se	b/se	b/se	b/se
coordboseq						
Disclosure	1.15304	1.78125	0.95082	0.99408	1.10086	1.16806
	(0.4049)	(0.8799)	(0.0896)	(0.1144)	(0.0933)	(0.1152)
Disclosure*High IQ diff.		0.39281		0.89822		0.86485
		(0.2805)		(0.1611)		(0.1114)
High IQ diff.		1.48763		1.03841		1.14280
		(0.7540)		(0.1306)		(0.1093)
Own IQ	1.00976	1.00872	1.02523**	1.02493**	1.02353**	1.02450**
	(0.0325)	(0.0335)	(0.0104)	(0.0104)	(0.0103)	(0.0104)
Partner IQ	0.98726	0.98644	1.02932***	1.02907***	1.02512***	1.02600***
	(0.0321)	(0.0330)	(0.0082)	(0.0084)	(0.0059)	(0.0061)
N	160	160	7520	7520	14560	14560

Table 12: **Battle of Sexes (high ineq.): Effect of disclosure on the subject's preferred choice.** The dependent variable is the subject making preferred choice. Columns 1 to 3 present the results for only subjects of higher IQ than their partner, in columns 4 to 6 the opposite is true. Columns 1 and 4: Logit estimator with errors clustered at the session level; estimation for *only* first round. Other columns: Panel logit estimator with random effects and errors clustered at the individual level; estimated either for *only* first half (2 & 5) or whole session (3 & 6). Controls for trend, gender, Big 5 personality traits, risk aversion, size of session, average length of past supergames, and average profit before t are included in the regressions but omitted from the table.. **The coefficients are presented in Odds Ratios**. Std errors clustered at the individual level in brackets; * $p-value < 0.1$, ** $p-value < 0.05$, *** $p-value < 0.01$.

	Own IQ > Partner IQ			Own IQ < Partner IQ		
	Round 1	1st Half	All	Round 1	1st Half	All
	b/se	b/se	b/se	b/se	b/se	b/se
preferredchoice						
Disclosure	1.06003	0.76298*	0.87484	0.76483	1.23484	1.12407
	(0.3561)	(0.1179)	(0.1412)	(0.2010)	(0.1721)	(0.1654)
Own IQ	1.06682	1.00640	1.01788	0.87508*	0.97715	0.98133
	(0.0894)	(0.0181)	(0.0193)	(0.0605)	(0.0186)	(0.0193)
Partner IQ	0.99694	0.99191	0.98947**	1.11940	0.99489	0.98839
	(0.0513)	(0.0081)	(0.0052)	(0.1369)	(0.0127)	(0.0090)
N	80	3760	7280	80	3760	7280

Table 13: **Battle of Sexes (high ineq.): Effect of disclosure on coordinating to subject's preferred outcome.** The dependent variable is coordination to the subject's preferred outcome. Columns 1 to 3 present the results for only subjects of higher IQ than their partner, in columns 4 to 6 the opposite is true. Columns 1 and 4: Logit estimator with errors clustered at the session level; estimation for *only* first round. Other columns: Panel logit estimator with random effects and errors clustered at the individual level; estimated either for *only* first half (2 & 5) or whole session (3 & 6). Controls for supergame, period, gender, Big 5 personality traits, risk aversion, size of session, average length of past supergames, and average profit before t are included in the regressions but omitted from the table. **The coefficients are presented in Odds Ratios**. Std errors clustered at the individual level in brackets; * $p-value < 0.1$, ** $p-value < 0.05$, *** $p-value < 0.01$.

	Own IQ > Partner IQ			Own IQ < Partner IQ		
	Round 1 b/se	1st Half b/se	All b/se	Round 1 b/se	1st Half b/se	All b/se
preferredoutcome						
Disclosure	0.65577	0.69991**	0.78068*	0.31459*	1.54206***	1.37195***
	(0.2277)	(0.1211)	(0.1064)	(0.1863)	(0.2065)	(0.1575)
Own IQ	0.94208	1.00958	1.01857	0.90789	0.98261	0.98987
	(0.1293)	(0.0213)	(0.0182)	(0.0928)	(0.0193)	(0.0171)
Partner IQ	1.12944**	1.02436**	1.01823**	1.03288	0.99197	0.98674
	(0.0564)	(0.0115)	(0.0077)	(0.1559)	(0.0141)	(0.0096)
N	47	2277	4503	47	2277	4503

Table 14: **Battle of Sexes (high ineq.): Effect of disclosure on payoffs.** The dependent variable is subject payoff. Columns 1 to 3 present the results for only subjects of higher IQ than their partner, in columns 4 to 6 the opposite is true. Columns 1 and 3: OLS estimator with errors clustered at the session level; estimation for *only* first round. Other columns: Panel GLS estimator with random effects and errors clustered at the individual level; estimated either for *only* first half (2 & 5) or whole session (3 & 6). Controls for supergame, period, gender, Big 5 personality traits, risk aversion, size of session, average length of past supergames, and average profit before t are included in the regressions but omitted from the table. Std errors clustered at the individual level in brackets; * $p-value < 0.1$, ** $p-value < 0.05$, *** $p-value < 0.01$.

	Own IQ > Partner IQ			Own IQ < Partner IQ		
	Round 1	1st Half	All	Round 1	1st Half	All
	b/se	b/se	b/se	b/se	b/se	b/se
Disclosure	–0.76924	–1.95282**	–0.26346	–0.04199	1.65318*	1.84633***
	(4.3139)	(0.9756)	(0.7593)	(4.8353)	(0.8639)	(0.6212)
Own IQ	–0.65893	0.08943	0.06919	–0.20396	0.17662	0.20136**
	(0.8590)	(0.1482)	(0.1170)	(0.6164)	(0.1136)	(0.0836)
Partner IQ	0.52783	0.34744***	0.33146***	–0.34422	0.00050	–0.02944
	(0.6285)	(0.1081)	(0.0800)	(0.8457)	(0.1296)	(0.0871)
N	80	3760	7280	80	3760	7280

Table 15: **Both Battle of Sexes: Effect of disclosure.** The dependent variable in column 1 is coordination to a non-zero payoff outcome. In columns 2 and 4, the dependent variable is coordination to the subject's preferred outcome, while in columns 3 and 5, the dependent variable is subject payoff. Columns 2 and 3 present the results for only subjects of higher IQ than their partner, in columns 4 and 5 the opposite is true. Columns 1,2, and 4: Panel logit estimator with random effects. Other columns: Panel GLS estimator with random effects. The dummy *High inequality* is equal to 1 for observations in the BoSHI and zero otherwise. Controls for supergame, period, gender, Big 5 personality traits, risk aversion, size of session, average length of past supergames, and average profit before t are included in the regressions but omitted from the table. **Coefficients in columns 1,2, and 4 are in Odds Ratios**. Std errors clustered at the individual level in brackets; * $p-value < 0.1$, ** $p-value < 0.05$, *** $p-value < 0.01$.

	All	Own IQ > Partner IQ		Own IQ < Partner IQ	
	Coordination b/se	Pref. Out. b/se	Payoff b/se	Pref. Out. b/se	Payoff b/se
main					
Disclosure	0.82999**	1.09916	–0.29559***	0.32195	–2.12532**
	(0.0638)	(0.1523)	(0.1076)	(0.2536)	(0.8832)
Disclosure*High Ineq.	1.33334**	0.69391*	0.58205***	2.49887	3.97441***
	(0.1557)	(0.1462)	(0.1659)	(2.8594)	(1.1524)
High Inequality	0.69019***	1.05271	–0.27006**	0.00135***	–7.39321***
	(0.0678)	(0.1997)	(0.1207)	(0.0013)	(1.0191)
Own IQ	1.01975***	1.00608	–0.01688	1.05368	0.11805
	(0.0061)	(0.0133)	(0.0114)	(0.0899)	(0.0738)
Partner IQ	1.02154***	1.01492***	–0.00163	1.33326***	0.04644
	(0.0042)	(0.0054)	(0.0091)	(0.0807)	(0.0800)
N	30030	9630	9630	15015	15015

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A Additional Analysis

Table A.1: **Prisoner's Dilemma: Outcomes at period $t-1$ as determinants of cooperative choice at period t.** The dependent variable is the cooperative choice at time t; the baseline outcome is mutual cooperation at $t-1$, that is (C, C) at $t-1$. Disclosure is a dummy for the disclosure sessions. In column 2, *High IQ difference* are pairs with an IQ difference between the two players above the median difference. The opposite is true in column 3, *Low IQ difference*. Controls for trend, gender, Big 5 personality traits, risk aversion, size of session, average length of past supergames, and average profit before t are included in the regressions but omitted from the table. Panel logit with individual random effects estimator. **The coefficients are expressed in Odds Ratios**. Robust standard errors clustered at the individual level in brackets; * $p-value < 0.1$, ** $p-value < 0.05$, *** $p-value < 0.01$.

	All Cooperate b/se	High IQ diff Cooperate b/se	Low IQ diff Cooperate b/se
choice			
Disclosure*$(C, C)_{t-1}$	0.65849	0.90769	0.46990
	(0.3285)	(0.5006)	(0.2671)
Disclosure*$(D, D)_{t-1}$	0.78643	0.78297	0.68088
	(0.2513)	(0.3279)	(0.2784)
Disclosure*$(D, C)_{t-1}$	1.66883	2.18392*	1.26843
	(0.5540)	(0.9667)	(0.4571)
Disclosure*$(C, D)_{t-1}$	1.66484*	1.93585**	1.30377
	(0.4392)	(0.6299)	(0.4312)
$(D, D)_{t-1}$	0.00433***	0.00562***	0.00364***
	(0.0021)	(0.0030)	(0.0024)
$(D, C)_{t-1}$	0.01245***	0.01409***	0.01016***
	(0.0049)	(0.0062)	(0.0055)
$(C, D)_{t-1}$	0.00792***	0.00984***	0.00718***
	(0.0031)	(0.0042)	(0.0037)
Own IQ	1.01048	0.98814	1.05709***
	(0.0146)	(0.0140)	(0.0224)
Partner IQ	1.01374	0.99747	1.01237
	(0.0087)	(0.0120)	(0.0180)
N	6600	3086	3514

Intelligence Disclosure in Repeated Interactions

Online Supplementary Material

Marco Lambrecht, Eugenio Proto, Aldo Rustichini, Andis Sofianos

October 18, 2021

A Timeline of the Experiment

1. Participants randomly assigned a seat number.
2. Participants sat at their corresponding computer terminals, which were in individual cubicles.
3. Instructions about the Raven task were read together with an explanation on how the task would be paid.
4. The Raven test was administered (36 matrices with a total of 30 minutes allowed). Three randomly chosen matrices out of 36 tables were paid at the rate of 1 Euro per correct answer.
5. The Holt-Laury task was explained verbally.
6. The Holt-Laury choice task was completed by the participants (10 lottery choices). One randomly chosen lottery out of 10 played out to be paid.
7. The game that would be played was explained using en example screen on each participant's screen, as was the way the matching between partners, the continuation probability and how the payment would be made.
8. The infinitely repeated game was played. Each experimental unit earned corresponded to 0.003 Euro.
9. A demographics and personality questionnaire was administered.
10. Calculation of payment was made and subjects were paid accordingly.

B Session Dates, Size and Characteristics

Tables O.1, O.2 and O.3 below summarise the dates and timings of each session across all treatments.

Table O.5 summarises the statistics about the Raven scores for each session in the PD, table O.6 for the BoSLI and table O.7 for the BosHI. Figure O.1 presents the overall distribution of Raven scores across our treatments. Tables O.8 until O.13 present some summary statistics description of the main data across all our treatments. Table O.14 shows the correlations among individual characteristics.

Table O.1: **Dates and details for Prisoners' Dilemma Sessions.**

	Date	Time	Subjects	Disclosure	Location
Session 1	28/11/2018	14:00	20	Yes	Heidelberg
Session 2	10/12/2018	15:00	20	No	Heidelberg
Session 3	11/12/2018	14:00	18	Yes	Heidelberg
Session 4	13/12/2018	14:00	16	No	Heidelberg
Session 5	21/01/2019	11:00	14	Yes	Heidelberg
Session 6	22/01/2019	13:00	12	No	Heidelberg
Total Participants			100		

Table O.2: **Dates and details for Battle of Sexes (low ineq.) Sessions**

	Date	Time	Subjects	Disclosure	Location
Session 1	29/11/2018	10:00	20	Yes	Heidelberg
Session 2	29/11/2018	14:00	18	No	Heidelberg
Session 3	12/12/2018	14:00	20	Yes	Heidelberg
Session 4	19/12/2018	15:00	12	No	Heidelberg
Session 5	19/02/2019	16:00	20	Yes	Heidelberg
Session 6	26/02/2019	16:00	16	No	Heidelberg
Session 7	08/07/2019	10:00	14	Yes	Heidelberg
Session 8	10/07/2019	14:00	18	No	Heidelberg
Session 9	19/07/2019	13:00	14	No	Frankfurt
Session 10	05/09/2019	15:30	18	Yes	Frankfurt
Total Participants			170		

Table O.3: **Dates and details for Battle of Sexes (high ineq.) Sessions**

	Date	Time	Subjects	Disclosure	Location
Session 1	05/07/2019	10:00	22	Yes	Frankfurt
Session 2	05/07/2019	13:00	24	No	Frankfurt
Session 3	05/07/2019	16:00	20	Yes	Frankfurt
Session 4	12/07/2019	10:00	22	No	Frankfurt
Session 5	12/07/2019	13:00	18	Yes	Frankfurt
Session 6	12/07/2019	16:00	22	No	Frankfurt
Session 7	21/10/2019	15:00	14	No	Heidelberg
Session 8	23/10/2019	16:00	18	Yes	Heidelberg
Total Participants			160		

Table O.4: **Maximal period (T) of each SG for all treatments.**

SG	T
1	1
2	4
3	2
4	2
5	1
6	2
7	12
8	4
9	4
10	5
11	8
12	2
13	1
14	7
15	2
16	4
17	4
18	1
19	4
20	1
21	5
22	7
23	3
24	1
25	1
26	4

Figure O.1: **Distribution of Raven scores.** Top-left panel shows Raven distribution for all participants in the PD treatments, top-right shows Raven distribution for all participants in the BoS (low ineq.) treatments and bottom left panels shows Raven distribution for all participants in the BoS (high ineq.) treatments.

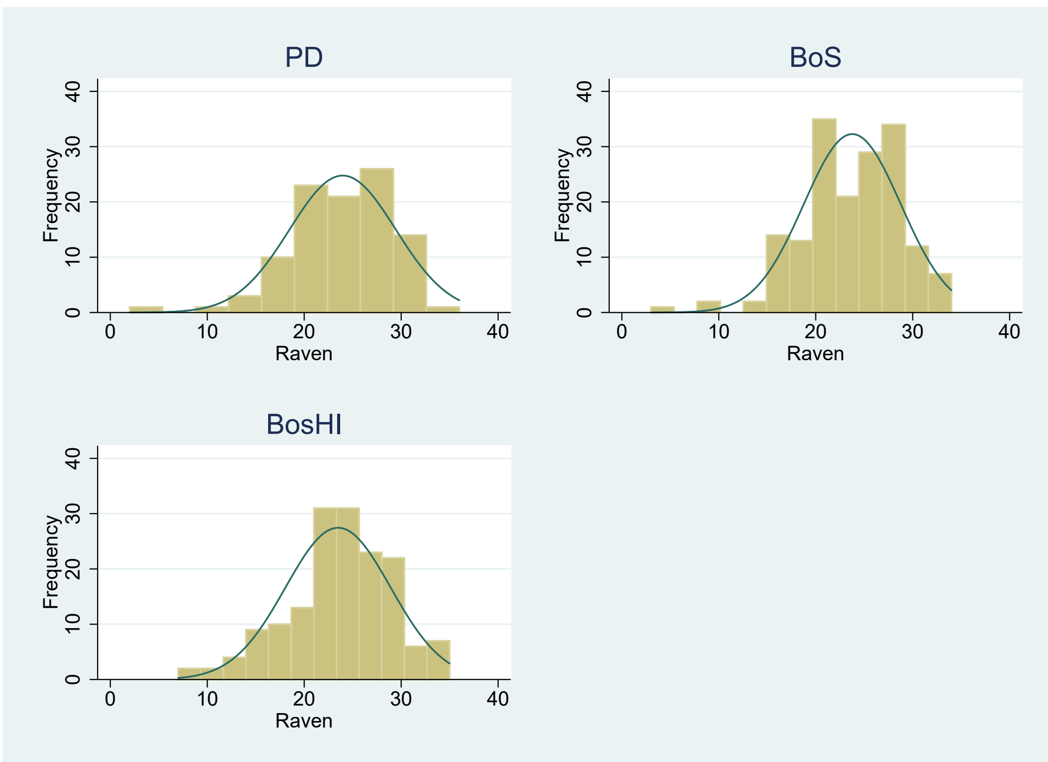

Table O.5: Raven Scores by Session in Prisoner's Dilemma Treatments

Variable	**Mean**	**Std. Dev.**	**Min.**	**Max.**	**N**
PD Disclosure - Session 1	24.3	4.824	13	30	20
PD Non-disclosure - Session 1	22.55	7.729	2	36	20
PD Disclosure - Session 2	25.056	4.952	17	32	18
PD Non-disclosure - Session 2	23.625	4.193	18	32	16
PD Disclosure - Session 3	25.786	4.98	16	32	14
PD Non-disclosure - Session 3	22.5	4.777	13	29	12

Table O.6: Raven Scores by Session in Battle of Sexes (low ineq.) Treatments

Variable	**Mean**	**Std. Dev.**	**Min.**	**Max.**	**N**
BoS Disclosure - Session 1	22.5	4.407	14	30	20
BoS Non-disclosure - Session 1	22.444	5.305	14	34	18
BoS Disclosure - Session 2	23.85	5.019	10	30	20
BoS Non-disclosure - Session 2	23.417	4.907	17	32	12
BoS Disclosure - Session 3	22.45	5.336	3	28	20
BoS Non-disclosure - Session 3	22.313	6.107	10	31	16
BoS Disclosure - Session 4	26.5	3.322	21	32	14
BoS Non-disclosure - Session 4	24.944	4.345	17	33	18
BoS Non-disclosure - Session 5 (FRA)	25.786	5.221	16	32	14
BoS Disclosure - Session 5 (FRA)	24.556	4.866	15	33	18

Table O.7: Raven Scores by Session in Battle of Sexes (high ineq.) Treatments

Variable	Mean	Std. Dev.	Min.	Max.	N
BosHI Disclosure- Session 1	22.545	5.18	8	32	22
BosHI Non-disclosure - Session 1	22.958	5.599	10	33	24
BosHI Disclosure - Session 2	23.65	5.509	14	33	20
BosHI Non-disclosure - Session 2	24.455	4.021	15	31	22
BosHI Disclosure - Session 3	23.722	4.496	11	29	18
BosHI Non-disclosure - Session 3	22.864	5.462	12	33	22
BosHI Non-disclosure - Session 4 (HD)	26.5	6.111	12	35	14
BosHI Disclosure - Session 4 (HD)	22.222	6.916	7	33	18

Table O.8: PD Non-disclosure, Main Variables

Variable	Mean	Std. Dev.	Min.	Max.	N
Choice	0.729	0.449	0	1	48
Partner Choice	0.729	0.449	0	1	48
Age	22.563	3.5	18	36	48
Female	0.646	0.483	0	1	48
Round	92	0	92	92	48
Openness	3.767	0.48	3	4.9	48
Conscientiousness	3.486	0.511	2.556	4.333	48
Extraversion	3.424	0.763	1.875	4.625	48
Agreableness	3.826	0.513	2.889	4.778	48
Neuroticism	2.927	0.642	1.75	4.5	48
Raven	22.896	5.947	2	36	48
Risk Aversion	5.167	2.319	0	10	48
Final Profit	3624.792	419.604	2796	4380	48
Profit x Period	39.4	4.561	30.391	47.609	48
Total Periods	92	0	92	92	48

Table O.9: PD Disclosure, Main Variables

Variable	Mean	Std. Dev.	Min.	Max.	N
Choice	0.769	0.425	0	1	52
Partner Choice	0.769	0.425	0	1	52
Age	23.25	3.793	19	35	52
Female	0.442	0.502	0	1	52
Round	92	0	92	92	52
Openness	3.742	0.625	2.5	4.8	52
Conscientiousness	3.382	0.675	1.556	4.889	52
Extraversion	3.531	0.815	1.5	5	52
Agreableness	3.682	0.66	2.111	4.889	52
Neuroticism	2.748	0.763	1.375	4.5	52
Raven	24.962	4.851	13	32	52
Risk Aversion	5.192	1.951	0	8	52
Final Profit	3573.154	443.977	2676	4384	52
Profit x Period	38.839	4.826	29.087	47.652	52
Total Periods	92	0	92	92	52

Table O.10: BoS (low ineq.) Non-disclosure, Main Variables

Variable	Mean	Std. Dev.	Min.	Max.	N
Choice	0.551	0.501	0	1	78
Partner Choice	0.551	0.501	0	1	78
Age	23.038	3.068	18	33	78
Female	0.564	0.499	0	1	78
Round	92	0	92	92	78
Openness	3.676	0.494	2.3	4.8	78
Conscientiousness	3.46	0.679	2	4.778	78
Extraversion	3.304	0.781	1.5	4.75	78
Agreableness	3.781	0.59	2.222	4.667	78
Neuroticism	2.904	0.759	1.25	4.875	78
Raven	23.744	5.256	10	34	78
Risk Aversion	4.795	2.337	0	9	78
Final Profit	2268.615	345.573	1498	2964	78
Profit x Period	24.659	3.756	16.283	32.217	78
Total Periods	92	0	92	92	78

Table O.11: BoS (low ineq.) Disclosure, Main Variables

Variable	Mean	Std. Dev.	Min.	Max.	N
Choice	0.565	0.498	0	1	92
Partner Choice	0.565	0.498	0	1	92
Age	23.457	4.321	18	57	92
Female	0.478	0.502	0	1	92
Round	92	0	92	92	92
Openness	3.668	0.566	2.3	4.9	92
Conscientiousness	3.502	0.544	2.111	4.556	92
Extraversion	3.357	0.71	1.875	4.875	92
Agreableness	3.763	0.497	2.333	4.778	92
Neuroticism	2.772	0.673	1.375	4.625	92
Raven	23.793	4.823	3	33	92
Risk Aversion	5.163	2.108	0	10	92
Final Profit	2180.478	381.597	1048	2812	92
Profit x Period	23.701	4.148	11.391	30.565	92
Total Periods	92	0	92	92	92

Table O.12: BoS (high ineq.) Non-disclosure, Main Variables

Variable	Mean	Std. Dev.	Min.	Max.	N
Choice	0.561	0.499	0	1	82
Partner Choice	0.561	0.499	0	1	82
Age	23.841	4.744	18	45	82
Female	0.488	0.503	0	1	82
Round	92	0	92	92	82
Openness	3.737	0.507	2.5	4.7	82
Conscientiousness	3.514	0.566	2.333	4.556	82
Extraversion	3.306	0.736	1.75	4.75	82
Agreableness	3.648	0.498	1.889	4.667	82
Neuroticism	2.927	0.776	1.125	4.625	82
Raven	23.939	5.350	10	35	82
Risk Aversion	5.268	2.155	0	10	82
Final Profit	1707.073	321.213	792	2424	82
Profit x Period	18.555	3.491	8.609	26.348	82
Total Periods	92	0	92	92	82

Table O.13: BoS (high ineq.) Disclosure, Main Variables

Variable	Mean	Std. Dev.	Min.	Max.	N
Choice	0.603	0.493	0	1	78
Partner Choice	0.603	0.493	0	1	78
Age	23.051	3.154	17	34	78
Female	0.5	0.503	0	1	78
Round	92	0	92	92	78
Openness	3.612	0.549	2.3	4.7	78
Conscientiousness	3.447	0.599	2.111	4.556	78
Extraversion	3.178	0.815	1.625	5	78
Agreableness	3.564	0.578	2.222	4.889	78
Neuroticism	3.029	0.752	1.625	4.625	78
Raven	23.026	5.501	7	33	78
Risk Aversion	5.244	2.071	0	10	78
Final Profit	1705.385	291.184	1032	2472	78
Profit x Period	18.537	3.165	11.217	26.87	78
Total Periods	92	0	92	92	78

Table O.14: All participants: Correlations Table (p−*values* in brackets)

Variables	Raven	Female	Risk Aversion	Openness	Conscientiousness	Extraversion	Agreableness	Neuroticism
Raven	1.000							
Female	-0.152	1.000						
	(0.002)							
Risk Aversion	0.180	0.022	1.000					
	(0.000)	(0.649)						
Openness	0.101	0.044	-0.031	1.000				
	(0.036)	(0.361)	(0.520)					
Conscientiousness	0.100	0.180	-0.004	0.098	1.000			
	(0.039)	(0.000)	(0.938)	(0.043)				
Extraversion	-0.031	0.000	0.017	0.292	0.202	1.000		
	(0.524)	(0.994)	(0.719)	(0.000)	(0.000)			
Agreableness	0.090	0.071	0.032	0.204	0.202	0.132	1.000	
	(0.063)	(0.139)	(0.512)	(0.000)	(0.000)	(0.006)		
Neuroticism	-0.148	0.340	-0.018	0.005	-0.137	-0.260	-0.166	1.000
	(0.002)	(0.000)	(0.717)	(0.920)	(0.004)	(0.000)	(0.001)	

C Experimental Instructions & Invitation Email

BoS: Experimental instructions

Thank you everyone for coming to our experiment today.

Before coming into the room, each one of you received a card number. This card corresponds to your seat number. Please make sure you are seated on the correct seat. If you're not on the correct seat, the money you end up receiving will not correspond to your own decisions.

The first section is to solve some puzzles, a pattern game. On the screen, you will see a set of abstract pictures with one of the pictures missing. You need to choose a picture from the choices below to complete the pattern. You will have a total of 30 minutes to complete 36 such puzzles. During these 30 minutes you will be able to move forwards and backwards and change your answers using the red buttons on your screens. Once the 30 minutes have passed you will no longer be able to change any answers. You can submit all your answers and wait for the others to finish once you reach the last puzzle by clicking on the grey button that will appear and be labelled 'DONE WITH PATTERN GAME'. The first picture you will see will only be an example. You will be paid for a random choice of three out of these 36 puzzles. For each correct choice, you will receive 1 Euro. [In disclosure sessions only:] A range including the number of your correct answers will be shown to other participants during a task later in the session. This will be presented anonymously, and there is no way others can trace the score back to you.

If you have any questions, please raise your hand and we will come to help you. Please remain silent while we are running the exercise, as otherwise we will be forced to terminate the session!

START RAVEN

The second section now is a choice task. On your screen, you will see a list of 10 lottery choices and for each case; you will be asked to indicate which of the lotteries you would prefer to play. One out of these 10 lottery choices will be randomly picked and then the choice you have made will be played out and you will be paid according to the probabilities indicated.

START HL

I will explain the next task while you look at an example screen on your monitors. Please feel free to ask any questions you might have. But make sure the questions are only clarifying questions. Any comments during the explanation will force me to terminate the session.

In this task, each of you will be randomly matched with someone in this room to make decisions in several rounds.

On your screen, you will a similar screen like what you see now. [In disclosure sessions only:] On the top of your screen, there is a graph that shows the results of the pattern game. The shaded grey line represents the possible range of 0 to 36 correct answers. You can also see a solid black line; this indicates the actual range of scores of people in this room, from lowest to highest score. The number of your correct answers will be highlighted by a yellow point on the line, the yellow point you see now is only for the example, your true own score will be revealed once we load that actual task. Finally, the green range you see indicates a series of scores within which your partner's score is in.

In the center of the screen, the computer will ask you to make a choice between R and Q. Your payoff will be presented on the left table, left side of the screen, and your partner's payoff will be presented on the right table, right side of the screen. In each table, your decisions (R or Q) are represented in the rows, looking up or down on either side of the screen, and your partner's decisions are represented in the columns, looking left or right on either side of the screen.

The payoffs of each round will depend on both your decisions as well as your partner's. I will now go through an example following the table on your screens. As I am doing so, please keep in mind that the numbers are for example purposes, this is meant to help you understand how to read the table and determine payoffs within each round.

- If you choose R, that is up, and your partner chooses Q, that is left, your payoff, looking at the left table, will be 48 and your partner's payoff, looking at the right table, will be 25.
- If you choose Q, that is down, and your partner chooses R, that is left, your payoff, looking at the left table, will be 0 and your partner's payoff, looking at the right table, will be 0.
- If you choose R, that is up, and your partner chooses Q, that is right, your payoff, looking at the left table, will be 0 and your partner's payoff, looking at the right table, will be 0.
- And finally, if you choose Q, that is down, and your partner chooses Q, that is right, your payoff, looking at the left table, will be 25 and your partner's payoff, looking at the right table, will be 48.

For each sequence of rounds (match) you will be randomly matched with someone from this room. This is done completely anonymously and no-one will ever know who you have been matched with.

After each round, there is a 75% probability that the match will continue for at least another round. That is, if there were 100 trials, in 75 of these the match would be repeated and in 25 the match would stop. So, for example, if you are at the second round of the match, the probability there will a third round is 75% and similarly if you are at round 9, there will be a 75% probability for a further round. Once each match is finished, you will again be randomly matched with someone from this room and play a new sequence of rounds accordingly to the 75-25 probability. Whenever this happens, I will be announcing *'New Partners',* if I say nothing that means you are still playing with the same person as in the previous round.

The sum of the units that you will collect through all the matches, will determine your payoff. Each unit corresponds to 0.3 cents. Keep in mind that the game will be repeated many times and so you can potentially earn a lot of money!

Any questions? If you have any questions during the experiment, please raise your hand and we will come to help you. Please remain silent throughout the session as otherwise, we will be forced to terminate the exercise.

Again, let me remind you that the length of each match is randomly determined. After each round, there is a 75% probability that the match will continue for at least another round. You will play with the same person for the entire match. In addition, once a match is finished you will be randomly matched with another person for a new match.

START BoS

The fourth and last section is a questionnaire. It is relevant to your background and a personality. Your payment is not affected by these. Again I would like to remind you that everything is anonymous so please answer as truthfully as possible as this is critically important for our research.

If you have any questions, please raise your hand and we will come to help you.

START QUESTIONAIRE

Invitation Email

Dear %FIRST_NAME% %LAST_NAME%!

Earn money for less than 90 minutes of your time, by participating in our research project "AMRE Study".

You will be asked to solve some puzzles and complete a questionnaire and some decision tasks. The sessions will be run in English.

We have a session running this next Wednesday 23rd October at 16:00-17:30.

All sessions will take place in the AWI-Experimentallabor.

If you want to participate, you can sign up by clicking the below link:

https://heidelberg-awi.sona-systems.com/default.aspx?p_return_experiment_id=195

(If you can not directly click on the link in your e-mail program, just mark it and copy it to the clipboard by right-clicking and selecting "Copy", then launch your web browser and paste the address there in the address window by clicking right there and choosing "Paste".)

For any further questions, please contact the researcher, Andis Sofianos (A.Sofianos@uni-heidelberg.de)

Kind Regards,

Andis Sofianos