

Project #5

Gender and collusion*

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August 2021

Abstract

Most of the literature in industrial economics neglects individuals' incentives to form cartels. Although oligopoly experiments revealed important insights on individuals acting as firms, they largely ignore individual heterogeneity, such as gender differences. We experimentally analyze gender differences in prisoner's dilemmas, where cartelization harms a passive third party. In a control treatment, no externality exists. To study the role of social distance, we apply a within-subjects setting with two consecutive games. In the first game subjects have no information on other players, whereas they are informed about personal characteristics in the second game. Results show that guilt-averse women are significantly less inclined to form cartels than men when collusion harms a third party. No gender difference can be found in the absence of this negative externality. Interestingly, we find that only men are sensitive to the decision context, i.e., betrayal-averse men significantly reduce cooperation when knowing that their interaction partner is also male.

JEL Codes: C92, D01, D02, D43, J16.

Keywords: Collusion, Cartels, Competition Policy, Antitrust, Gender Differences

1. Introduction

The determinants of cartel formation and the necessary conditions to guarantee their stability have been important questions in the theoretical and empirical literature of industrial economics and competition policy for almost one century (for surveys see Levenstein and Suslow, 2006; Connor and Bolotova, 2006). Somewhat surprisingly, the multitude of these works focuses almost exclusively on firms and their incentives as the unit of analysis. Even though economics portrays itself as being based on the paradigm of methodological individualism, most papers neglect the incentives of the very individuals involved in a cartel. Put differently, individuals' incentives to participate in cartels are set equal to firms' incentives. In this respect, the literature mainly analyzes the role of market characteristics (e.g., the number of firms, market transparency, multi-market contacts, demand elasticities) and firm characteristics (e.g., individual cost functions, private information) to analyze the incentives to form and maintain cartels.

However, cartels are usually formed by individuals within the firm, such as product managers, sometimes even without knowledge of the firm's management board. Surprisingly enough, the bulk of papers ignores the individual motivations to form cartels. A notable exception is the literature on oligopoly experiments (e.g., Huck, et al., 1999; 2001; 2004), where subjects in the laboratory assume the role of firms. The experimental literature repeatedly emphasizes that individuals who act as if they were a firm may be motivated by other aspects than real firms, such as imitative behavior, refusal of payoff asymmetries, trusting behavior (Huck and Armstrong, 2010) and not only classical payoff-maximizing behavior. Furthermore, experiments on competition policy instruments such as leniency programs have highlighted the role of individual incentives to destabilize cartels. As leniency policies provide incentive structures that motivate whistleblowers to report cartels (Hinloopen and Soetvent, 2008; Bigoni et al., 2012; Clemens and Rau, 2019), cartels tend to break down, as trust is disrupted and cartel members face psychological costs of being betrayed by their partners (Marvão and Spagnolo, 2018). While this research highlights the importance of behavioral factors when analyzing individual motives to participate in cartels, most experiments do not differentiate between firms and individuals but portray individuals and firms as interchangeable entities.

Even though oligopoly experiments study individual decisions, they largely ignore individual heterogeneity such as gender and other differences. Comparing the collusive behavior of men and women may be one promising avenue for research, since little is known about the effect of gender differences on managers' propensity to collude, most likely also because women are still under-represented in management positions (Santacreu-Vasut and Pike, 2019). Empirical research provides first indications that women may reduce corruption and increase public good provision¹ (Swamy et al., 2001; Chattopadhyay and Duflo, 2004). In the context of (un)ethical behavior, such as collusion, laboratory experiments can generate controlled data to obtain new insights into gender differences with respect to pricing behavior in markets. This is of particular interest in light of gender inequality and the effectiveness of affirmative action policies (Grosch et al., 2021). Experimental research in economics has repeatedly revealed gender differences

¹ Public goods are characterized by non-excludability and non-rivalry. Non-excludability means that individuals cannot be prevented from "using" the goods or benefiting from them, while non-rivalry means that one individual benefiting from the good does not prevent other people benefiting from the same good. Classical examples are environmental protection, national security, or herd immunity. It is not possible to exclude people from these benefits even if they do not contribute to the good's provision. Notably, competition policy is also a public good as nobody can be excluded from its benefits. The market provision of public goods is difficult due to "free-rider problems," where individuals reap the benefits from a good without contributing to its funding. A typical consequence is that the market provision of public goods is inefficiently low in the absence of Government interventions.

with respect to preferences that determine behavior (Croson and Gneezy, 2009). For example, women have been found to be less risk tolerant (Charness and Gneezy, 2012), less competitive (Niederle and Vesterlund, 2007), and sometimes women trust less than men (Rau, 2012). It was also found that women are more generous (Eckel and Grossman, 1998; Grosch and Rau, 2017) and more cooperative than men (Ortmann and Tichy, 1999). These differences represent key aspects that are relevant for engaging in collusive behavior and they are, therefore, highly relevant for competition policy.

Motivated by these findings we run a laboratory experiment to conduct a comprehensive analysis on gender differences in collusive behavior. The novelty of our approach is that we study gender differences in a setting, where collusive behavior comes at the expense of a passive third party, which is typical for cartels, as price fixing harms consumers. Our experiment focuses on a step by step approach to understand the complexity of gender differences in cooperation and the extent to which collusive behavior is affected by external effects. We model cartelization in a prisoner's dilemma where cooperation harms passive third players (Engel and Zhurakhovska, 2014). More precisely, we study a within-subjects setting, where subjects subsequently decide in two of these prisoner's dilemmas. First, subjects decide without information about their interaction partner, which yields insights on the pure gender differences in collusive behavior when third parties are harmed. Second, they receive information on the interaction partner (gender, age, duration of study) before deciding again. This step and the within-subjects design allow us to compare how collusive behavior changes when subjects are informed about characteristics of their interaction partner. We isolate the impact of harm to third parties with a control treatment, where collusive behavior has no negative externality. To shed light on the underlying mechanisms, we collect an extensive set of economic preferences (risk, patience, social value orientation) and psychological measures (betrayal-, guilt-, and shame aversion), which are of relevance in this context.

Results demonstrate that women behave significantly less collusively than men when third parties are harmed. The gender difference is driven by guilt- and shame-averse women who are less likely to cartelize when it causes harm to third parties. The gender difference vanishes in the control treatment, since women cooperate significantly more than in the treatment with negative externalities. We find that only men are sensitive to the decision context. In the treatment with negative externalities, they significantly reduce cooperation when knowing that their interaction partner is male. Closer inspection reveals that this is driven by betrayal-averse men who apparently face psychological costs when cartelization fails. By contrast, women's collusive behavior is always low and not sensitive to the information on the characteristics of the interaction partner.

Our results have important practical implications suggesting an increase of women in management positions can reduce collusive behavior and increase compliance with antitrust laws. The finding that betrayal-averse men may behave less cooperatively when they are informed about some characteristics of the other active player is interesting. It suggests that (old) boys' networks may only work when the social distance is sufficiently small such that trust can overcome betrayal aversion. This highlights the importance of monitoring business connections and the risk that close social relationships among men can pose for compliance programs.

2. Experimental Design

In this section we present the experimental design. Our study consists of two main blocks, which each consist of two parts. In the first block, subjects participate in the main part of our within-subjects experiment, i.e., the cooperation games. In the second block, we elicit economic preferences and apply a set of psychological measures, which are relevant for cooperative behaviour.

2.1 First Block: Cooperation Games

In the beginning of the experiment subjects provide a few basic sociodemographic characteristics about themselves (gender, age, duration of study). Next, they are informed that the experiment consists of four parts and that they receive new instructions before each part begins. When participating in a part, subjects do not know any details about the next part (see Appendix B). Participants are told that either part one or two will be randomly selected for their final payoff, while parts three and four are both paid with certainty. The resulting payoffs are not disclosed during the experiment and only communicated at the very end.

In the first block of the within-subjects experiment, subjects participate in two consecutive cooperation games (parts one and two), which are based on a symmetric two-person prisoner's dilemma extended by a third player who is a passive outsider. This outsider does not participate in the game, but depending on the treatment² their payoffs are affected by the other players' choices.

Our design is similar to Engel and Zhurakhovska (2014), but differs in three important respects. First, our setting models collusive behavior. The two active players face the opportunity to collude in prices (i.e., in contrast to Engel and Zhurakhovska, 2014 we frame subjects' actions by setting a high vs. a low price). The passive player in our design can be regarded as a consumer, who is negatively affected if the two active players successfully collude, i.e., the payoff of the passive player is only reduced when collusion among the active players is successful. By contrast, in Engel and Zhurakhovska (2014) the payoff of the third player is already reduced whenever at least one of the two active players wants to cooperate even though the other active player may not cooperate. Second, we apply a so-called within-subjects experiment, where participants play an additional cooperation game, which generates information on some characteristics of the active players (see below for details). Third, the main interest of our experiment are gender differences and their consequences on subjects' behavior when knowing the gender of the other active player.

In the experiment, we apply two different treatments in block one. In the so-called baseline treatment, consumers (i.e., the passive players) are not hurt by collusion, while in the so-called negative treatment, collusion among the active players harms the third player. The general sequence in the first block is the same in both treatments, the only difference are the payoff consequences for the passive player when the active players collude. The first block starts with instructions for part one, the first of the two cooperation games. Here, players are randomly matched in groups of three. Each group consists of two active players (P_1 and P_2) and one passive player (P_3). Roles are randomly allocated and remain constant throughout both cooperation games. Each subject is informed about their role and moves to the decision stage of the first cooperation game. In the first cooperation game, players are anonymous and do not have information about each other's characteristics. All subjects receive an initial endowment of € 6 and are shown the payoff matrix on their computer screens. Moreover, the on-screen instructions explain the payoff consequences of the possible actions of the active players to all players. In the experiment, we call the actions of the two players "high price" and "low price." Next, the two active players (P_1 and P_2) play the Prisoner's Dilemma, while the passive player (P_3) does not decide. We apply the following payoff parameters:

² Experiments are typically divided into different treatments, that are identical in all except one central condition or parameter, i.e., the treatment variable. To achieve a high degree of control participants do not know about the different treatments, they are randomly selected into one of them and remain in this treatment throughout the entire experiment. This design allows experimenters to clearly identify how a particular condition affects subjects' behavior.

Table 1: Payoff Matrix

		P ₂	
		High price	Low price
P ₁	High price	P ₁ : € 14 ; P ₂ : € 14 P ₃ : € 6 - U	P ₁ : € 8 ; P ₂ : € 16 P ₃ : € 6
	Low price	P ₁ : € 16 ; P ₂ : € 8 P ₃ : € 6	P ₁ : € 10 ; P ₂ : € 10 P ₃ : € 6

If P₁ and P₂ cooperate and choose a high price, they can increase their payoff by € 8 and earn € 14 each including their endowment. If one player defects while the other player cooperates, the defector receives a total of € 16, the co-operator € 8. If both players chose the low price and defect, each one receives € 10.

P₃ does not participate in the game. Depending on the treatment, active players' choices may impact the payoff of P₃. This externality is indicated by *U* which differs between two treatments:

- (i) In the *baseline* treatment, P₃ is not affected and receives his endowment of € 6 (*U*=0), independently of the active players' choices.
- (ii) In the *negative* treatment, cooperation of P₁ and P₂ imposes a negative externality on the outsider. If both active players choose the high price, P₃'s endowment is reduced by € 3 (*U*=3) and he receives a total payoff of € 3. Otherwise, insiders' actions do not harm an outsider's payoff. In a stylized way, an interpretation may be that only in the case of mutual cooperation a cartel is established, while the market is competitive if a firm deviates and chooses a low price.

After having submitted their choices, P₁ and P₂ are asked to indicate their beliefs on the choice of the other active player. We do not incentivize the belief elicitation of the active players to avoid hedging behavior of their stated beliefs against adverse outcomes of their decision in the game (Blanco et al., 2010). At the same time, we measure the beliefs of P₃ regarding the behavior of insiders. That is, we ask them to guess whether both cooperate, defect or whether one cooperates while the other defects. We incentivized this measure, If P₃ is correct, they receive € 1.

Next, subjects receive new instructions for the second part. In this part, subjects are told they again participate in a similar cooperation game. Therefore, groups are reshuffled, while the roles (P₁, P₂ or P₃) remain the same as in the first game. We then disclose the gender composition of the active players, i.e., P₁ and P₂ receive the following information about each other: gender, age and duration of study. The characteristics of P₃ are not revealed to the insiders. P₁ and P₂ play the same version of the prisoner's dilemma as in the first game. Again, we apply exactly the

same belief elicitation. P_3 is informed about the demographics of one of the active players and again has to predict the outcome of the game.³

A short questionnaire for the two active players concludes the first block of the experiment. In the questionnaire we ask whether the active players focused more on the active players' payoffs or on the passive player's payoff.⁴ We ask this question twice in a row for each of the two cooperation games. After all subjects made their choices, they proceed to the second block of the experiment.

2.2 Second Block: Elicitation of Economic Preferences and Psychological Measures

In the second block of the experiment we elicit a set of economic preferences and psychological measures. The elicitation is conducted in separate consecutive parts (parts 3 and 4), where subjects always receive new instructions (see Appendix A for detailed explanations). In the third part, we measure subjects' risk tolerance with the method of Eckel and Grossman (2002). They have to choose one of six lotteries, where higher choices correspond to lower risk aversion. In the fourth part, we measure social value orientation with the task of Murphy et al. (2011). Here, subjects are matched in pairs and have to decide in six decision sets about the monetary allocation between them and a passive player. Based on their replies we can compute a Social Value Orientation (SVO) angle. Higher (lower) angle values can be interpreted as more (less) prosocial.

Before we apply our verbal measures on psychological preferences, we inform subjects that they will participate in several questionnaires before the experiment concludes. First, we measure betrayal aversion with two verbal questions used by Cubitt et al., (2017). The two questions focus on situations characterized by social and neutral risk. Subjects have to state the required minimum probabilities, such that they would participate in these situations. We measure betrayal aversion as the difference between the stated probabilities of social and neutral risk. Betrayal aversion increases (decreases) in the difference.

In the next part subjects complete some questions of the psychological TOSCA questionnaire introduced by Tangney et al. (2000) and used in experiments by Bellemare et al. (2019). Subjects are presented with nine scenarios of everyday life and have to indicate how likely they would react in various ways. Based on the replies we compute indices on: guilt-proneness, shame-proneness, externalization, and detachment/unconcern. Finally, we measure time preferences following Müller and Rau (2021) and Rau (2021) by asking two questions, where subjects have to trade-off a monetary amount between two time points. First, they have to state the level of immediate compensation in Euros to forego a payment of € 1000 in six months. Afterwards, they are asked about the required level of compensation in six months to forego a payment of € 1000 in twelve months. We compute the mean of both answers. The measure is interpreted as follows: more (less) patient subjects request a higher (lower) amount.

At the end of the experiment, the final payoffs are determined. The computer randomly picks one of the two stages of block one and informs subjects about all player's choices and their individual earnings. The profits made in block two are added. They result from the coin toss in the risk lottery

³ This disclosure of information is limited to only one of the two players to pin down P_3 's belief on how this exact player will behave. The goal is to learn about passive players average belief of players with these characteristics. Guessing the behaviour of two players would require to anticipated interaction effects, which is more complex and biases this analysis.

⁴ We asked them: "What was the payoff consequence you focused on when taking your decisions in part one?" They could choose one of the three answers: (i) The payoff consequences of the other active player and my own payoff consequences; (ii) The payoff consequences of the passive person (person C) and my own payoff consequences; (iii) Only my own payoff consequences.

and the randomly determined money allocation in the SVO elicitation task. Each subject is informed about the profits in the payoff-relevant parts and on the total profits of the experiment.

2.3 Procedure

The experiment was conducted between January to March 2021 within the lab of a German university. During the pandemic the physical experimental laboratory was closed. Therefore, we decided to run an online experiment. It was programmed in z-Tree unleashed (Fischbacher, 2007; Duch et al., 2020) and took place via participants' web browser. We recruited subjects from various study fields and age groups from the university's database for lab experiments, using ORSEE (Greiner 2015). In total, 408 subjects (*negative*: 234; *baseline*: 174) participated in the experiment. Due to technical problems during the online experiment (e.g., sometimes people dropped out or their internet connection was lost), we lost some participants. We remain with the data of 382 subjects. More precisely, we have the data of 223 subjects (54% female) in the *negative* treatment and the data of 159 subjects (58% female) in the *baseline* treatment. In total we ran 25 sessions of varying size. A session lasted about one hour and subjects' mean earning was € 12.92 (*negative*: € 12.61, *baseline*: € 13.36) including show-up fee. The study was pre-registered on aspredicted.org under the number #56299: <https://aspredicted.org/yz8uv.pdf>.

3. Hypotheses

Next, we derive hypotheses based on the experimental literature on gender effects in cooperation. Our basic setting of the cooperation game is similar to Engel and Zhurakhovska (2014). The authors study a prisoner's dilemma game, where cooperation of active players may have a negative externality on a passive outsider. Results show that cooperation levels of active players decrease in the level of harm on the outsider. Based on this finding, we expect less collusion when negative externalities exist.

Hypothesis 1: Less cooperation is observed in the treatment with a negative externality than in the baseline.

Regarding gender differences, the psychological literature finds mixed evidence for prisoner's dilemmas (Croson and Gneezy, 2009). Some studies report that men are more cooperative than women (e.g., Rapoport and Chammah, 1965; Kahn et al., 1971), whereas other studies find that women cooperate more often than men (e.g., Sibley et al., 1968). In line with this, economic experiments show that women are more cooperative than men (Frank, 1993) and that this gender difference vanishes after repetitions (Ortmann and Tichy, 1999). In *baseline* we focus on a one-shot set-up, which is most closely related to economic prisoner's dilemma experiments. Therefore, we postulate that women should cooperate more than men.

Hypothesis 2a: In the baseline treatment, women cooperate more often than men.

The main difference of *negative* is that the active player's action can (negatively) affect the passive player's payoff. Thus, the *negative* treatment additionally shares common characteristics of a so-called dictator game⁵ (Kahneman et al., 1986; Engel, 2011). In dictator

⁵ The so-called dictator game is a popular experiment that has been widely studied in social psychology and economics. The term "game" may be somewhat misleading for outsiders, as there is only one active player ("the dictator") in the game who can either send money or not to a passive player. Maybe somewhat surprisingly, most "dictators" have been found to send some money to the passive player

games it was commonly found that altruistic dictators send positive amounts to passive recipients (Engel, 2011). Experimental research has also revealed that female dictators send higher amounts than men to the passive recipients (Eckel and Grossmann, 1996). An explanation may be gender differences in guilt aversion (Plant et al., 2000; Else-Quest et al., 2012), i.e., women may feel more guilty than men when not behaving altruistically towards passive players. Similar results are reported in the experimental literature on lying games, which study so-called “black lies”. Telling a “black lie” means that a person increases his/her payoff at the expense of a passive other person. Results show that women engage significantly less often in such unethical behavior than men (Capraro, 2018; Grosch and Rau, 2017). Taken together, we expect that women behave less cooperatively in the *negative* treatment than men in order not to harm the passive player.

Hypothesis 2b: In the treatment with the negative externality women cooperate less often than men.

The disclosure of the gender analysis is based on an exploratory basis. Therefore, we refrain from deriving hypotheses for this setting, since less is known on this case. Moreover, the evidence is mixed. In dictator games Dufwenberg and Muren (2006) find no gender differences when gender was known. Ben-Ner et al. (2004) report that women give significantly less to other women, whereas no effects are found for men. By contrast, Cigarini et al. (2020) find that only men react to known gender and cooperate less when facing other men.

4. Results

In this section we present our results on collusive behavior in the two stages of our treatments. We report two-sided p-values throughout.

4.1 Collusive Behavior: Anonymous Setting (Stage One⁶)

To obtain a general understanding regarding the effects of the negative externality on collusive behavior, we start focusing on treatment effects between *negative* and *baseline*. In stage one, results show that a significant smaller share of players (38%) behave collusively when a third party is harmed, as compared to the *baseline* treatment (52%) (Chi²-test, $p = 0.030$). This is in line with the findings of Engel and Zhurakhovska (2014). Since less collusive behavior occurs when negative externalities exist, we find support for Hypothesis 1.

Next, we turn to our main results on gender differences with respect to collusive behavior. Figure 1 shows the share of cooperating subjects in the two treatments *negative* (left panel) and *baseline* (right panel).

even though the passive player has no influence whatsoever on the game's outcome. These findings have undermined the assumption of narrow self-interest that was traditionally applied in neoclassical economics.

⁶ Parts one and two are henceforth referred to as “stage one” and “stage two. Since the two cooperation games are two sub stages of one part, which analyzes collusive behavior we refer to the two cooperation games as “stages” in our analysis.

Figure 1: Share of cooperating subjects in *negative* (left panel) and *baseline* (right panel), conditional on gender (men: black bars; women: grey bars). Standard deviations in parentheses.

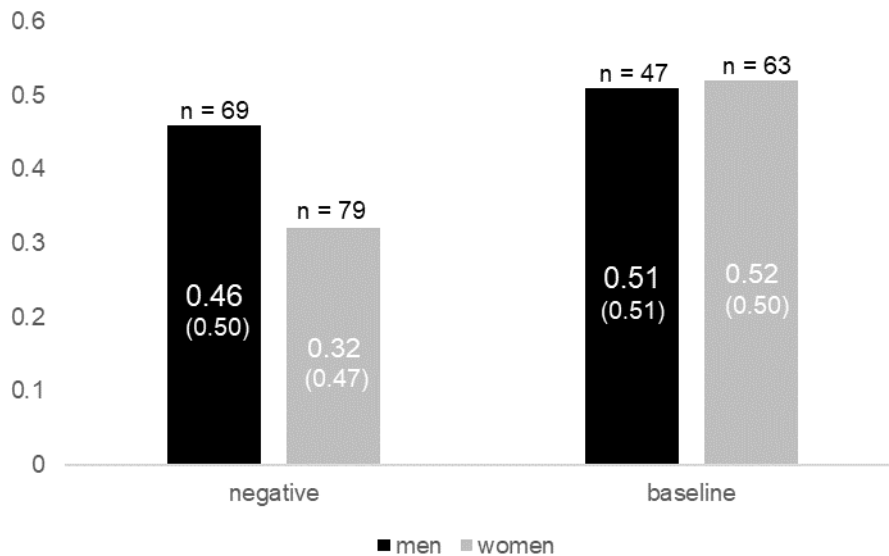


Figure 1 highlights that the lower rate of collusion in *negative* is driven by female subjects, who cooperate significantly less often (32 %) when they exert a negative externality compared to the *baseline* treatment (52%) (Chi²-test, $p = 0.013$). By contrast, no treatment differences exist for men who cooperate in 51% of all times in *baseline* and at a similarly high level (45%) in *negative* (Chi²-test, $p = 0.620$). Focusing on gender differences in the treatment with the negative externality, we find that women cooperate significantly less often than men (Chi²-test, $p = 0.066$), which shows first support for our directed Hypothesis 2b. Indeed, this gender difference does not occur in *baseline*. However, since women in *baseline* do not cooperate more than men (Chi²-test, $p = 0.891$), we find no support for Hypothesis 2a.

The findings are confirmed by probit regressions on cooperation rates. To study for the channels of collusive behavior, we include our data on preferences and psychological measures. For these measures we conduct a principal component analysis (pca) to reduce the number of correlated variables. Factors were extracted based on the basis of eigenvalues above. We identified four components with eigenvalues exceeding one.⁷ A loading of 0.50 or greater was used to identify items. In component one, two items of the so-called TOSCA scales⁸ load positively and very strongly, namely *detachment* (0.65) and *externalization of blame* (0.67). This component presents an unemphatic person who is not aware of his/her mistakes. We call this component PC1: *unconcerned*. In component two, two further items of the TOSCA scales load positively and very strongly, i.e., *proneness to shame* (0.67) and *proneness to guilt* (0.63). Therefore, we call this component PC3: *shame & guilt*. In component three we find that *patience* loads very strongly (0.80) and *svo* (-0.53) loads negatively. We call this component PC3: *patient & Individualistic*. In component four *betrayal aversion* (0.74) and *risk tolerance* (0.67) load strongly. Therefore, this component is labelled PC4: *betrayal & risk*.

⁷ A varimax rotation was applied.

⁸ The Test of Self-Conscious Affect (TOSCA) (Tangney et al., 2000) has long been used by psychologists as an instrument for empirically distinguishing between trait emotions of guilt and shame. There are various versions of the TOSCA, which consist of brief scenarios that respondents would be likely to encounter in day-to-day life. Each scenario is followed by a number of associated statements that includes phenomenological aspects of shame and guilt. For each statement, respondents' rate, on a 5-point scale, how likely they could react in the manner stated.

Table 2 presents probit regressions on cooperation rates. Models (1)-(3) focus on the aggregate data to analyze treatment effects. Models (4)-(6) present a closer look at the drivers of the treatment effect, i.e., gender differences in the *negative* treatment. All models include a gender dummy (*female*), which is one for women. In models (1)-(3), we include a treatment dummy (*negative*), which is one for the treatment with negative externality. In models (2)-(3) we control for the interaction effect (*negative x female*) of the treatment and gender. We include a dummy (*belief cooperation*), which is positive when players believe that the other active player is cooperative. Furthermore, we include our principal components on subjects' preferences (PC3 and PC4) in models (3), (5) and (6). To test for the impact of the psychological measures, we include PC1 and PC2 in model (6). In models (3), (5) and (6), we apply sociodemographic variables as controls (*age* and whether subjects are *econ* students). All regressions present average marginal effects and standard errors, clustered at the session level.⁹

Table 2: Probit regressions on cooperation rates. Average marginal effects reported.

	all data			negative		
	(1)	(2)	(3)	(4)	(5)	(6)
negative	-0.135** (0.057)	0.013 (0.070)	0.014 (0.069)			
female	-0.080 (0.052)	-0.028 (0.067)	-0.024 (0.074)	-0.145** (0.064)	-0.183*** (0.065)	-0.110 (0.079)
negative x female		-0.159* (0.091)	-0.163* (0.096)			
belief cooperation		0.470*** (0.020)	0.468*** (0.020)		0.427*** (0.034)	0.422*** (0.033)
PC1: unconcerned						-0.000 (0.028)
PC2: shame & guilt						-0.076** (0.036)
PC3: patient & individualistic			0.024 (0.024)		0.053*** (0.021)	0.046** (0.020)
PC4: betrayal & risk			0.018 (0.026)		0.024 (0.041)	0.021 (0.042)
Controls	no	no	yes	no	yes	yes
obs.	258	258	258	148	148	148

Standard errors in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Model (1) shows that the coefficient of the treatment dummy is significant with a negative sign, i.e., the likelihood of collusive behavior is about 14% smaller when negative externalities exist.

⁹ We cluster the standard errors on the session level to control for session heterogeneity, i.e., the online sessions are relatively heterogenous regarding the number of participants, which reflects in the duration of the sessions.

Thus, we find support for Hypothesis 1. The treatment effect is also reflected by our questionnaire, where we asked active players whose payoffs they focused on. We find that in the *negative* treatment a significantly smaller fraction of active players (48%) state that they focused on the payoffs of the active players compared to the *baseline* treatment (70%) (Chi²-test, $p < 0.001$). Focusing on models (2)-(3), it can be seen that the coefficient of *negative x female* supports Hypothesis 2a. That is, women are 16% less likely to cooperate in *negative* than in *baseline*.¹⁰

Result 1:

- (a) Subjects collude less often when negative externalities on third parties exist.
- (b) The treatment effect is induced by women who are less likely to collude in the negative treatment.

Moreover, models (4)-(5) reveal that the coefficient of *female* is significantly negative in the treatment with negative externalities. In model (5), the positively significant coefficient of *PC3* emphasizes that patient and individualistic subjects are more likely to collude when cooperation harms third parties. Interestingly, the gender difference vanishes, as soon as we control for our psychological measures on guilt and shame (model (6)). At the same time, the coefficient of *PC2* is significantly negative, i.e., shame and guilt averse subjects are less likely to cooperate. A closer look shows that the effect of shame and guilt aversion particularly matters for women. Women who are below/equal the median of *PC2* cooperate 52% of the time. By contrast, for an above median *PC2* the share of collusive women (22%) is significantly smaller (Chi²-test, $p = 0.008$). The effect is less pronounced and insignificant for men.¹¹ We find that *PC3* is still significant, i.e., more patient and individualistic people are more likely to collude.

Result 2:

The gender effect is induced by shame and guilt averse women who are less likely to collude when negative externalities exist on third parties.

Finally, we find that *belief cooperation* is positive and highly significant in all regression models, i.e., subjects are more likely to collude when they believe that the other player cooperates. Moreover, we run the same sub sample regression models for the *baseline* treatment, where we do not find gender differences (see Table 5 in Appendix A). All regressors are insignificant except the highly significant positive coefficient of *belief cooperation*.

4.2 Collusive Behavior: The Role of Information about Players' Characteristics (Stage One vs. Stage Two)

In this section, we exploit the panel characteristic of our data set. We compare subjects' collusive behavior in the anonymous first stage to the second stage, where we inform subjects about some characteristics (age, gender, semester number) of the matched other active player.

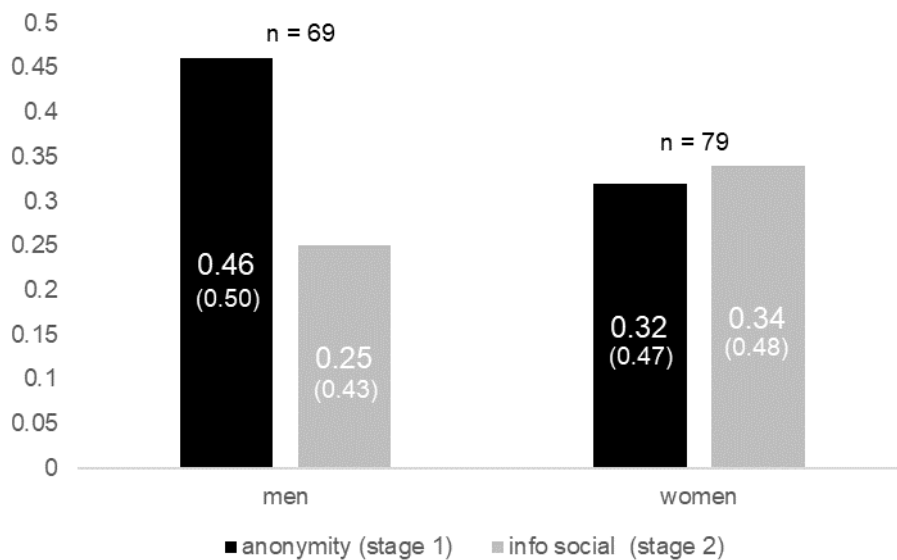
In line with the previous findings, cooperation in stage two is significantly lower with the *negative* externality (30%) than in *baseline* (47%) (Chi²-Test, $p = 0.005$). Focusing on the dynamics, it turns out that subjects in *negative* collude insignificantly less often in stage two than in stage one (38%) (Wilcoxon matched-pairs test, $p = 0.111$). No difference can be found in *baseline*

¹⁰ The gender difference in collusive behavior is also reflected by our questionnaire on active players' payoff focus. We find that a significantly smaller share of women (48%) focuses on active players' payoffs in *negative* as compared to the *baseline* treatment (75 %) (Chi²-test, $p = 0.001$). By contrast, no significant treatment difference can be found for men (*negative*: 49%; *baseline*: 64 %; Chi²-test, $p = 0.122$).

¹¹ Chi²-test, $p = 0.113$.

(Wilcoxon matched-pairs test, $p = 0.487$). Thus, for our further analyses on the role of information on players' characteristics, we focus on the *negative* treatment. Turning to gender effects, Figure 2 presents an overview on the dynamics of collusive behavior of men (left panel) and women (right panel) in the two stages of *negative* (see Figure 4 in Appendix A for a diagram focusing on *baseline*). Black bars present cooperation under anonymity, whereas grey bars present cooperation when some characteristics of the matched partner were known (info social).

Figure 2: Impact of knowledge about personal characteristics in the *negative* treatment. The diagram presents the share of cooperating men and women in stage 1 (black bars) and stage 2 (grey bars) conditional on gender. Standard deviations in parentheses.



A striking finding is that men significantly reduce collusive behavior when the personal characteristics of the matched player are known (Wilcoxon matched-pairs test, $p = 0.003$). By contrast, this effect cannot be observed for women who always cooperate at the same (low) levels in *negative* (Wilcoxon matched-pairs test, $p = 0.839$). In *baseline* we do not observe these gender effects, i.e., the cooperation rates across stages are not significantly different for both men and women.¹² The findings in the *negative* treatment are consistent with the results of Cigarini et al. (2020) who conducted a prisoner's dilemma experiment without negative externalities and find that male pairs cooperate less often when they have visual contact.

¹² Wilcoxon matched-pairs tests find for men: $p = 0.508$ and for women: $p = 0.152$.

Table 3: Random effects Probit regressions on cooperation rates in *negative*. Average marginal effects reported.

	all data		male data		female data	
	(1)	(2)	(3)	(4)	(5)	(6)
info	-0.087*	-0.215***	-0.214***	-0.214***	0.027	0.028
	(0.045)	(0.064)	(0.059)	(0.059)	(0.061)	(0.062)
female	-0.025	-0.089				
	(0.062)	(0.080)				
info x female		0.242***				
		(0.086)				
info: men		-0.040	-0.153**	-0.149**	0.030	0.032
		(0.051)	(0.068)	(0.065)	(0.092)	(0.088)
info: age		-0.002	-0.011	-0.010	0.001	0.001
		(0.008)	(0.010)	(0.011)	(0.010)	(0.010)
info: semester		-0.000	-0.010	-0.011	0.006	0.009
		(0.016)	(0.024)	(0.024)	(0.025)	(0.026)
PC1: unconcerned		0.030	0.030	0.026	0.055**	0.052*
		(0.024)	(0.030)	(0.036)	(0.027)	(0.028)
PC2: shame & guilt		-0.052	0.000	0.002	-0.071*	-0.072*
		(0.036)	(0.048)	(0.053)	(0.041)	(0.038)
PC3: patient & individualistic		0.027	0.102***	0.100***	-0.016	-0.019
		(0.031)	(0.027)	(0.029)	(0.044)	(0.047)
PC4: betrayal & risk		-0.025	-0.079**	-0.077**	0.023	0.015
		(0.028)	(0.036)	(0.038)	(0.036)	(0.033)
controls	no	yes	no	yes	no	yes
groups	148	148	69	69	79	79
obs.	296	296	138	138	158	158

Standard errors in parentheses

*** p < 0.01, ** p < 0.05, * p < 0.1

Our effects are confirmed by probit random effects panel regressions using the sample of the *negative* treatment (Table 3) (see Table 6 in Appendix B for the corresponding regressions using the sample of the *baseline* treatment).

Models (1)-(2) focus on the aggregate data of the *negative* treatment. To obtain deeper insights on the channels of gender-specific effects, models (3)-(4) focus on the male sample, whereas models (5)-(6) focus on the female sample. Models (1)-(2) include a gender dummy (*female*) and *info*, a dummy that is positive when subjects make their decision in stage two. Moreover, model (2) includes the interaction of *info* and *female* and controls for the information presented to the subject in the social information stage. More precisely, *info: men* is a dummy, which is 1 (0) when subjects were informed in stage two that the matched person is male (female). *Info: age* is the age in years of the matched partner, which was communicated to subjects in stage two. *Info: semester* is the semester number of the matched partner, which was disclosed in stage two as well. Models (3)-(6) include the same variables, with the exceptions of *female* and *info x female*. All regressions focus on average marginal effects of 148 groups and standard errors clustered at the session level.

Models (1)-(2) confirm the findings of Figure 2, i.e., the significant negative coefficients of *info* show that subjects are less likely to collude in *negative* when presented information on the matched subject.¹³ In line with Figure 2, this also holds for the male sample (models (3)-(4)), i.e., the coefficient of *info* is negative and highly significant. The dummy is insignificant when focusing on women (models (5)-(6)). We do not find this decrease of cooperation for men¹⁴ in the *baseline* treatment (see Table 6 in Appendix A).

Result 3:

Men collude less often when a negative externality exists and when they have information on personal characteristics of the matched subject.

The results reveal two sources that drive men's decrease in collusive behavior. First, it turns out that *social: man* is significant and negative. Thus, men tend to cooperate less when they know that the other active subject is also male. Interestingly, this result is not driven by beliefs as men hold similar beliefs on collusive behavior of matched men (35%) and matched women (33%) (Chi²-Test, $p = 0.861$). Second, the results highlight that PC4 is significantly negative. Closer inspection reveals that this result is mainly driven by betrayal aversion of men, since significant positive correlations exist between betrayal aversion and collusive behavior at stages one (Spearman's correlation coefficient, $\rho = -0.215$, $p = 0.076$) and two (Spearman's correlation coefficient, $\rho = -0.306$, $p = 0.011$).¹⁵ Interestingly, we only find substantial correlation between betrayal aversion and collusive behavior when male subjects are informed that the other player is male (Spearman's correlation coefficient, $\rho = -0.410$, $p = 0.038$), but not when they know that the other player is female ($\rho = -0.251$, $p = 0.105$).

Moreover, the positively significant coefficient of PC4 shows in models (3)-(4) that more patient and more individualistic men are significantly more likely to collude. For women we do not find that the matching partner or betrayal aversion have an impact. The negatively significant coefficient of PC2 shows again that shame and guilt averse women collude less often when negative externalities exist. Moreover, PC1 is significant, i.e., women who are not concerned by others are more likely to collude. We summarize our results as follows.

Result 4:

- (a) In the social info condition men are less likely to collude when matched with men, although they hold the same beliefs on collusive behavior of women and men.
- (b) Men collude less with men when they are characterized by betrayal aversion.
- (c) Information on social characteristics has no effect on collusive behavior of women.

5. Discussion

Our paper started with the observation that the role of individuals and their characteristics has largely been ignored in the industrial economics literature on cartels and collusion, even though cartels are often formed by individual managers rather than firms as collectives. At the same

¹³ The questionnaire data on subjects' payoff focus do not reflect the difference in cooperation between stage one and two. In both stages a similar fraction of players focuses on active players' payoffs (stage one: 48%; stage two: 52%; Wilcoxon matched-pairs test, $p = 0.522$).

¹⁴ In Table 6, model (2) shows that the coefficient of the interaction of *info x female* is negative and moderately significant, which even suggests an effect in the opposite direction, when no externalities exist.

¹⁵ No significant correlations can be found between *risk* and collusive behavior in stages one (Spearman's correlation coefficient, $\rho = 0.093$, $p = 0.450$) and two (Spearman's correlation coefficient, $\rho = -0.136$, $p = 0.266$).

time, the literature on experimental industrial organization explored the role of individual behavior and motives (e.g., imitation behavior, other regarding behavior) (Armstrong and Huck, 2010), but has typically not focused on cases where cooperation between individuals comes at a cost for third parties. However, this externality is common for cartels where cooperation between firms regularly harms consumers. Moreover, the industrial organization literature points out the importance of trust and the psychological costs when trust is betrayed in cartel contexts. It was emphasized that psychological measures, such as betrayal aversion and guilt aversion play a central role in the analysis of individual incentives to form cartels, since trust is determined by these factors (Leslie, 2005; Bigoni et al., 2015). Nevertheless, no paper exists that controls for these measures to study their direct influence on individual motives to form cartels. Furthermore, the experimental industrial organization literature largely ignored individual heterogeneity (e.g., gender differences), although experimental evidence reports ample evidence for gender differences in these behaviors (Croson and Gneezy, 2009). In this respect, laboratory experiments can provide important new insights on gender differences in collusive behavior. Hence, experiments can help to better anticipate the consequences of policies regarding the impact of increasing the share of women in management positions.

The current paper sheds new light on these aspects. In a comprehensive experiment, we control one by one for several important personal factors when individuals decide about the formation of cartels. First, we study whether different personal traits are more or less conducive to facilitate collusion that comes at a cost for a third party. Second, we study economic preferences and elicit psychological measures to figure out what personal characteristics drive these differences exactly.

The main focus of our analysis was on gender differences in collusive behavior. Our results suggest that women are, in general, less inclined to engage in collusive behavior at the cost of somebody else than men. Interestingly enough, for females this effect does not depend on knowing anything about the other potential cartel member. In contrast, while male participants are more inclined to form cartels, they also engage less in collusive behavior once they learn about the personal characteristics of the other potential cartel member. However, it remains to be explored how stable these effects are once the game is played repeatedly and players can develop more trust for each other. Moreover, we have not been able to explore how these findings may depend or interact with other individual characteristics such as age, education, or cultural background.

Based on our current findings, it appears that an increased female representation in management positions can have the benefit of making collusion less likely – or to put it positively – compliance with competition law more likely.

For competition authorities this can imply that diversity may be an additional factor that agencies could promote as part of both their competition advocacy work and their evaluation of firms' compliance programs, as more diverse management boards may help to foster compliance with antitrust laws. Moreover, competition agencies may also use these insights as part of their forensic cartel analysis, as traditional male-dominated industries may be more prone to collusion than industries with a more diverse set of managers. As resources are also scarce within competition agencies, enforcement priorities may be given to industries characterized by lower degrees of management diversity. Finally, in order to facilitate further research on the role of gender in collusion, competition authorities may also collect and report data on the sociodemographic characteristics of cartel participants.

With respect to further research on the role of gender in collusion, we have only analyzed a simple game with binary decisions so far. More experimental research is needed on repeated settings in market games, where subjects can choose among continuous market prices. In this respect, it will also be interesting to understand how men and women manage to overcome distrust over time when meeting repeatedly. Further extensions may also include communication stages and focus on women's and men's reactions to antitrust policies such as leniency

programs. Neither fines and penalties – the traditional elements of anti-cartel policy – nor leniency measures have been included in our experiments. Since females have regularly been found to be more risk averse than males, the inclusion of fines and penalties in an experimental setting may possibly further strengthen our main finding that women are less likely to engage in collusive behavior. Whether this hypothesis can be supported by empirical evidence should be analyzed through further experimental research. The interaction of gender, fines and penalties, and leniency should provide stimulating questions for further research.

Finally, future research should also focus on the role of minorities or people characterized by cultural or educational differences for collusive behavior. Similarly, it would be interesting to analyze how the findings vary with the age of decision makers. In our data we control for age. However, the findings are less conclusive, since there is only low variation of age in a student subject pool. Thus, more empirical evidence is needed. While our one-shot results are only a first step to thoroughly analyze the impact of personal characteristics on collusive behavior, we hope they can provide a stimulus for future research.

References

- Armstrong, M. and Huck, S. (2010). Behavioral economics as applied to firms: A primer. *CESifo Working Paper Series* No. 2937, available at SSRN: <https://ssrn.com/abstract=1553645>.
- Bellemare, C., Sebald, A., & Suetens, S. (2019). Guilt aversion in economics and psychology. *Journal of Economic Psychology*, 73, 52-59.
- Ben-Ner, A., Kong, F., & Putterman, L. (2004). Share and share alike? Gender-pairing, personality, and cognitive ability as determinants of giving. *Journal of Economic Psychology*, 25(5), 581-589.
- Bigoni, M., Fridolfsson, S. O., Le Coq, C., & Spagnolo, G. (2012). Fines, leniency, and rewards in antitrust. *RAND Journal of Economics*, 43(2), 368-390.
- Bigoni, M., Fridolfsson, S. O., Le Coq, C., & Spagnolo, G. (2015). Trust, leniency, and deterrence. *Journal of Law, Economics, and Organization*, 31(4), 663-689.
- Blanco, M., Engelmann, D., Koch, A. K., & Normann, H. T. (2010). Belief elicitation in experiments: is there a hedging problem?. *Experimental Economics*, 13(4), 412-438.
- Capraro, V. (2018). Gender differences in lying in sender-receiver games: a meta-analysis. *Judgment and Decision Making*, 13(4), 345-355.
- Chattopadhyay, R., & Duflo, E. (2004). Women as policy makers: Evidence from a randomized policy experiment in India. *Econometrica*, 72(5), 1409-1443.
- Charness, G., & Gneezy, U. (2012). Strong evidence for gender differences in risk taking. *Journal of Economic Behavior & Organization*, 83(1), 50-58.
- Cigarini, A., Vicens, J., & Perelló, J. (2020). Gender-based pairings influence cooperative expectations and behaviors. *Scientific reports*, 10(1), 1-10.
- Clemens, G., & Rau, H. A. (2019). Do discriminatory leniency policies fight hard-core cartels? *Journal of Economics & Management Strategy*, 28(2), 336-354.
- Connor, J. M., & Bolotova, Y. (2006). Cartel overcharges: Survey and meta-analysis. *International Journal of Industrial Organization*, 24(6), 1109-1137.
- Croson, R., & Gneezy, U. (2009). Gender differences in preferences. *Journal of Economic Literature*, 47(2), 448-74.
- Cubitt, R., Gächter, S., & Quercia, S. (2017). Conditional cooperation and betrayal aversion. *Journal of Economic Behavior & Organization*, 141, 110-121.
- Duch, M. L., Grossmann, M. R. P. and Lauer, T. (2020). z-Tree unleashed: A novel client-integrating architecture for conducting z-Tree experiments over the Internet, *Journal of Behavioral and Experimental Finance* 28, 100400.
- Dufwenberg, M., & Muren, A. (2006). Generosity, anonymity, gender. *Journal of Economic Behavior & Organization*, 61(1), 42-49.
- Eckel, C. C., & Grossman, P. J. (2002). Sex differences and statistical stereotyping in attitudes toward financial risk. *Evolution and Human Behavior*, 23(4), 281-295.
- Eckel, C. C., & Grossman, P. J. (1998). Are women less selfish than men? Evidence from dictator experiments. *The Economic Journal*, 108, 726-735.
- Eckel, C. C., & Grossman, P. J. (1996). The relative price of fairness: Gender differences in a punishment game. *Journal of Economic Behavior & Organization*, 30(2), 143-158.

- Else-Quest, N. M., Higgins, A., Allison, C., & Morton, L. C. (2012). Gender differences in self-conscious emotional experience: A meta-analysis. *Psychological Bulletin*, 138(5), 947.
- Engel, C. (2011). Dictator games: A meta study. *Experimental Economics*, 14(4), 583-610.
- Engel, C., & Zhurakhovska, L. (2014). Conditional cooperation with negative externalities: An experiment. *Journal of Economic Behavior & Organization*, 108, 252-260.
- Fischbacher, U. (2007). z-tree: Zurich toolbox for ready-made economic experiments, *Experimental Economics* 10(2), 171-178.
- Frank, R. H., Gilovich, T., & Regan, D. T. (1993). Does studying economics inhibit cooperation? *Journal of Economic Perspectives*, 7(2), 159-171.
- Greiner, B. (2015). Subject pool recruitment procedures: Organizing experiments with ORSEE. *Journal of the Economic Science Association*, 1(1), 114-125.
- Grosch, K., & Rau, H. A. (2017). Gender differences in honesty: The role of social value orientation. *Journal of Economic Psychology*, 62, 258-267.
- Grosch, K., Müller, S., Rau, H. A., & Zhurakhovska, L. (2020). Selection into leadership and dishonest behavior of leaders: A gender experiment. *CESifo Working Paper No. 8514*.
- Hinloopen, J., & Soetevent, A. R. (2008). Laboratory evidence on the effectiveness of corporate leniency programs. *RAND Journal of Economics*, 39(2), 607-616.
- Huck, S., Normann, H. T., & Oechssler, J. (1999). Learning in Cournot oligopoly: An experiment. *The Economic Journal*, 109, 80-95.
- Huck, S., Müller, W., & Normann, H. T. (2001). Stackelberg beats Cournot: On collusion and efficiency in experimental markets. *Economic Journal*, 111(474), 749-765.
- Huck, S., Normann, H. T., & Oechssler, J. (2004). Two are few and four are many: number effects in experimental oligopolies. *Journal of Economic Behavior & Organization*, 53(4), 435-446.
- Kahn, A., Hottes, J., & Davis, W. L. (1971). Cooperation and optimal responding in the Prisoner's Dilemma game: Effects of sex and physical attractiveness. *Journal of Personality and Social Psychology*, 17(3), 267.
- Kahneman, D., Knetsch, J. L., & Thaler, R. H. (1986). Fairness and the assumptions of economics. *Journal of Business*, S285-S300.
- Leslie, C. R. (2005). Antitrust amnesty, game theory, and cartel stability. *Journal of Corporation Law*, 31, 453-488.
- Levenstein, M. C., & Suslow, V. Y. (2006). What determines cartel success? *Journal of Economic Literature*, 44(1), 43-95.
- Marvão, C. M., & Spagnolo, G. (2018). Cartels and leniency: Taking stock of what we learnt. In: Corchón, L.C., & Marini, M.A., (eds.) *Handbook of Game Theory and Industrial Organization*, Vol. II, Cheltenham: Edward Elgar, 57-90.
- Müller, S., & Rau, H. A. (2021). Economic preferences and compliance in the social stress test of the COVID-19 crisis. *Journal of Public Economics*, 194, 104322.
- Murphy, R. O., Ackermann, K. A., & Handgraaf, M. (2011). Measuring social value orientation. *Judgment and Decision making*, 6(8), 771-781.

Niederle, M., & Vesterlund, L. (2007). Do women shy away from competition? Do men compete too much?. *Quarterly Journal of Economics*, 122(3), 1067-1101.

Ortmann, A., & Tichy, L. K. (1999). Gender differences in the laboratory: evidence from prisoner's dilemma games. *Journal of Economic Behavior & Organization*, 39(3), 327-339.

Plant, E. A., Hyde, J. S., Keltner, D., & Devine, P. G. (2000). The gender stereotyping of emotions. *Psychology of Women Quarterly*, 24(1), 81-92.

Rapoport, A., & Chammah, A. M. (1965). Sex differences in factors contributing to the level of cooperation in the prisoner's dilemma game. *Journal of Personality and Social Psychology*, 2(6), 831.

Rau, H. A. (2012). Trust and trustworthiness: A survey of gender differences. In: McGeowen, S. (ed), *Psychology of Gender Differences*, New York: Nova Science Publishers, 205-224.

Rau, H. A. (2021). Time preferences in decisions for others. *Economics Letters*, 200, 109766.

Santacreu-Vasut, E. & Pike, C. (2019). Competition policy and gender. *OECD Competition Papers*, Available at SSRN: <https://ssrn.com/abstract=3487471> or <http://dx.doi.org/10.2139/ssrn.3487471>.

Sibley, S. A., Senn, S. K., & Epanchin, A. (1968). Race and sex of adolescents and cooperation in a mixed-motive game. *Psychonomic Science*, 13(2), 123-124.

Swamy, A., Knack, S., Lee, Y., & Azfar, O. (2001). Gender and corruption. *Journal of Development Economics*, 64(1), 25-55.

Tangney, J., Dearing, R. , Wagner, P. & Gramzow, R. (2000). The test of self-conscious affect-3 (TOSCA-3), George Mason University, Fairfax.

Appendix: A

A.1 Detailed explanations of the preference elicitations

Elicitation of Risk Aversion

To measure risk aversion we apply the lottery-choice task introduced by Eckel and Grossmann (2002), where subjects choose one of six lotteries. These lotteries have a 50% chance of yielding either a high payoff (Event A) or a low payoff (Event B). Table 4 overviews the choice set, i.e., the six lotteries, the corresponding expected payoffs, and the implied CRRA range. Higher lottery choices can be interpreted as lower risk aversion. After subjects selected their lottery, a random draw decides whether Event A or Event B materializes. At the end of the experiment, subjects are informed on the outcome.

Choice	Event A	Event B	Expected Payoff	Impl. CRRA Range
1	€5.60	€5.60	€5.60	$3.46 < r$
2	€7.20	€4.80	€6.00	$1.16 < r < 3.45$
3	€8.80	€4.00	€6.40	$0.71 < r < 1.16$
4	€10.40	€3.20	€6.80	$0.50 < r < 0.71$
5	€12.00	€2.40	€7.20	$0 < r < 0.50$
6	€14.00	€0.40	€7.20	$r < 0$

Table 4: Lottery choices of the risk elicitation

Elicitation of Social Value Orientation (SVO)

We elicit Social Value Orientation (SVO) with the task of Murphy et al. (2011). In this setting, participants are matched in pairs. There are two roles, i.e., an active and a passive person. Each subject initially takes on the role of an active player, who is confronted with six different decisions on how to allocate points that are later converted to money between her and another individual. Es. Subjects have to choose the preferred point allocation for themselves and their matched partner in each of the six decision sets. In the task, we make use of the original trade-offs used in Murphy et al. (2011). We present the six choice sets below. The following exchange rate is applied: 1 point = € 0.03. Subjects know that at the end of the experiment, one player of the pair is randomly selected by the computer and becomes the active player, whereas the other player is passive. An SVO angle can be computed for each person by evaluating the participant's

decisions during the six sets in the active role.¹⁶ Higher (lower) angles represent more (less) prosocial subjects. Below we present to representative choice scenarios.



Figure 3: Choice sets of the task. “Entscheidungssituation” = Decision situation; “Auswahl” = Choice; “Sie erhalten” = You receive; „Anderer erhält“ = Other subject receives; “Ihre Auswahl”= Your choice.

Elicitation of Betrayal Aversion

We verbally measure betrayal aversion in a modified variant of two questions introduced by Cubitt et al. (2017). We present subjects with two scenarios of hypothetical taxi rides. In each of them they have to choose between two taxi companies. Company A charges a fixed fee, whereas company B charges a variable fee, which could either be low or high. In the first scenario the variable fee is characterized by social risk, since the taxi driver may betray the

¹⁶ The SVO angles are computed with the following formula: $SVO^\circ = \arctan\left(\frac{\bar{A}_o - 50}{\bar{A}_s - 50}\right)$, whereas \bar{A}_o (\bar{A}_s) is the mean allocation, which a passive player allocated to himself (to the other passive player).

subject by driving an expensive detour instead of a cheap direct route. In the second scenario the variable fee is characterized by natural risk, since it depends on traffic conditions, i.e., bad (high fee) or good (low fee). For the first scenario, subjects have to state the minimum probability of honest drivers for them to choose the company with the variable fee. For the second scenario, they are asked about the minimum probability of good traffic conditions to pick said company. Participants' betrayal aversion is computed as the difference of the stated probabilities of scenario one and two. Subjects who require a higher probability in the social risk scenario than in the neutral risk scenario, are classified as betrayal-averse subjects. The higher the probability premium they demand in the social risk case, the more betrayal averse are subjects.

Elicitation of Guilt- and Shame Aversion (TOSCA-3 Questionnaire)

We measure subjects' guilt- and shame aversion with a questionnaire common in psychology, i.e., TOSCA-3 (Tangney et al., 2000). Our questions are chosen from Bellamare et al. (2019) and relate to 16 scenarios. Out of these we picked nine TOSCA-3 questions,¹⁷ which are most relevant to guilt- and shame aversion. In these questions subjects are presented with daily life situations and common reactions of people in these situations. Subjects have to imagine themselves in these situations and indicate how likely they would react in each of the ways (a-d or a-e) described. They reply on a 5-point Likert scale (1 = not likely; 5 = very likely). Using the replies, four indices can be computed ((i) guilt-proneness; (ii) shame-proneness; (iii) externalization; (iv) detachment/unconcern). The scale scores are the sum of responses to relevant items (for the response we count the number (1-5), which is selected in the Likert scale). The coding is:

Question 1: a) shame; b) detached; c) guilt; d) externalization

Question 2: a) guilt; d) externalization; e) shame

Question 3: a) externalization; b) detached; c) shame; d) guilt

Question 4: a) shame; b) externalization; c) detached; d) guilt

Question 5: a) externalization; b) shame; c) detached; d) guilt

Question 6: a) detached; b) shame; c) externalization; d) guilt

Question 7: a) externalization; b) shame; c) guilt; d) detached

Question 8: a) shame; b) externalization; c) guilt; d) detached

Question 9: a) detached; b) guilt; c) shame; d) externalization

¹⁷ We picked questions: 1, 3, 5, 7, 9, 12, 13, 15, 16. For an overview of the questions, see the instructions.

A.2 Tables and Figures

	baseline		
	(1)	(2)	(3)
<i>female</i>	0.013 (0.084)	-0.048 (0.073)	-0.064 (0.071)
<i>belief cooperation</i>		0.454*** (0.033)	0.457*** (0.037)
<i>PC1: unconcerned</i>			0.023 (0.033)
<i>PC2: shame & guilt</i>			0.021 (0.033)
<i>PC3: patient & individualistic</i>		-0.023 (0.045)	-0.021 (0.049)
<i>PC4: betrayal & risk</i>		0.021 (0.035)	0.016 (0.035)
controls	no	yes	yes
obs.	110	110	110

Standard errors in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 5: Probit regressions on cooperation rates in the *baseline* treatment. Average marginal effects reported.

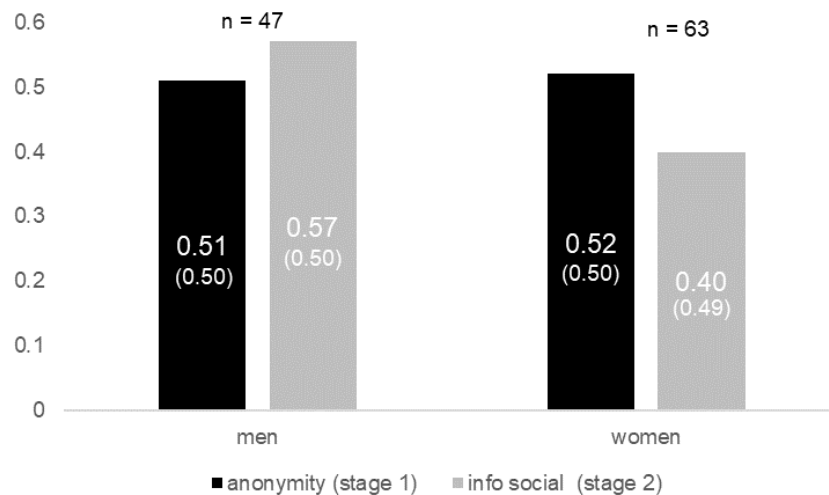


Figure 4: Impact of information of social characteristics in the *baseline* treatment. The diagram presents the share of cooperating men and women in stage 1 (black bars) and stage 2 (grey bars) conditional on gender. Standard deviations in parentheses.

	all data		male data		female data	
	(1)	(2)	(3)	(4)	(5)	(6)

<i>info</i>	-0.045 (0.059)	0.069 (0.089)	0.065 (0.085)	0.065 (0.083)	-0.126* (0.066)	-0.126* (0.066)
<i>female</i>	-0.082 (0.070)	-0.051 (0.073)				
<i>info x female</i>		-0.189* (0.101)				
<i>info: man</i>		-0.065 (0.066)	0.009 (0.079)	-0.007 (0.085)	-0.078 (0.094)	-0.082 (0.090)
<i>info: age</i>		-0.004 (0.005)	0.003 (0.007)	-0.004 (0.008)	-0.002 (0.007)	-0.006 (0.006)
<i>info: semester</i>		0.002 (0.027)	0.018 (0.038)	0.013 (0.033)	-0.003 (0.036)	0.025 (0.027)
<i>PC1: unconcerned</i>		0.043* (0.026)	-0.013 (0.048)	-0.021 (0.034)	0.052 (0.065)	0.038 (0.061)
<i>PC2: shame & guilt</i>		0.030 (0.023)	-0.041 (0.054)	-0.058 (0.047)	0.069 (0.046)	0.121*** (0.042)
<i>PC3: patient & individualistic</i>		-0.067* (0.040)	-0.147** (0.069)	-0.152** (0.063)	-0.028 (0.044)	-0.024 (0.046)
<i>PC4: betrayal & risk</i>		0.022 (0.036)	0.015 (0.042)	0.059* (0.034)	-0.026 (0.030)	-0.043 (0.032)
controls	no	yes	no	yes	no	yes
groups	110	110	47	47	63	63
obs.	220	220	94	94	126	126

Table 6: Random effects Probit regressions on cooperation rates in *baseline*. Average marginal effects reported.

Appendix B: Experimental Instructions (translated from German)

The instructions were shown on participants' screens. Comments that did not appear on the screens are written in cursive parentheses.

B.1 The Prisoner's Dilemma

B.1.1 Questionnaire

Welcome to the Experiment!

Before we start, we'd like you to answer the following questions. Your information might be shown anonymously to other participants. At no point will your data be connected to your name.

- What is your gender? [female/ male/ divers]
- What is your age? [free input]
- How many semesters have you been studying (total of Bachelor and Masters)? [0, 1, [...], 6 or higher]

B.1.2 General Instructions

The experiment consists of 4 parts, in which you can earn money. The computer will randomly decide whether part 1 or part 2 are paid out. Parts 3 and 4 will both be paid and are added to your earnings from the selected part (1 or 2).

At the beginning of each part you will receive new instructions on the screen.

Your participation in the experiment is compensated with at least € 6. Possible additional earnings from parts 1-4 are added at the end of the experiment.

After finishing the experiment, you will need to fill in your ORSEE-ID.

If you have any questions or trouble, please write a private message to the experimenter in Webex.

B.1.3 Instructions for Stage 1

In part 1, the computer will assign one of three possible roles to you (person A, person B, person C). The computer randomly matches groups that consist of three players (person A, person B, person C). In these groups, person A and B play an active part, while person C is passive and does not make choices.

Players A and B take on the roles of firms on a market. In part 1 they simultaneously decide whether to set a high or a low price. While players decide, they do not know what the other person chose. Both players' payoffs depend on their own and the other player's decision.

If player A and B both set a high price, player C's payoff is reduced by half. (*only in Negative treatment, not shown in Baseline*)

There are 4 possible cases:

1. Person A and person B both set a low price: Person A and B each receive € 10; Person C receives € 6.
2. Person A and person B both set a high price: Person A and B each receive € 14; Person C receives € 3. (*Negative treatment, in Baseline: Person C receives € 6*)
3. Person A sets a low price, person B sets a high price: A receives € 16, B receives € 8; C receives € 6.
4. Person A sets a high price, person B sets a low price: A receives € 8, B receives € 16; C receives € 6.

All payoffs include a starting capital of € 6. If part 1 is picked at the end to determine the final payoff, you will be informed about the other player's decision and the resulting payoff.

If you click "okay", you will be informed about your role and which group you were allocated into. Afterwards you will see an overview of all 4 cases. Part 1 begins and you can make a choice if you are person A or B.

B.1.4 Information about Role and Group Allocation

The result of the random draw is: You are [person A/ person B/ person C]. You are in group [group number].

B.1.5 Decision 1

The following 4 payoff combinations are possible

	Person A/B chooses: low price	Person A/B chooses: high price
You choose: low price	You: 10; Person B: 10; Person C: 6	You: 16; Person B: 8; Person C: 6
You choose: high price	You: 8; Person B: 16; Person C: 6	You: 14; Person B: 14; Person C: 3 (<i>in Baseline: Person C: 6</i>)

- Please decide, what price you want to set: [high/ low]
(*only shown to players A and B*)
- How do you think players A and B will decide? [both choose a low price/
If you are correct, you earn € 1 extra both choose a high price/
(*only shown to player C*) A chooses low, B chooses high/
A chooses high, B chooses low]

B.1.6 Belief 1 (*only shown to players A and B*)

- What price do you think did person A/B (*the other player*) choose? [high/ low]

B.1.7 Instructions for Stage 2

In part 2, you are in the same role as in part 1. The computer randomly assigns new groups that consist of three players (person A, person B, person C). In these groups, person A and B play an active part, while person C is passive and does not make choices.

You will receive information about the active player that was assigned to you on the next screen.

Players A and B again take on the roles of firms on a market. In part 1 they simultaneously decide whether to set a high or a low price. While players decide, they do not know what the other person chose. Both players' payoffs depend on their own and the other player's decision.

If player A and B both set a high price, player C's payoff is reduced by half. (*only in Negative treatment, not shown in Baseline*)

There are 4 possible cases:

1. Person A and person B both set a low price: Person A and B each receive € 10; Person C receives € 6.
2. Person A and person B both set a high price: Person A and B each receive € 14; Person C receives € 3.
3. Person A sets a low price, person B sets a high price: A receives € 16, B receives € 8; C receives € 6.
4. Person A sets a high price, person B sets a low price: A receives € 8, B receives € 16; C receives € 6.

All payoffs include a starting capital of € 6. If part 1 is picked at the end to determine the final payoff, you will be informed about the other player's decision and the resulting payoff.

If you click "okay", you will be informed about your role and which group you were allocated into. Afterwards you will see an overview of all 4 cases. Part 1 begins and you can make a choice if you a person A or B.

B.1.8 Information about Role and Group

You are still [person A/ person B/ person C]. You are now in group [group number].

B.1.9 Decision 2

The following information about person [A/B] is available (*person C always receives information on player B*): gender [male, female, divers], age [number], current semester [1, 2, ..., 6 or higher]

The following 4 payoff combinations are possible

	Person A/B chooses: low price	Person A/B chooses: high price
You choose: low price	You: 10; Person B: 10; Person C: 6	You: 16; Person B: 8; Person C: 6
You choose: high price	You: 8; Person B: 16; Person C: 6	You: 14; Person B: 14; Person C: 3 (<i>in Baseline: Person C: 6</i>)

- Please decide, what price you want to set: [high/ low]
(*only shown to players A and B*)
- How do you think players A and B will decide? [both choose a low price/
both choose a high price/
A chooses low, B chooses high/
A chooses high, B chooses low]
If you are correct, you earn € 1 extra (*only shown to player C*)

B.1.10. Belief 2 (*only shown to players A and B*)

- What price do you think did person A/B (*the other player*) choose? [high, low]

B.1.11 Comparison (*only shown to players A and B*)

- In part 1, what payoff did you consider? [my payoff and the other active player's payoff/
my payoff and the passive player's (person C) payoff/
only my payoff]
- In part 2, what payoff did you consider? [my payoff and the other active player's payoff/
my payoff and the passive player's (person C) payoff/
only my payoff]

B.2 Elicitation of Preferences

B.2.1 Risk Preferences

Instructions

In part 3 you have to pick out of six lotteries. Your payoff is determined by state A or B.

After you have submitted your choice, the computer tosses a coin. If the outcome is head, state A is realized. If the outcome is tails, state B is realized.

If you click "okay", you see an overview of the six lotteries. You can then choose one of the lotteries. At the end of the experiment you are informed about the coin toss and your corresponding payoff from part 3.

Decision

States A and B are both realized with a 50% chance. Please chose one of the lotteries:

Lottery	Payoff State A	Payoff State B
1	€ 1,40	€ 1,40
2	€ 1,80	€ 1,20
3	€ 2,20	€ 1,00
4	€ 2,60	€ 0,80
5	€ 3,00	€ 0,60
6	€ 3,50	€ 0,10

B.2.2 Social Value Orientation

Instructions

In part 4, the computer randomly matches you with one other person. You and this person simultaneously make several choices. At no point in the experiment will the identities be revealed.

Your decisions are made in thalers with the following exchange rate: 1 thaler = € 0,02.

You will face 6 different decision situations. These situations represent your payoff and the matched player's payoff. At the bottom of the page you find an exemplary situation.

In the upper row you see your payoff, in the lower row you see the other person's payoff.

You can choose between 9 different allocation of thalers between you and the other person. In each of the 6 situations you have to pick one out of 9 allocations.

Choice No.	1	2	3	4	5	6	7	8	9
You receive	50	54	59	63	68	72	76	81	85
Other player receives	100	89	79	68	58	47	36	26	15

Example 1: If you pick "Choice No. 2", you receive 54 thalers. The matched person receives 89 thalers.

Example 2: If you pick "Choice No. 6", you receive 72 thalers. The matched person receives 47 thalers.

Roles A and B:

The person who is player A has to choose an allocation between herself and the person who is player B. Player A is active and makes a choice, while player B is passive and has to accept player A's decision. Each person decides as player A. At the end of the experiment the computer randomly allocates the two roles between you and your matched player. If you are player A, your choice is relevant and the other person is passive. If you are player B, the other person is active while you are passive. In this case, the matched player's decision is relevant for your payoff.

Payment:

At the end of the experiment, the computer will randomly pick one of the 6 decisions which will then determine your payoff. Additionally, the roles A and B are randomly assigned and it will be decided if yours or the other player's choice determines the allocation of thalers, which are then converted to Euro according to the exchange rate.

We will inform you which of the 6 situations was randomly chosen and whose decision determined the payoff at the end of the experiment. You will also be informed about your resulting earnings from part 4.

Decisions

Players are presented 6 situations similar to the example with varying allocations and are asked to choose one of the allocations.

B.2.3 Betrayal Aversion

Decision 1

Please read the following text thoroughly and answer the question.

You have to travel to a larger city for personal reasons. Upon arrival at the airport you can choose between two cab companies to reach your final destination. Cab company A sets a fixed price of € 12.

Cab Company B uses a taximeter. $X\%$ of the cab drivers are honest and take the direct route. The trip then costs € 8. It is also possible that you get a driver who takes a detour to get more money out of you. The trip then costs € 16.

How many percent of the drivers X have to be honest for you to pick company B? Please use the slider to make a choice.

- [Input between 0% and 100%]

Your choice indicates that you would pick company B if at least [input] % of the drivers are honest.

Decision 2

Please read the following text thoroughly and answer the question.

You have to travel to a larger city for personal reasons. Upon arrival at the airport you can choose between two cab companies to reach your final destination. Cab company A sets a fixed price of € 12.

Cab Company B uses a taximeter. In $X\%$ of the time the traffic conditions are good. The trip then costs € 8. It is also possible that the conditions are bad. The trip then costs € 16.

How many percent of the conditions X have to be good for you to pick company B? Please use the slider to make a choice.

- [Input between 0% and 100%]

Your choice indicates that you would pick company B if at least [input] percent of the traffic conditions are good.

B.2.4 Guilt and Shame Aversion (TOSCA)

Below are situations that people are likely to encounter in day-to-day life, followed by several common reactions to those situations.

As you read each scenario, try to imagine yourself in that situation. Then indicate how likely you would be to react in each of the ways described. We ask you to rate all responses because people may feel or react more than one way to the same situation, or they may react different ways at different times

Questionnaire

1. *You make plans to meet a friend for lunch. At 5 o'clock, you realize you stood your friend up.*

- a) You would think: "I'm inconsiderate" not likely 1 -- 2 -- 3 -- 4 -- 5 very likely
- b) You would think: "Well, my friend will understand" not likely 1 -- 2 -- 3 -- 4 -- 5 very likely
- c) You'd think you should make it up to your friend as soon as possible not likely 1 -- 2 -- 3 -- 4 -- 5 very likely
- d) You would think: "My boss distracted me just before lunch." not likely 1 -- 2 -- 3 -- 4 -- 5 very likely

2. *You are out with friends one evening, and you're feeling especially witty and attractive. Your best friend's spouse seems to particularly enjoy your company.*

- a) You would think: "I should have been aware of what my best friend was feeling." not likely 1 -- 2 -- 3 -- 4 -- 5 very likely
- b) You would feel happy with your appearance and personality. not likely 1 -- 2 -- 3 -- 4 -- 5 very likely
- c) You would feel pleased to have made such a good impression. not likely 1 -- 2 -- 3 -- 4 -- 5 very likely
- d) You would think your best friend should pay attention to his/her spouse not likely 1 -- 2 -- 3 -- 4 -- 5 very likely
- e) You would probably avoid eye contact for a long time not likely 1 -- 2 -- 3 -- 4 -- 5 very likely

3. *You make a mistake at your student job and find out a co-worker is blamed for the error.*

- a) You would think the company did not like the co-worker. not likely 1 -- 2 -- 3 -- 4 -- 5 very likely
- b) You would think: "Life is not fair." not likely 1 -- 2 -- 3 -- 4 -- 5 very likely
- c) You would keep quiet and avoid the co-worker. not likely 1 -- 2 -- 3 -- 4 -- 5 very likely
- d) You would feel unhappy and eager to correct the situation. not likely 1 -- 2 -- 3 -- 4 -- 5 very likely

4. *While playing around, you throw a ball and it hits your friend in the face.*

- a) You would feel inadequate that you can't even throw a ball not likely 1 -- 2 -- 3 -- 4 -- 5 very likely
- b) You would think maybe your friends needs more practice at catching. not likely 1 -- 2 -- 3 -- 4 -- 5 very likely
- c) You would think: "It was just an accident." not likely 1 -- 2 -- 3 -- 4 -- 5 very likely
- d) You would apologize and make sure your friend feels better. not likely 1 -- 2 -- 3 -- 4 -- 5 very likely

5. *You are driving down the road, and you hit a small animal*

- a) You would think the animal shouldn't have been on the road. not likely 1 -- 2 -- 3 -- 4 -- 5 very likely
- b) You would think: "I'm terrible." not likely 1 -- 2 -- 3 -- 4 -- 5 very likely
- c) You would feel: "Well, it was an accident." not likely 1 -- 2 -- 3 -- 4 -- 5 very likely
- d) You'd feel bad you hadn't been more alert driving down the road not likely 1 -- 2 -- 3 -- 4 -- 5 very likely

6. *While out with a group of friends, you make fun of a friend who's not there.*

- a) You would think: "It was all in fun; it's harmless." not likely 1 -- 2 -- 3 -- 4 -- 5 very likely
- b) You would feel small . . . like a rat. not likely 1 -- 2 -- 3 -- 4 -- 5 very likely
- c) You would think that perhaps that friend should have been there to defend him/herself. not likely 1 -- 2 -- 3 -- 4 -- 5 very likely
- d) You would apologize and talk about that person's good points. not likely 1 -- 2 -- 3 -- 4 -- 5 very likely

7. *You make a big mistake on an important project at work. People were depending on you, and your boss criticizes you*

- a) You would think your boss should have been more clear about what was expected of you. not likely 1 -- 2 -- 3 -- 4 -- 5 very likely
- b) You would feel like you wanted to hide. not likely 1 -- 2 -- 3 -- 4 -- 5 very likely
- c) You would think: "I should have recognized the problem and done a better job." not likely 1 -- 2 -- 3 -- 4 -- 5 very likely
- d) You would think: "Well, nobody's perfect." not likely 1 -- 2 -- 3 -- 4 -- 5 very likely

8. *You are taking care of your friend's dog while your friend is on vacation, and the dog runs away.*

- a) You would think, "I am irresponsible and incompetent." not likely 1 -- 2 -- 3 -- 4 -- 5 very likely
- b) You would think your friend must not take very good care of the dog or it wouldn't not likely very likely have run away. not likely 1 -- 2 -- 3 -- 4 -- 5 very likely
- c) You would vow to be more careful next time. not likely 1 -- 2 -- 3 -- 4 -- 5 very likely
- d) You would think your friend could just get a new dog. not likely 1 -- 2 -- 3 -- 4 -- 5 very likely

9. You attend a student's housewarming party and you spill red wine on a new cream-colored carpet, but you think no one notices.

- a) You think the student should have expected some accidents at such a not likely very likely big party. not likely 1 -- 2 -- 3 -- 4 -- 5 very likely
- b) You would stay late to help clean up the stain after the party. not likely 1 -- 2 -- 3 -- 4 -- 5 very likely
- c) You would wish you were anywhere but at the party. not likely 1 -- 2 -- 3 -- 4 -- 5 very likely
- d) You would wonder why the student chose to serve red wine with the new light carpet. not likely 1 -- 2 -- 3 -- 4 -- 5 very likely

B.2.5 Patience

Decision 1

How much money would you need to receive today in order to forgo a safe payment of € 1000 in 6 months? (Please enter an amount between 0 and 1000)

- [free input]

Decision 2

How much money would you need to receive today in order to forgo a save payment of € 1000 in 12 months? (Please enter an amount between 0 and 1000)

- [free input]

B.3 Final Questions

- What subject do you study? [business administration/ economics/ industrial chemistry/ philosophy, politics and ethics/ other].
- Please enter your ORSEE-ID [free input]

B.4 Payoff Information

The following part was picked as relevant for your payoff: [part1/ part 2]
You chose: [high price/ low price]
The other player chose: [high price/ low price]
Your earnings in this part are: [payoff part 1/ 2]
In part 3 the coin toss resulted in: [state A/ state B]
Your earnings in part 3 are: [payoff part 3]
In part 4 you were: [the active player/ the passive player]
Your earnings in part 4 are: [payoff part 4]
Your total payoff in this experiment is: [total payoff]

Thank you for your participation!

B.3 Screenshots of the Decision Screens in the Cooperation Games

Stage 1 (Negative)

Periode
1 von 1

Teil 1: Folgende 4 Auszahlungskombinationen können auftreten

	Person B wählt den Preis: NIEDRIG	Person B wählt den Preis: HOCH
Sie wählen den Preis: NIEDRIG	Sie: 10 ; Person B: 10 ; Person C: 6	Sie: 16 ; Person B: 8 ; Person C: 6
Sie wählen den Preis: HOCH	Sie: 8 ; Person B: 16 ; Person C: 6	Sie: 14 ; Person B: 14 ; Person C: 3

Bitte wählen Sie den Preis, den Sie setzen möchten

NIEDRIG
 HOCH

OK

Stage 2 (Negative)

Periode
1 von 1

Teil 2: Folgende 4 Auszahlungskombinationen können auftreten

Folgende Informationen liegen über **Person B** vor:
 Geschlecht: **Weiblich**.
 Alter: **0**.
 Aktuelles Studiensemester: **1**.

	Person B wählt den Preis: NIEDRIG	Person B wählt den Preis: HOCH
Sie wählen den Preis: NIEDRIG	Sie: 10 ; Person B: 10 ; Person C: 6	Sie: 16 ; Person B: 8 ; Person C: 6
Sie wählen den Preis: HOCH	Sie: 8 ; Person B: 16 ; Person C: 6	Sie: 14 ; Person B: 14 ; Person C: 3

Bitte wählen Sie den Preis, den Sie setzen möchten

NIEDRIG
 HOCH

OK

Stage 1 (Baseline)

Periode
1 von 1

Teil 1: Folgende 4 Auszahlungskombinationen können auftreten

	Person B wählt den Preis: NIEDRIG	Person B wählt den Preis: HOCH
Sie wählen den Preis: NIEDRIG	Sie: 10 ; Person B: 10 ; Person C: 6	Sie: 16 ; Person B: 8 ; Person C: 6
Sie wählen den Preis: HOCH	Sie: 8 ; Person B: 16 ; Person C: 6	Sie: 14 ; Person B: 14 ; Person C: 6

Bitte wählen Sie den Preis, den Sie setzen möchten

NIEDRIG
 HOCH

OK

Stage 2 (Baseline)

Periode
1 von 1

Teil 2: Folgende 4 Auszahlungskombinationen können auftreten

Folgende Informationen liegen über **Person B** vor:
 Geschlecht: **Weiblich**.
 Alter: **0**.
 Aktuelles Studiensemester: **1**.

	Person B wählt den Preis: NIEDRIG	Person B wählt den Preis: HOCH
Sie wählen den Preis: NIEDRIG	Sie: 10 ; Person B: 10 ; Person C: 6	Sie: 16 ; Person B: 8 ; Person C: 6
Sie wählen den Preis: HOCH	Sie: 8 ; Person B: 16 ; Person C: 6	Sie: 14 ; Person B: 14 ; Person C: 6

Bitte wählen Sie den Preis, den Sie setzen möchten

NIEDRIG
 HOCH

OK