ISTANBUL BILGI UNIVERSITY

INSTITUTE OF SOCIAL SCIENCES

ECONOMICS MASTER'S DEGREE PROGRAM

A BEHAVIORAL APPROACH TO INSTITUTIONAL ECONOMICS: RULES OF THE GAME AND COOPERATION BEHAVIOR

KURUMSAL İKTİSATA DAVRANIŞSAL BİR YAKLAŞIM: OYUNUN KURALLARI VE İŞ BİRLİKÇİ DAVRANIŞ

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İSTANBUL

2019

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Tezin Onaylandığı Tarih : .....

Toplam Sayfa Sayısı: .....

Anahtar Kelimeler (Türkçe)

1) İş birliği
2) Mahkumlar ikilemi
3) Oy verme
4) Kurumlar
5) Koordinasyon

Anahtar Kelimeler (İngilizce)

1) Cooperation
2) Prisoners' dilemma
3) Voting
4) Institutions
5) Coordination

ACKNOWLEDGMENTS

First and foremost, I would like to express my special thanks to my dissertation advisor Assoc. Prof. Ayça Ebru Giritligil for her guidance and endless support from the beginning of my master's studies.

I would also like to express my sincere thanks to our BELIS family for their valuable comments and contributions throughout my study. Especially, I'm grateful to Nedim Okan for sharing his knowledge and help whenever I needed.

Finally and most importantly, I would like to thank my family and friends for always motivating and supporting me unconditionally.

In loving memory of my grandmother...

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ABBREVIATIONS

PD: Prisoners' Dilemma

VCM: Voluntary Contribution Mechanism

C: Cooperate

D: Defect

CC: Cooperate & Cooperate

CD: Cooperate & Defect

TL: Turkish Lira

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ABSTRACT

In the behavioral economics literature, the dynamics of cooperation in groups have received a great deal of interest. There are many studies investigating the effect of some individual characteristics and external factors on cooperation behavior of individuals in different settings. The findings of those studies show that the effect of a policy on cooperation is greater when the policy is chosen democratically by group members than when it is imposed exogenously. With this motivation, in this thesis study, I mainly focus on whether cooperation behavior of individuals is influenced by the mechanisms imposing the rules when there is a conflict between what is individually optimal and what is optimal for the society as a whole. In an experimental setting, using a prisoners' dilemma game which can be transformed into a coordination game, the study questions if people can coordinate on the socially efficient equilibrium when the transformation is imposed democratically. Also, with a coordination game it is investigated how people coordinate when there are more than one equilibrium. The results cannot confirm the claim that democratic decision-making processes increase cooperation but suggest that individual-level cooperation is influenced by prior mutual cooperation experience and some personal characteristics.

Key Words: Cooperation, prisoners' dilemma, voting, coordination, experiment.

ÖZET

Gruplardaki iş birlikçi davranış dinamikleri, davranışsal iktisat literatüründe pek çok akademik çalışmaya konu olmuştur. Literatürde bulunan çalışmaların büyük çoğunluğu, farklı koşullar altında, dışsal faktörlerin ve bireylerin kişisel tercihlerinin işbirlikçi davranışı nasıl etkilediği sorusuna cevap aramaktadır. Bu çalışmalardan elde edilen bulgular ve sonuçlar, kuralların demokratik yöntemlerle koyulması durumunda, bireylerin koyulan kurallara uyma eğilimi sergileyip daha iş birlikçi davrandıklarını göstermiştir. Literatüreki bu sonuçlardan hareketle, bu tez çalışmasında mahkumlar ikilemi oyunu kullanılarak, toplumsal ve bireysel tercihlerin çatıştığı durumlarda iş birlikçi davranışla kural koyma yöntemleri arasındaki ilişkinin nasıl şekillendiği üzerinde durulmaktadır. Ayrıca, bir koordinasyon oyunuyla bireylerin iki farklı denge olması durumunda nasıl koordine oldukları da incenlenmektedir. Çalışma kapasamında yapılan iktisadi deneylerde, demokratik karar verme süreçlerinin işbirlikçi davranışı olumlu etkilediğini destekleyen sonuçlara ulaşılamamıştır. Ancak, deneylerden elde edilen sonuçlar bireysel işbirliği davranışının bireylerin daha önceki karşılıklı iş birliği deneyimlerinden ve bazı kişisel özelliklerden etkilendiği ortaya koymuştur.

Anahtar Kelimeler: İş birliği, Mahkumlar ikilemi, Oy verme, koordinasyon, deney.

INTRODUCTION

According to North (1990), institutions are the rules of the game in a society or, more formally, are the humanly devised constraints that shape human interaction. These rules not only affect how people behave but also how they make their decisions in the first place. In line with this understanding, Acemoğlu and Robinson (2001) emphasize the relationship between institutional characteristics and collective decision-making methods that influence both the political and social organization of societies and hence the economic performance in the long run.

With a desire for understanding and analyzing human behavior, especially the dynamics of cooperation in groups, in my thesis study, I want to investigate whether the way in which a rule/policy is imposed affects prosocial behavior. In an experimental setting, I test the claim that the effect of a policy on the level of cooperation is greater when the policy chosen democratically by group members than when it is imposed by an external body.

In addition to the effect of democratic processes on cooperation, I also concentrate on how people make their decisions when there is a tension between individual and social interests. From personal characteristics, including risk attitudes and trust preferences, to past experiences, I consider many possible explanatory factors to understand how individuals behave in such choice environments. It is worth to mention that I am interested in not only cooperation behavior but also coordination among individuals.

In the experiment, after having played a prisoners' dilemma game for several periods, the participants are given a chance to modify that game into a coordination game with two Nash equilibria. My aim here is to see if the participants consider playing the modified game where the socially efficient outcome is one of the two Nash equilibria, and also if the socially efficient equilibrium is achieved by mutual cooperation. In the two main treatments, by changing the group size, I want to observe the potential impact of the size of the majority on cooperative behavior if it exists. Also, in the third treatment, using a coordination game, I aim to understand

if people can coordinate on the efficient outcome when they have no prior experience. Basically, this treatment informs us about how people behave in the coordination game and serve as a model to compare with the cases where the PD game is transformed into the coordination game.

The remainder of this thesis study is organized as follows. In Section II, I review the studies in the behavioral economics literature that concentrate on similar questions and briefly mention the contribution of my study to the existing literature. Then, in Section III, I explain the benchmark study which inspired my thesis, and after that present my experimental design in detail. In Section IV, I present my analyses in detail and share the main findings and results. Finally, the concluding remarks and future research ideas are presented.

2. LITERATURE REVIEW

In the behavioral economics literature, there are many studies that investigate the relationship between the way in which a policy is imposed and prosocial behavior. Almost all of the studies focusing on this relationship present similar results supporting the idea that the effect of a policy on prosocial behavior is greater when it is chosen democratically by the subjects than when it is exogenously imposed.

The majority of the studies in the existing experimental literature focus on the relationship between democratic processes and prosocial behavior. These studies analyze the dynamics of prosocial behavior using a public good game setting in which there is a conflict of interest between society and individual. From a game-theoretical perspective, we know that in a standard voluntary contribution mechanism (VCM) what is socially efficient is not the best strategy to apply for a rational individual who wants to maximize her own utility only. However, by inducing different mechanisms, both informal and formal, into the standard public good provision game, it is possible to modify actions of the players and make them deviate from the strategy they adopt in the standard version. Here, I focus on the studies that question the relationship between the way how a policy is imposed (endogenous or exogenous) and cooperative behavior and highlight the key findings of those studies that provide fruitful insights for my thesis.

In their experimental study, Tyran and Feld (2006) investigate the effects of mild law (non-deterrent sanctions) on the provision of public good by comparing it to severe law (deterrent sanctions) and no law cases. The rule they concentrate on makes the contribution to a public good obligatory and sanctions free-riding. The results of the study show that exogenously imposed mild law does not achieve compliance, but compliance is much more improved if mild law is endogenously chosen through voting. Voting for mild law induces expectations of cooperation, and therefore, people tend to comply with the rule if they expect others to do so. As it is seen, the way a policy is imposed can be understood as a signal for the behavior of the others and thus affect the behavior of individuals and the level of the public good.

Using a VCM in which punishment may be imposed depending on subjects' votes, Ertan, Page, and Putterman (2009), show that punishment in a VCM game leads to efficiency when the punishment that is targeted at low contributors is allowed democratically. Also, the authors question whether having a prior experience makes any significant difference in individuals' behavior in similar settings.

In a different study, Sutter, Haigner, and Kocher (2010) analyze a VCM in which individuals can endogenously determine whether they want to add an option of rewarding or punishing other group members. The main result of the paper supports the authors' claim that there is a positive effect of endogenous institutional choice on the level of cooperation. They also find that there will be higher contributions when a given rule is chosen endogenously than when it is implemented exogenously.

In the context of repeated public good games, Ambrus and Greiner (2018) investigate the impact of democratic punishment, that is group members decide to punish other members by majority voting, on the level of cooperation and average payoffs. The main finding of the study is that democratic punishment facilitates cooperation and also results in higher average payoffs. Moreover, they conclude that participation in democratic punishment makes punishment intentions more pro-social.

Finally, in the study that I take as a benchmark for my thesis, Dal Bó, Foster, and Putterman (2010) question whether the influence of policy on cooperation behavior among individuals is more pronounced when it is chosen democratically by the group members than when it is exogenously imposed. The authors find supporting results.

The contribution of my study to the current literature is that, in addition to the relation between policy selection mechanism and cooperation behavior, I also investigate many other individual and external factors that can influence prosocial behavior in groups. My thesis differs from the existing studies since it aims to capture a greater portion of the factors that potentially affect the relationship

between democratic mechanisms and cooperation. By changing the group size in two separate treatments, I analyze the possible interaction between the size of the majority and cooperative behavior. Moreover, I try to explain how individual factors including risk attitudes, trust preferences, and cognitive skills affect the way people decide when there is a conflict between what is socially efficient and what is individually rational. In addition to these, my thesis focuses on how both cooperation and coordination among individuals is affected by prior experiences.

3. THE EXPERIMENT

3.1. The Benchmark Study

The study I take as a benchmark for my thesis study is the paper of Dal Bó, Foster, and Putterman (2010), which mainly concentrates on the effect of democratic institutions on cooperation among individuals. In the paper, the authors argue that a policy that is chosen democratically by the group members encourages cooperation. To test this claim, they use a prisoners' dilemma game that may be transformed into a coordination game by a simple majority (endogenous modification) or by a computer (exogenous modification).

As it is quite well-known, the prisoners' dilemma game has a unique Nash equilibrium that is mutual defection (DD). In the modified coordination game, however, there are two Nash equilibria - mutual defection (DD) and mutual cooperation (CC). Therefore, the game is modified in a way that the socially efficient outcome, mutual cooperation, becomes an equilibrium outcome. Since the mutual defection is still an equilibrium, participants who expect that the mutual defection will be the outcome of the modified game have no incentive to modify the initial payoffs. On the other hand, those who expect mutual cooperation to be the outcome of the game when the payoffs are modified will have an incentive to vote in favor of modification (Dal Bo et al. 2010). The normal-form games are given below.

	C	D
C	50, 50	10, **60**
D	**60**, 10	40, 40

Figure 1. Initial payoffs, Dal Bo et al. (2010)

	C	D
C	50, 50	10, **48**
D	**48**, 10	40, 40

Figure 2. Modified payoffs, Dal Bo et al. (2010)

In an experimental setting, they aim to compare the cooperation rate, which is defined as playing CC, between the exogenously modified games and the ones for which the modification is endogenous. In the first part of the experiment, the subjects play the PD game with given payoffs. Then, at the beginning of the second part, they might change the payoffs by a vote, and continue to play the modified game.

Members in each group consist of four subjects vote on whether to modify the payoffs and hence to continue to play with the modified payoffs. Then, the computer randomly decides whether to consider the result of the vote in each group. If the computer considers the votes, then the majority wins. In case of a tie, the computer breaks it. If the computer does not consider the votes in a group, then it might modify the payoffs or might not change them. The computer's decision will be random. The figure given below summarizes the voting mechanism the study uses.

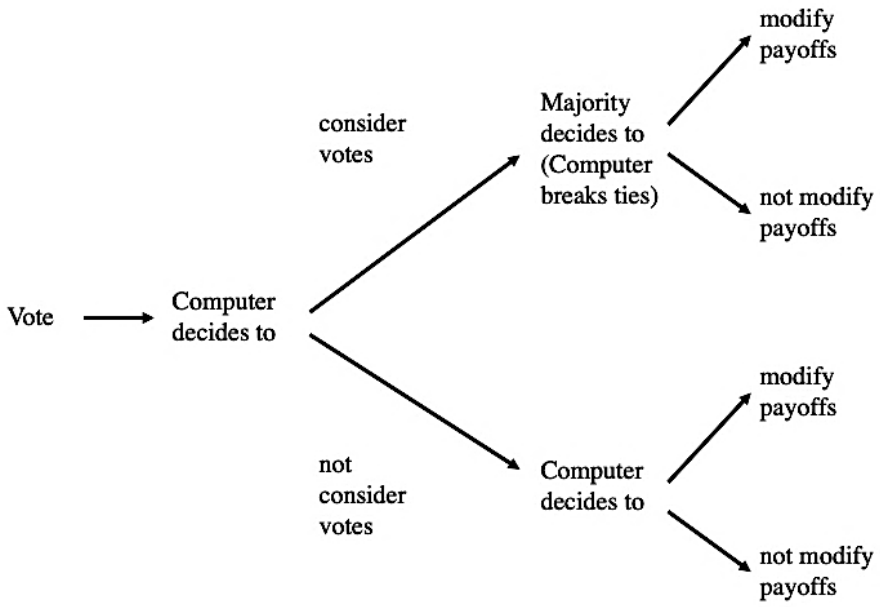

Figure 3. Voting stage (Dal Bo et al., 2010)

When the authors analyze the data obtained, they find that the effect of a policy on the level of cooperation is greater when it is chosen by the majority of group

members than when it is imposed from outside. Also, they decompose the effect of the endogenous modification and show that this is due to a selection effect and an "endogeneity premium" effect. By selection effect, the authors mean that players who vote for modification are different from those who do not in terms of their cooperation preferences. Similarly, as they define in the paper, endogeneity premium results from the fact that individuals with similar characteristics facing the same game might choose different actions depending on the modification mechanism. As a significant contribution to the existing literature, the paper distinguishes these two effects to analyze the real effect of democracy.

3.2. Experimental Design

In my experiment there are three treatments.

- *Treatment 1*: Small group treatment
- *Treatment 2:* Large group treatment
- *Treatment 3:* Coordination game treatment

Small Group Treatment

In the small group treatment, subjects are divided into groups of 6 people, and members of each group remain unchanged for the entire session. Group size is determined to be six, which is an even number to maximize the probability of a tie that will be broken by the computer.

The experiment consists of two parts. In the first part, participants play ten rounds of a PD game with the payoffs presented below. For the sake of neutrality, I name the actions as Action 1 and Action 2. In each round, they are randomly matched with a different group member and play the game.

	Action 1 (C)	Action 2 (D)
Action 1 (C)	50, 50	10, **60**
Action 2 (D)	**60**, 10	40, 40

Figure 4. Unmodified game, Dal Bo et al. (2010)

	Action 1 (C)	Action 2 (D)
Action 1 (C)	50, 50	10, **49**
Action 2 (D)	**49**, 10	40, 40

Figure 5. Modified game

In the next part, there are ten rounds as well. At the beginning of this part, however, the subjects might change the initial payoffs by vote and transform the initial game into a coordination game presented above (Figure 5). The modification is in the form of a reduction in the payoff of unilateral defection, which is similar to the one that Del Bo et. al (2010) impose. In my experiment, however, the amount of reduction is smaller than that in the benchmark study. The payoff that a subject gets when she defects unilaterally is determined as 49 to understand better how she behaves when the difference between the payoffs is that small. As I already explained, members in each group vote on whether to modify payoffs and hence to continue to play with the modified payoffs. Then, the computer randomly decides whether to consider the result of the vote in each group. If the computer decides to consider the votes in a group, then the majority wins. In case of a tie, the computer breaks it. If the computer does not consider the votes, then it might modify the payoffs or might not change them. The computer's decision is random.

The subjects learn whether their votes are considered by the computer and whether they will play with the modified payoffs. Also, they are informed about the exact distribution of votes in their group. After the voting stage, they play the chosen game, the previously played one or the modified one, for another ten rounds.

When the second part is completed, I ask the subjects to answer some questions to learn about their reasoning in the experiment. In addition to the experiment related questions, they are expected to answer some additional questions revealing their risk preferences and trust attitude. These questions are taken from "The Preference

Survey Module: A Validated Instrument for Measuring Risk, Time, and Social Preference" (Falk et. al, 2016).

In order to measure the participants' trust level, I ask them the following validated survey question:

> *How well does the following statement describe you as a person? As long as I am not convinced otherwise, I always assume that people have only the best intentions. Please use a scale from 0 to 10, where 0 means "does not describe me at all" and a10 means "describes me perfectly".*

To reveal the subjects' risk attitudes, I combine two different tools. First, they are asked to self-assess their risk appetite by answering the following question formulated by Falk et. al, 2016:

> *How do you see yourself: are you a person who is generally willing to take risks, or do you try to avoid taking risks? Please use a scale from 0 to 10, where a 0 means you are "completely unwilling to take risks" and a 10 means you are "very willing to take risks".*

In addition to the self-assessment question, the subjects are also asked to make a choice between a lottery and a safe option. I use the first question of the staircase risk assessment method developed by Falk et al. in the Preference Survey Module (Falk et al., 2016). The question is presented in Appendix I.

Furthermore, the subjects report some personal academic information including their scholarship status and major of study.

In order to calculate the earnings, we choose four periods randomly and take the arithmetic average of the points that the subjects earned in these chosen periods. This average is multiplied by 0.5 TL, and the amount earned is determined in money terms.

Large Group Treatment

In the large group treatment, participants go through the same stages, but the group size is increased. This time, every subject in the lab participates in the vote in a group of 30 people. Again, the computer decides whether to consider the result of the vote or not. As I mentioned earlier, comparing these two treatments, I want to understand if the size of the majority has an impact on cooperative behavior in groups.

Coordination Treatment

In addition to these two treatments, I have a third treatment to observe how individuals behave in the coordination game when they have no prior experience with the PD game. In this treatment, each subject is randomly paired with another subject in each round, and they play the coordination game for 20 rounds. With this treatment, I aim to understand how the subjects behave in a game with two equilibria when they do not have prior experience with a PD game in which there is a temptation payoff that functions as a reference point and makes not to cooperate more attractive.

Hypotheses to Be Tested in This Study

In this experimental setting, I test the following hypotheses:

$\boldsymbol{H_1}$: *In the first part of the game, cooperation decreases with experience.*

$\boldsymbol{H_2}$: *Subjects who experience mutual cooperation outcome more frequently in the first part of the game will expect that CC will be the outcome of the modified game as well and hence have an incentive to vote for modification.*

$\boldsymbol{H_3}$: *Subjects who play C more frequently in the first part of the game will continue to play C after the voting stage.*

$\boldsymbol{H_4}$: *If the game is modified endogenously, then group members will be more likely to cooperate (effect of democracy).*

$\boldsymbol{H_5}$: *Group size, in other words, the size of the majority, affects cooperative behavior.*

$\boldsymbol{H_6}$: *Cooperation behavior is closely linked with trust among individuals.*

$\boldsymbol{H_7}$: *Cooperation behavior is closely linked with some other personal characteristics including risk preferences, cognitive skills, laboratory experience, education of parents and so.*

$\boldsymbol{H_8}$: *Coordination among individuals depends on prior experiences.*

4. RESULTS

We conducted eight experimental sessions from June 2018 to February 2019 at Bilgi Economics Lab of Istanbul (BELIS). The table below shows the distribution of the subjects across treatments.

Coordination (No-voting) treatment	**Large group treatment**	**Small group treatment**
2 sessions	3 sessions – 3 group observations	3 sessions – 12 group observations
30 subjects per session	30 subjects per session	24 subjects per session
60 subjects in total	90 subjects in total	72 subjects in total

Table 1. Distribution of the subjects across treatments

In total, 222 subjects participated in the experiment. 162 of them played the version with a voting stage, whereas 60 students participated in the coordination game treatment.

The subjects were Istanbul Bilgi University undergraduate students and recruited through ORSEE. On average, the participants earned 19.59 TL with a maximum of 25 TL and a minimum of 5 TL. They spent less than one hour (45 minutes approximately) in the laboratory. Given the duration of a session, it can be claimed that the subjects earned a considerable amount. Since I did not want to affect the subjects' decisions, by offering a sure amount of money which is independent of their actions in the game, there was no show-up fee.

Below table shows the summary statistics of the sessions.

Age	22.22 (max: 46, min:18)	
Sex	F: 119 (53.6%))	M: 103 (46.4%)
Faculty	Law: 19 (8.6%)	Business: 35 (15.8%)
	Communications: 19 (8.6%)	Architecture: 4 (1.8%)
	Engineering: 60 (27%)	Social Sciences: 40 (18%)
	Health Sciences: 21 (9.4%	Vocational School: 24 (10.8%)
Scholarship	No scholarship: 39 (17.6%)	Partial scholarship 107 (48.2%)
	Full scholarship: 76 (34.2%)	
Previous lab experience	Yes: 177 (79.7%)	No: 45 (20.3%)
Previous game theory knowledge	Yes: 60 (27%)	No: 162 (73%)

Table 2. Summary statistics

As it is shown in the table, most of the subjects, who participated in the sessions had previously attended other experiments. However, only 30% of them claimed that they had encountered game theory before.

4.1. Mutual Cooperation

I start with the results of coordination treatment, then present the findings in the large group and small group treatments, respectively.

4.1.1. Coordination Treatment

Considering the treatment in which the participants play 20 rounds of the coordination game, it is seen that the level of coordination on the 50-50 equilibrium where both players playing C was decreasing as the session continued. The average level of coordination on the better equilibrium is found to be 17% with a maximum of 40% in the first round. After the tenth round, coordination on the efficient outcome became very unlikely, and it is observed that most of the players played

D, hence the game ended up at the 40-40 equilibrium. The following table summarizes the level of mutual cooperation throughout the coordination game.

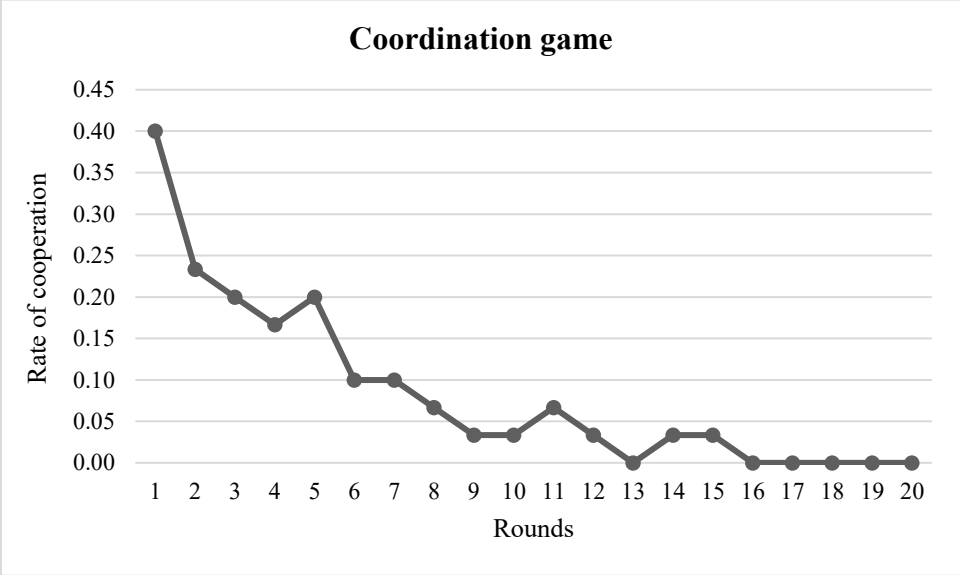

Figure 6. Cooperation rates in the coordination game

I conclude that even if there is no temptation payoff that the subjects recall from their past experiences, they still do not play CC as the game continues. Coordination on the efficient outcome, in other words, mutual cooperation, decreases with experience.

When we remove the temptation payoff, the most plausible explanation that we can argue for the decrease in coordination on the efficient outcome is the low level of trust between individuals. We can claim that the subjects played D because they thought that the other player would want them to get the "sucker payoff" (10) and therefore would play D. In other words, as a result of the low level of trust among the subjects, they decided to play D to guarantee a payoff of 40. When we check the answers of the participants to the question asking how they made decisions during the game, it is seen that most of them mentioned that they were motivated to play C (Action 1 in the game), but then they had to play D (Action 2) since the other player continued to play D. Also, most of the subjects defined D as the less

risky action in the game just because the lowest payoff that they get from playing D is 40 whereas for C it is 10.

4.1.2 Large Group Treatment

In large group treatment, we observe that the average level of mutual cooperation, both players playing C, in the first part of the game is found to be 5.78% with a maximum of 33.33% in the first round. In the last round of the first part, cooperation decreases to 0 with experience as expected.

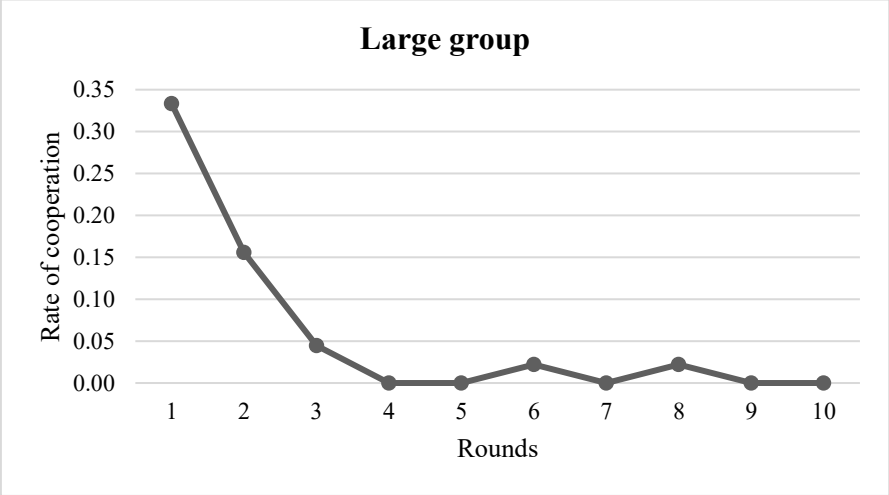

Figure 7. Cooperation rates in the first part (n=30)

In the second part of the game, however, depending on the result of the vote, there are four cases to consider. Since I have only three large group observations, I can analyze the cooperation levels in a large group for the endogenous no modification, exogenous modification, and exogenous no modification cases. When these cases are compared, we obtain very similar results for the cooperation between subjects. Considering the data collected from these three cases together, it is found that in each case the average level of cooperation in the second part of the game was almost zero. We see that there is only one pair playing CC in the eleventh period. As discussed earlier, the subjects voted for no modification with an expectation that the mutual cooperation wouldn't be played in the upcoming rounds. Therefore,

almost none of the subjects played C as expected, and only one mutual cooperation outcome is observed in the eleventh round.

4.1.3 Small Group Treatment

In the small group treatment where the group size is 6, again, we observe that the level of cooperation decreased with experience in the first part. The average level of cooperation in the first ten rounds was 5.55% with a maximum of 33.33% in the first round of the game. As expected, in the last round before the voting stage none of the subjects played C, and therefore the rate of cooperation decreased to 0.

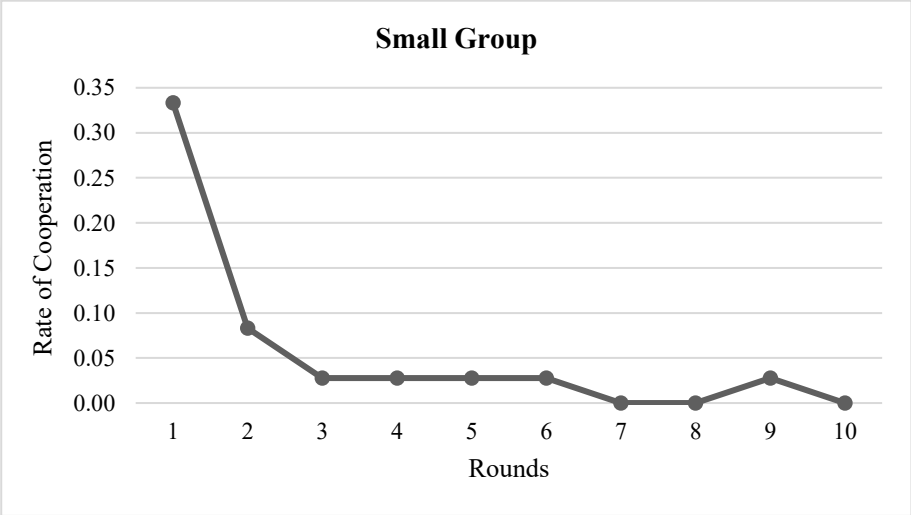

Figure 8. Cooperation rates in the first part (n=6)

Similar to the large group treatment, depending on the result of the vote, there will be four possible cases to be considered in the second part of the game. In this treatment, I collected 12 small group observations.

We conclude that the mutual cooperation in the large group and small group treatments is not statistically different since the Wilcoxon rank-sum test gives a z-value of -0.360. Test results are presented in Appendix I.

4.2. Cooperation at Individual Level

In this section, I focus on cooperation at the individual level. First, I will present the distribution of playing C in the two voting treatments, large group, and small group, namely.

In the large group treatment, among the 90 subjects, the ratio of playing action C throughout the game is 12.1% on average. As it is shown in the below table, thirty subjects never played C in any round in the experiment, and only one subject played C in all rounds.

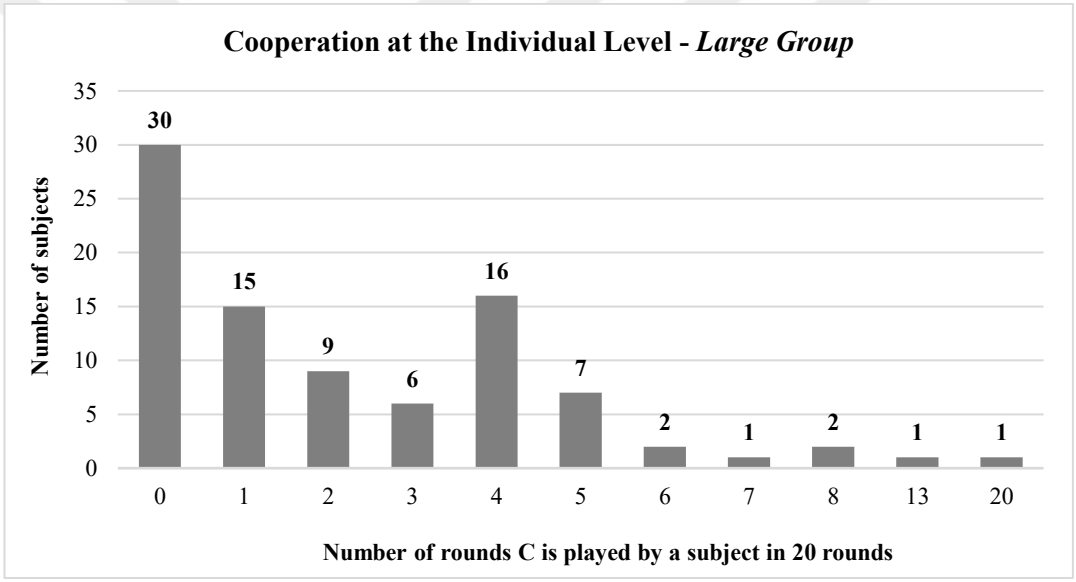

Figure 9. Distribution of playing C throughout the game (n=30)

Similarly, in the small group treatment, the average ratio of playing C in 20 rounds is found to be 13.3%. In other words, considering all 20 rounds in each session, it is observed that action C is played by the subjects 191 times in total. Below tables summarizes the distribution in the small group treatment.

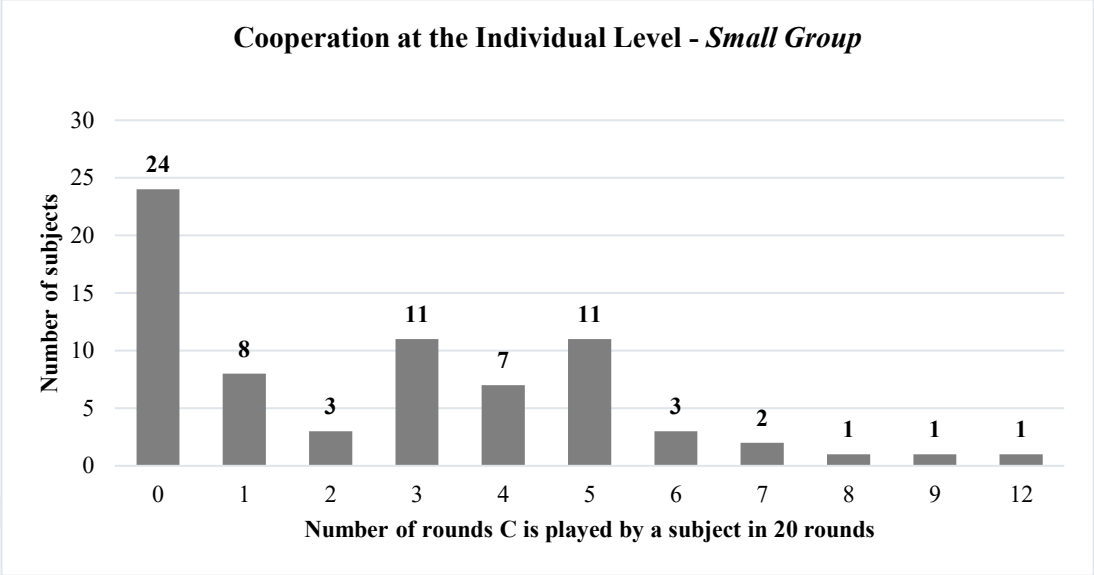

Figure 10. Distribution of playing C throughout the game (n=6)

In addition to these results, I also report the findings regarding the individual level cooperation dynamics in the first of the part game. Using the cooperation pattern of the subjects in the first ten rounds before the voting stage, we can explain both their voting behavior and their cooperation behavior in the second half conditional on the outcome of the vote.

Considering the large group treatment, it is observed that the average ratio of playing action C is calculated as 22.6% at the individual level. Put it differently action C is played by the subjects 163 times in 720 rounds.

In the small group treatment, when we check the actions of the subjects in the first ten rounds, it is found that the ratio of playing action C is 19.6% on average. So, the number of rounds action C played by the subjects is 141 in total taken all the rounds in the small group treatments into account together. On the other hand, in the small group treatment, when we check the actions of the subjects in the first ten rounds, it is found that the ratio of playing action C is 19.6% on average. The number of rounds in which action C played is 141 considering all the rounds in the small group treatments. Distribution of playing action C is summarized below.

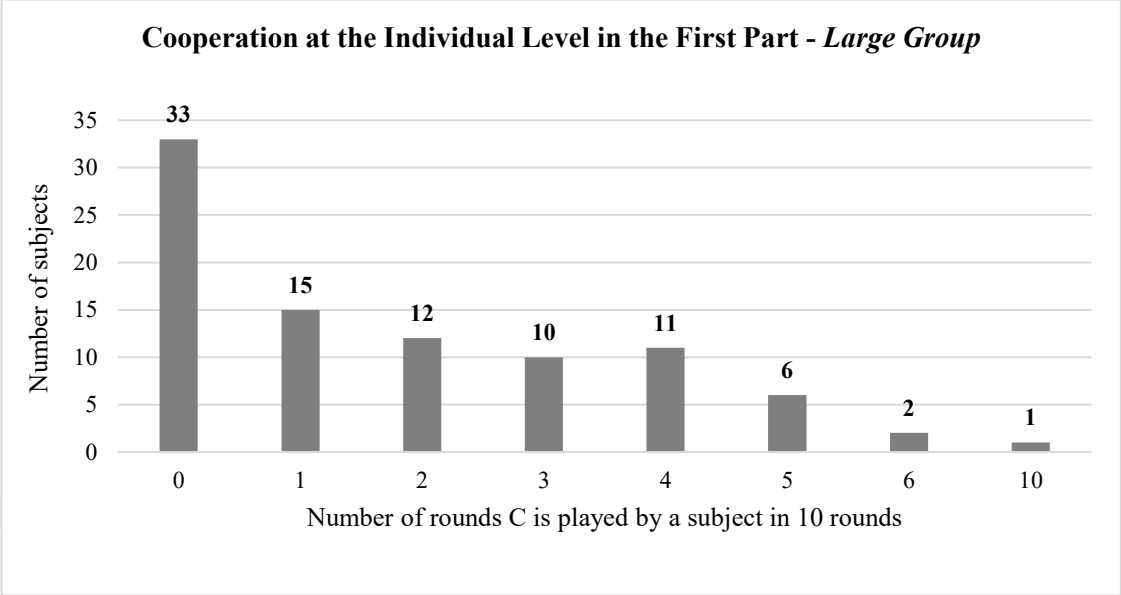

Figure 11. Distribution of playing C in the first part (n=30)

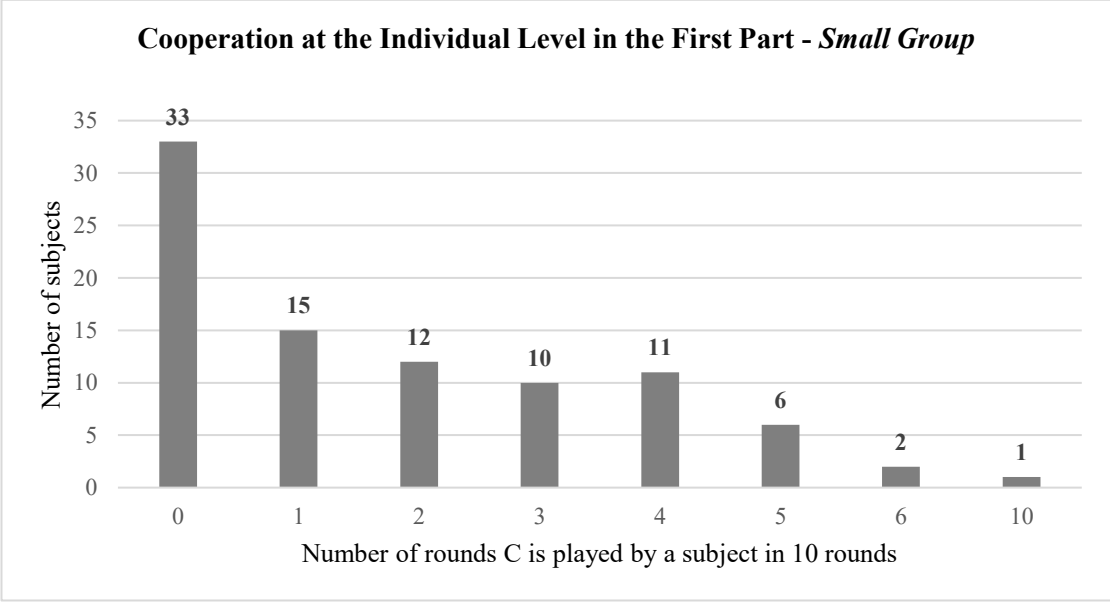

Figure 12. Distribution of playing C in the first part (n=6)

When we test whether the distributions are statistically different, we observe that this is not the case. According to my findings, cooperation at the individual level does not depend on group size.

Finally, I mention the importance of periods in which the action of a subject is C, but the outcome of that period is CD. I think it is crucial to discuss that the voting behavior of a subject is also affected by the periods where she wants to cooperate, but the other part does not since her belief about the possibility of CC being an outcome in the upcoming periods is shaped by unilateral defection outcomes that she faced earlier. Again, in this part, I focus on the small group and large group treatments separately.

The tables given below show the distribution of CD outcomes before the voting stage, observed by the individuals who played C in those periods. It is worth to mention that these distributions are conditional on that a subject played C and therefore 0 means the subject did not face CD but CC as the outcome of that period. For instance, in the large group treatment, there is one subject who wanted to cooperate but faced D 9 times in the first half of the game. When we examine the small group treatment, the maximum number of rounds in which a subject played C but the outcome in this round was CD is found to be 4.

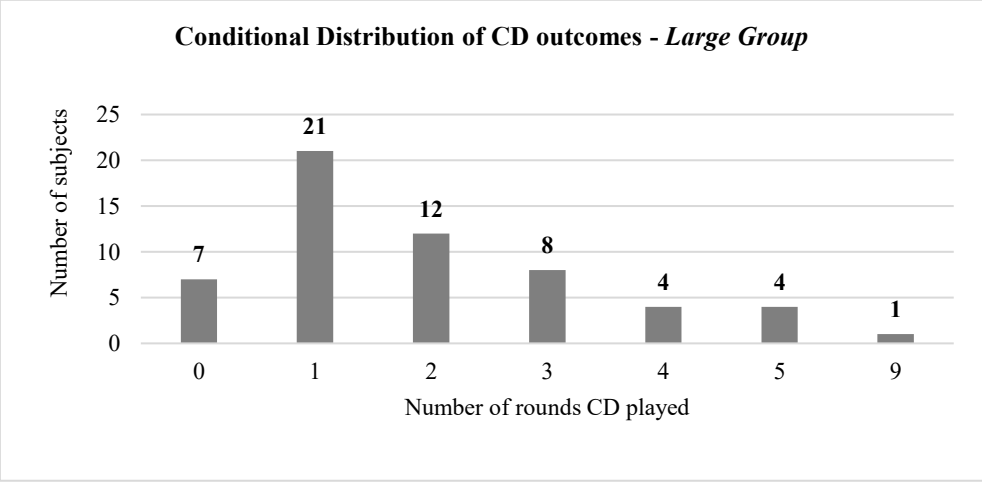

Figure 13. Distribution of the rounds in which a subject playing C faces CD as an outcome (n=30)

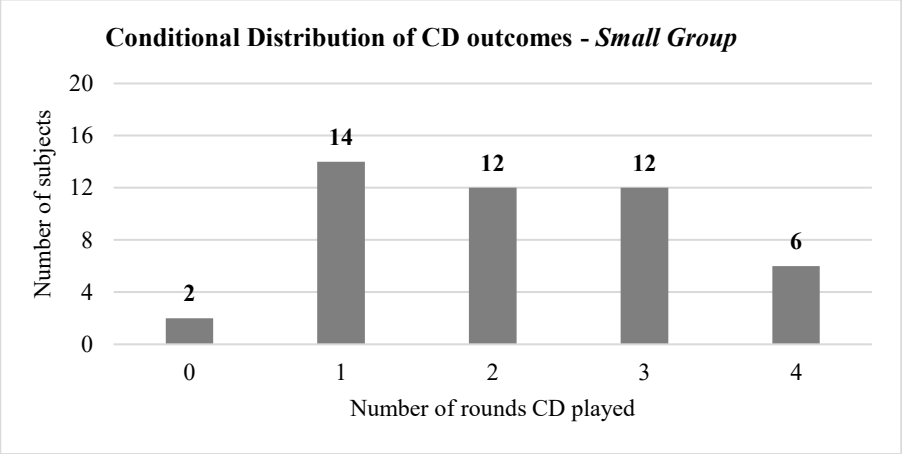

Figure 14. Distribution of the rounds in which a subject playing C faces CD as an outcome (n=6)

Considering all the findings together, we conclude that group size does not matter for cooperation. Also, in the regression analyses, I include group size as a dummy variable to see if it has an impact on cooperation together with other explanatory variables. However, it is found to be insignificant.

4.3. Voting Behavior

As I mentioned earlier, in the coordination game, the equilibrium outcome of the initial game is still an equilibrium. Therefore, if subjects expect to coordinate on DD when the payoffs are changed, then they have no incentive to vote for modification. We can claim that the optimal voting decision depends on the subjects' expectation of how other players will act in the coordination game. Hence, if a subject expects that mutual cooperation will be achieved in the modified version, she should vote for modification.

In the experimental results, it is observed that in none of the treatments the majority voted for modification. Only in one small group, there was a tie where three subjects voted for modification of the payoffs whereas the remaining three voted for no

modification. In that case, the computer broke the tie. The table and figure given below summarize the distribution of the votes across treatments.

	Vote to modify	*EndoMod*	*EndoNot*	*ExoMod*	*ExoNot*	*Total*
Large group	*Yes*	-	5	8	5	18
	No	-	25	22	25	72
Small group	*Yes*	-	4	3	6	13
	No	-	32	9	18	59

Table 3. Distribution of the votes across four possible voting stage outcomes

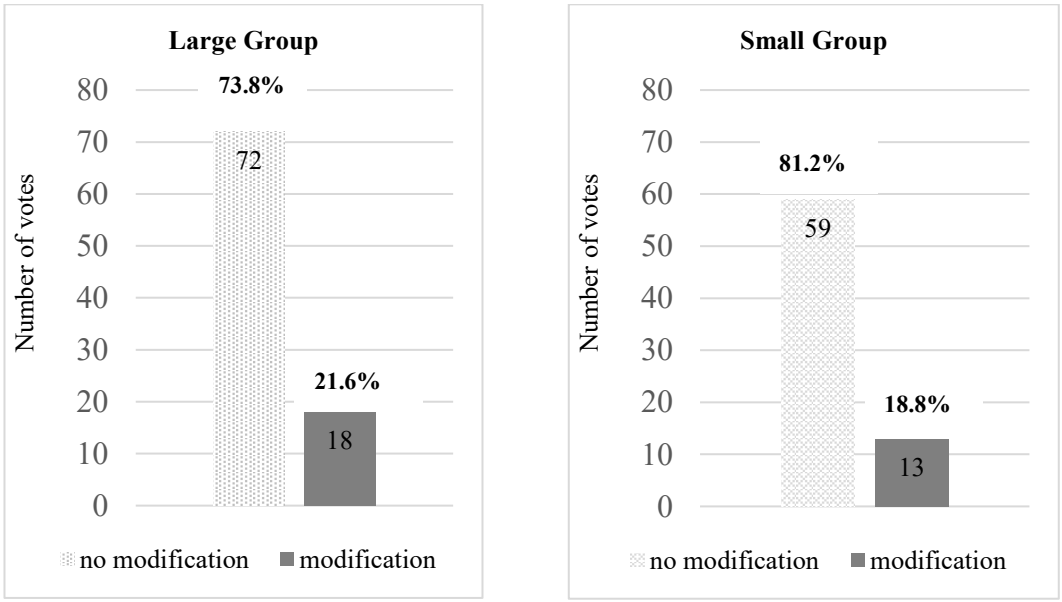

Figure 15. Distribution of the votes across treatments

When we test whether the distribution of voting for modification differs across treatments, we see that there is no statistically significant difference. The Wilcoxon rank-sum test gives a p-value of 0.719, implying that there is no difference in the distribution of votes for these two treatments.

As it is shown in Table 3, by the construction of the voting stage, there are four possible cases to occur. First, the majority might be in favor of the modification of the payoffs or not, and the computer decides to consider the votes. There will be two possible cases: endogenous modification or endogenous no modification. Second, no matter what the result of the vote is the computer might decide not to consider the votes and randomly change the payoffs or not. So, the possible cases will be an exogenous modification or exogenous no modification. While denoting these four possible cases, I borrowed the labels that the authors of the benchmark study created (Dal Bó et al., 2010). Endo denotes that the votes of the group were considered, Exo denotes that the computer didn't consider the votes, and Mod denotes that payoffs of the initial game were modified versus Not.

We see that there is no observation in the first column of the table. In order to explain why there was no endogenous modification observation, we can argue for some plausible reasons. As I explained earlier, the modification that can be imposed is in the form of a decrease in the temptation payoff. By removing that payoff, I aim to make it easier for people to coordinate in the socially efficient outcome that is mutual cooperation. However, as the results suggest, the subjects did not consider this modification as an opportunity for a collective gain that will benefit both players. Instead, they concentrated on the possible gain of the temptation payoff and therefore wanted to keep playing the PD game.

Besides, we can suggest that it was not only the temptation payoff but also the expectation that the outcome in the modified game would be mutual defection that motivated the subjects to vote for no modification. They expected that the other player would play D and therefore the game would end up at the inefficient equilibrium (40-40), which was also the equilibrium of the PD game. In a way, it

can be said that the lack of trust among individuals prevented them from relying on the other player, and the subjects did not want to lose the possibility of gaining the temptation payoff. This can be a plausible reason for the implementation of inefficient policies.

Another possible explanation of why the subjects did not vote for modification might be that they apply a max-min strategy in both games. Therefore, no matter what the other player does, a subject plays D to secure a minimum payoff of 40 for herself. Considering this strategy, we can claim that since the mutual defection is a possible equilibrium outcome in both the PD game and the coordination game, the players have no incentive to change the initial game which also promises a possible temptation payoff of 60 when D is played.

In the literature, there are many studies that concentrate on the effects of sociocultural differences on social decision-making and especially on the level of cooperation among individuals. In different settings from ultimatum games to public good provision games and repeated prisoners' dilemma games, there are different findings on the relationship between cultural components and the strategies that players follow. In her meta-analysis paper, Rezaei (2015) examines 37 papers with 107 observations from repeated prisoner's dilemma experiments conducted in 12 different countries. The findings provide evidence that there is no significant difference in the repeated prisoner's dilemma's cooperation rate between different cultures.

In addition to these, some studies in the literature specifically investigate the effect of social capital on cooperation behavior. Karlan (2005) claims that the higher the social capital, in other words, the higher the trust between individuals, the more they are able to cooperate and coordinate. For instance, in a public good provision game setting, it is found that the most important measures of individual social capital, the self-assessment trust question that I use in the questionnaire and membership in voluntary associations, are strongly correlated with higher contributions in the public-goods experiment (Anderson et. al, 2004). This result

allows us to argue that the low level of social capital of the participants can be a plausible explanation for why they do not vote for modification.

The result for the measure of trust in Turkey from the World Value Survey (WVS) supports above-mentioned inferences. The trust question used in the WVS is quite similar to the one that I asked in the experiment: "Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?" According to the WVS conducted in 2014, the ratio of Turkish people agreeing with the statement "most people can be trusted" is 12.01% which is quite low compared to most of the developed countries (World Values Survey, 2014). However, the paper claims that it is not possible to distinguish between countries with a very high level and those with a low level of trust at their cooperation level (Rezaei, 2015).

Before presenting the regression results, I report the survey results regarding the risk and trust preferences of the participants.

In the survey, the average self-assessed trust score was found to be 5.64. Similarly, the average self-assessed risk score was calculated as 4.64. Moreover, it is found that 82.8% of the subject preferred the safe amount, whereas the remaining 17.2% chose the lottery. Below table compares the self-assessment of the subjects and their choice in the first step of e staircase procedure.

Self-assessment		**Lottery or safe amount?**	
Risk averse (0 - 3)	83 (37.4%)	**1**	82
Risk neutral (4 – 6)	82 (36.9%)	10	72
Risk seeker (7 – 10)	57 (25.7%)	27	**30***
Total	***222***	***38 (17.2%)***	***184 (82.8%)***

Table 4. Risk preferences of the subjects

Especially, in the last category, it is observed that there is a mismatch between the subjects' self-assessment of risk appetite and their choice between a sure amount and a lottery. Among the ones who chose the sure amount, three subjects claimed that they are extremely risk seeker by choosing 10.

I want to note that in the calculations presented above, all of the subjects were included in the sample. However, while analyzing voting behavior, I consider only the ones who participated in the treatments with a voting stage. Also, the data for the choice between the lottery and the safe amount is only used to check whether the subjects' self-assessment is valid, not included in the regression analysis.

4.4. Regression Results

To see which variables affect the voting behavior of a subject, I ran some regressions with different explanatory variables that might be potentially associated with a subject's decision. In the regression output given below, the dependent variable is *"VoteMod"* that is 0, if a subject doesn't vote for modification, and 1 otherwise.

The explanatory variables included in the regression are the number of rounds in which the subject played C in the first part of the game, the number of rounds where the outcome was CC in the first part, standardized self-assessed risk score, standardized self-assessed trust score, age, sex, academic major, scholarship, education level of mother, education level of father, previous lab experience, game theory knowledge, and also group size.

Variable	***Description***
VoteMod	*0 if the subject votes for no modification, 1 otherwise*
C_1	*the number of rounds in which the subject played C in the first part*
CC_1	*the number of rounds where the outcome was CC in the first part*
zRisk	*Standardized self-assessed risk score*

zTrust	*Standardized self-assessed trust score*
Age	*Continuous*
Sex	*0 if male, 1 if female*
Major	*Academic major (categories stated in Table.2 numbered from 0 to 8)*
Scholarship	*Merit-based. 0 if scholarship is up to 50% (excluded), 1 if scholarship is from 50% up to 100%,2 if full-scholarship*
MotherEdu	*Education level of mother*
FatherEdu	*Education level of father*
Experience	*0 if no previous lab experience, 0 otherwise*
GameTheory	*0 if no game theory knowledge, 1 otherwise*
GroupSize	*1 if n=30, 2 if n=6*

Table 5. Descriptions of the variables

The regression output presented below shows that among all the explanatory variables that are mentioned above together in the regression, the number of rounds in which CC played, self-assessed trust score, previous lab experience, and scholarship are found to be statistically significant in explaining the subject's vote for modification. Therefore, the hypothesis that subjects who experience mutual cooperation outcome more in the first part of the game will have an incentive to vote for modification is validated.

Besides that, we can conclude that cooperation behavior is positively related to trust among individuals as expected. The results also suggest that the level of scholarship which can be understood as an indicator of intelligence is positively associated with the voting behavior in the experiment. This finding is consistent with the results of the previous studies in which the level of cooperation and intelligence are found to be correlated (Jones, 2008). The statistical significance and negative coefficient of previous lab experience suggest that participation in economic experiments makes individuals more non-cooperative. This result supports the findings of many previous studies that question whether experienced and inexperienced participants behave differently in the lab (Benndorf et. al, 2017).

Dependent variable: voting for modification

	1	2	3	4	5	6	7	8
C_1	0.082						0.175**	0.212**
	(0.057)						(0.079)	(0.087)
CC_1		0.093					0.381*	0.479*
		(0.145)					(0.200)	(0.215)
CD_1			- 0.149**					
			(0.071)					-
zRisk								-0.133
								(0.142)
zTrust				0.287**			0.269**	0.284
				(0.120)			(0.131)	(0.139)
Age								-0.006
								(0.055)
Sex								0.242
								(0.282)
Major								-0.020
								(0.066)
Scholarship					0.419**		0.473**	0.479*
					(0.168)		(0.185)	(0.199)
MotherEdu								0.090
								(0.120)
FatherEdu								-0.014
								(0.122)
Experience						-0.543**	-0.562**	-0.581**
						(0.252)	(0.270)	(0.291)
GameTheory								0.042
								(0.290)
GroupSize								0.230
								(0.273)
Constant	-1.039***	-0.823***	-1.089***	-0.908***	-1.374***	-0.479**	-1.223***	-1.607
	(0.164)	(0.136)	(0.156)	(0.118)	(0.241)	(0.121)	(0.353)	(1.458)

Standard errors in parentheses.

****significant at the 1% level.*

***significant at the 5% level.*

**significant at 10% level.*

Table 6. Probit Model Regression Output I – dependent variable: VoteMod

Since the marginal effects of scholarship and experience are statistically significant and relatively greater, I regroup individuals according to their scholarship status and past lab experience to analyze the effect of these variables on voting decision better. In this categorization, I transform "scholarship" into a binary variable that takes a value of 1 if the participant has full-scholarship and 0 otherwise. There are four subgroups:

- Scholarship & lab experience
- Scholarship & no lab experience
- No scholarship & lab experience
- No scholarship & no lab experience

Among the participants in the treatments with a voting stage, the majority (76.5%) has previous lab experience. Therefore, in the subgroups with no lab experience, there are very few observations. Below table summarizes the number of observations across subgroups.

	Number of observations
Scholarship & lab experience	43
Scholarship & no lab experience	10
No scholarship & lab experience	81
No scholarship & no lab experience	28

Table 7. Number of observations across subgroups

According to the Wilcoxon rank-sum test results that are presented in Appendix I, there is no statistically significant difference in voting behavior between the participants with scholarship and the ones with no scholarship. Similarly, the results imply that the voting behavior of students who have scholarship does not change with prior lab experience. On the other hand, conditioning on prior lab experience,

there is a significant difference between participants who have a scholarship and those who do not at a 10% significance level. Furthermore, the voting behavior of those who do not have scholarship changes with lab experience. The corresponding p-value is found to be 0.01.

To further check for the robustness of the results, I investigate the impact of risk and trust preferences of individuals on voting behavior by comparing the action of individuals with extreme trust and risk scores. In other words, I compare the decision of participants who are extremely risk-averse (with a risk score of 0) with the decision of those who are extremely risk seeker (with a risk score of 10). The same comparison is made for individuals with extreme trust scores as well. However, in both cases, the Wilcoxon rank-sum test implies that there is no statistically significant difference between the participants with extreme risk and/or trust scores in terms of their voting behavior.

In addition to the analysis of voting behavior, I also concentrate on how people act in the 11th round, right after the voting stage, to understand the effect of the policy selection mechanism on cooperation. In this model, action of a subject in the 11th round that is the dependent variable is regressed on the vote of the subject, the number of rounds in which the subject played C in the first ten rounds, the number of CC outcomes the subject faced in the first part, standardized self-assessed risk score, standardized self-assessed trust score, group size, whether there is a match between the subjects vote and the decision of the group and policy selection mechanism (EndoMod, EndoNot, ExoMod, ExoNot).

Dependent variable: action in the 11th round

	1	2	3	4	5	6	7	8
C_1	0.191***							0.274**
	(0.059)							(0.083)
CC_1		0.139						0.253
		(0.131)						(0.193)
zRisk			-0.026					-0.118
			(0.113)					(0.121)
zTrust				0.107**				0.095
				(0.116)				(0.126)
VoteMod					0.150			-0.092
					(0.280)			(0.309)
Mechanism						0.083		0.102
						(0.134)		(0.149)
GroupSize							-0.020	-0.033
							(0.228)	(0.241)
	-	-	-	-	-	-		-
Constant	1.290***	0.958***	0.873***	0.878***	0.903**	1.028***	0.861***	1.474***
	(0.181)	(0.141)	(0.113)	(0.114)	(0.127)	(0.278)	(0.169)	(0.368)

Standard errors in parentheses.

****significant at the 1% level.*

***significant at the 5% level.*

**significant at 10% level.*

Table 8. Probit model regression output II – dependent variable: Action_11

The regression results imply that among all the variables that are expected to be associated with a subject's action in the first round of the second part of the experiment, only number of rounds in which the subject played C in the first part is found to be statistically significant. Given this result, we cannot comment on the effect of the policy selection mechanism on cooperation behavior of a subject since the variable "*Mechanism"* is statistically insignificant in explaining the action in the 11th round. Similarly, neither risk preferences of subjects nor trust among individuals is related to cooperative behavior of a subject right after the voting stage. The variable "*GroupSize"* is also found to be not associated with the dependent variable.

As I mentioned earlier, since there is no observation in the EndoMod case, it is not possible to make a comparison regarding the cooperation levels between the groups that are exposed to different policy selection mechanisms. That's why I include the variable *Mechanism* in the regression to at least see if the outcome of the voting stage can explain how individuals play in the second part.

Moreover, I ran some other alternative regression analyses with different explanatory variables including the variable *Match* which takes a value of 1 if a subject's vote is the same with the outcome of the majority decision and 0 otherwise, and *CD_1* that is used in the previous regression explaining voting behavior. None of these alternative models give significantly different results than the one I present above. Again, it is found that *C_1* is the only statically significant variable that explains how people behave in the 11th round of the experiment. I also consider adding an interaction term for standardized risk and trust scores. However, when I rerun the corresponding regressions, the term is found to be insignificant.

5. DISCUSSION AND CONCLUSION

In this thesis study, I concentrated on the relationship between the way in which a policy/rule applied and cooperative behavior in groups. In an experimental setting, with the participation of 222 subjects, I tested the claim that the effect of a policy on the level of cooperation is greater when it is chosen democratically than when it is imposed from outside.

The results show that even if there is no prior experience of a reference point, people do not coordinate on the socially efficient outcome, mutually cooperation. Also, coordination on the 50-50 equilibrium is decreasing as the subjects gain experience. When we consider the first part of the treatments with a voting stage, it is seen that cooperation decreases in the prisoners' dilemma game with experience confirming the findings of the previous studies in the literature.

At the individual level, it is observed that people rarely play C in both games, the PD game, and the coordination game, namely. As I discussed in the previous chapter, from risk aversion to cultural factors shaping trust among individuals, we can argue for many underlying factors that might explain the low level of individual cooperation. Also, it might be the case that the difference in payoffs between two actions is not that significant in the cooperation game, and therefore, the subjects are indifferent between getting a payoff of 50 and 49. By increasing the punishment on unilateral defection, put it differently, decreasing the payoff of playing D when other player plays C, might affect individuals' cooperation decisions. Similarly, the difference between equilibrium payoffs, 50 and 40, might not be that remarkable in the eyes of the subjects. Increasing the difference between the two equilibrium payoffs, we can find out if the results are robust and generalizable.

Furthermore, we see that the vast majority of subjects do not vote for modification. As implied by the analyses explained in detail in the previous chapter, the voting decision is influenced by the number of rounds in which CC played in the first part, self-assessed trust score, previous lab experience, and scholarship. Therefore, we can conclude that the level of mutual cooperation experienced in the first part

shapes people's expectations regarding the outcome in the second part of the experiment and hence affects how they vote for modification. Also, some individual characteristics play a crucial role in shaping how people vote after playing the PD game. Trust attitudes and cognitive abilities are positively correlated with voting for modification, whereas it is exactly the opposite for having previous laboratory experience.

As it is mentioned previously, unlike the benchmark study conducted in the US in this study, there is no observation in which the modification of the payoffs is imposed by the votes of group members. To explain this issue, I discussed the possible impact of some socio-cultural factors such as social capital that might influence the trust between group members, and thus, the subjects' vote in this experiment. Starting from this point of view, we can suggest that the study can be replicated with a different pool of subjects to investigate whether the results are Turkey specific or not.

Considering the mutual cooperation in the second part, our results suggest that a subject's action in the 11th round only depends on the number of rounds in which the subject played C in the first part. Therefore, if a subject chooses C more often in the PD game played in the first part, then she is expected to play C more often in the second part as well. Due to the low number of observations, it is not possible to make a group-level comparison between the cases.

Moreover, the findings suggest that group size explains neither how people vote nor how they cooperate. This can be the case due to the low number of observations in this study. Increasing the number of observations at the group level might provide us with more reliable and informative results so that we can see if group size, in other words, size of the majority in this design, has a real impact on cooperation behavior.

Overall, the findings of this thesis study shed light on some aspects of the relationship between democratic institutions and prosocial behavior, in this setting mutual cooperation, and suggest that in order to clearly understand the dynamics of

this relationship we should conduct some complementary studies. Especially, having more observations at the group level might yield more valid and significant results that can serve as a starting point for future studies focusing on prosocial behavior in democratic and undemocratic environments.

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APPENDIX

Appendix I: Test Results

The Wilcoxon rank-sum test to check if the distribution of mutual cooperation is the same in large and small groups:

```
Two-sample Wilcoxon rank-sum (Mann-Whitney) test

          G |       obs    rank sum    expected
------------+------------------------------------
          L |        10       100.5         105
          S |        10       109.5         105
------------+------------------------------------
   combined |        20         210         210

unadjusted variance      175.00
adjustment for ties      -18.42
                        --------
adjusted variance        156.58

Ho: vote(G==L) = vote(G==S)
             z =  -0.360
    Prob > |z| =   0.7191
```

The Wilcoxon rank-sum test results to check if the distribution of voting for modification is the same in subgroups.

<u>No scholarship & no lab experience vs. scholarship & no lab experience:</u>

```
Two-sample Wilcoxon rank-sum (Mann-Whitney) test

         G2 |       obs    rank sum    expected
------------+------------------------------------
      NS_NE |        28         549         546
       S_NE |        10         192         195
------------+------------------------------------
   combined |        38         741         741

unadjusted variance      910.00
adjustment for ties     -319.73
                        --------
adjusted variance        590.27

Ho: B(G2==NS_NE) = B(G2==S_NE)
             z =   0.123
    Prob > |z| =   0.9017
```

No scholarship & lab experience vs. scholarship & lab experience:

```
Two-sample Wilcoxon rank-sum (Mann-Whitney) test

          G4 |      obs    rank sum    expected
-------------+---------------------------------
       NS_E |       81        4851      5062.5
        S_E |       43        2899      2687.5
-------------+---------------------------------
    combined |      124        7750        7750

unadjusted variance    36281.25
adjustment for ties   -22158.11
                     ----------
adjusted variance      14123.14

Ho: D(G4==NS_E) = D(G4==S_E)
             z =  -1.780
    Prob > |z| =   0.0751
```

Scholarship & lab experience vs. scholarship & no lab experience:

```
Two-sample Wilcoxon rank-sum (Mann-Whitney) test

          G5 |      obs    rank sum    expected
-------------+---------------------------------
        S_E |       43      1146.5        1161
       S_NE |       10       284.5         270
-------------+---------------------------------
    combined |       53        1431        1431

unadjusted variance     1935.00
adjustment for ties     -860.00
                     ----------
adjusted variance       1075.00

Ho: S(G5==S_E) = S(G5==S_NE)
             z =  -0.442
    Prob > |z| =   0.6583
```

No scholarship & lab experience vs. no scholarship & no lab experience:

```
Two-sample Wilcoxon rank-sum (Mann-Whitney) test

          G3 |      obs    rank sum    expected
-------------+---------------------------------
       NS_E |       81      4216.5        4455
      NS_NE |       28      1778.5        1540
-------------+---------------------------------
    combined |      109        5995        5995

unadjusted variance    20790.00
adjustment for ties   -12190.50
                     ----------
adjusted variance       8599.50

Ho: C(G3==NS_E) = C(G3==NS_NE)
             z =  -2.572
    Prob > |z| =   0.0101
```

The Wilcoxon rank-sum test to check if the distribution of voting for modification is the same for participants with extreme risk scores.

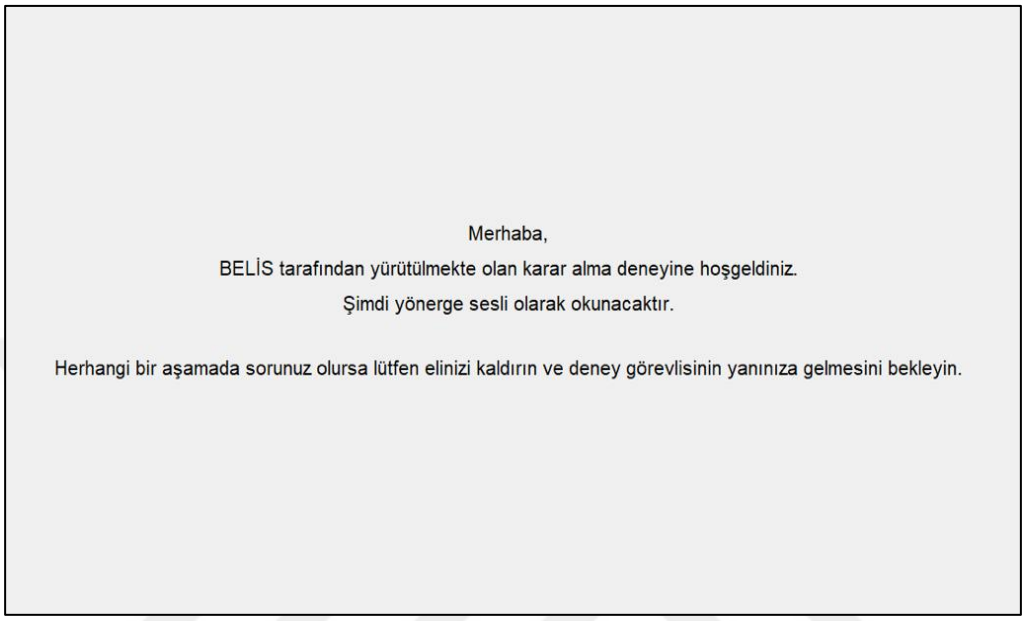
```
Two-sample Wilcoxon rank-sum (Mann-Whitney) test

           G |      obs    rank sum    expected
-------------+---------------------------------
          RA |        7          42          49
          RL |        6          49          42
-------------+---------------------------------
    combined |       13          91          91

unadjusted variance       49.00
adjustment for ties      -29.75
                     ----------
adjusted variance         19.25

Ho: VoteMod(G==RA) = VoteMod(G==RL)
             z =  -1.595
    Prob > |z| =   0.1106
```

The Wilcoxon rank-sum test to check if the distribution of voting for modification is the same for participants with extreme self-assessed trust scores.

```
Two-sample Wilcoxon rank-sum (Mann-Whitney) test

          G1 |      obs    rank sum    expected
-------------+---------------------------------
          HT |       11          90        82.5
          LT |        3          15        22.5
-------------+---------------------------------
    combined |       14         105         105

unadjusted variance        41.25
adjustment for ties       -12.69
                        ----------
adjusted variance          28.56

Ho: E(G1==HT) = E(G1==LT)
             z =   1.403
    Prob > |z| =   0.1605
```

Appendix II: Screenshots of the Experiment

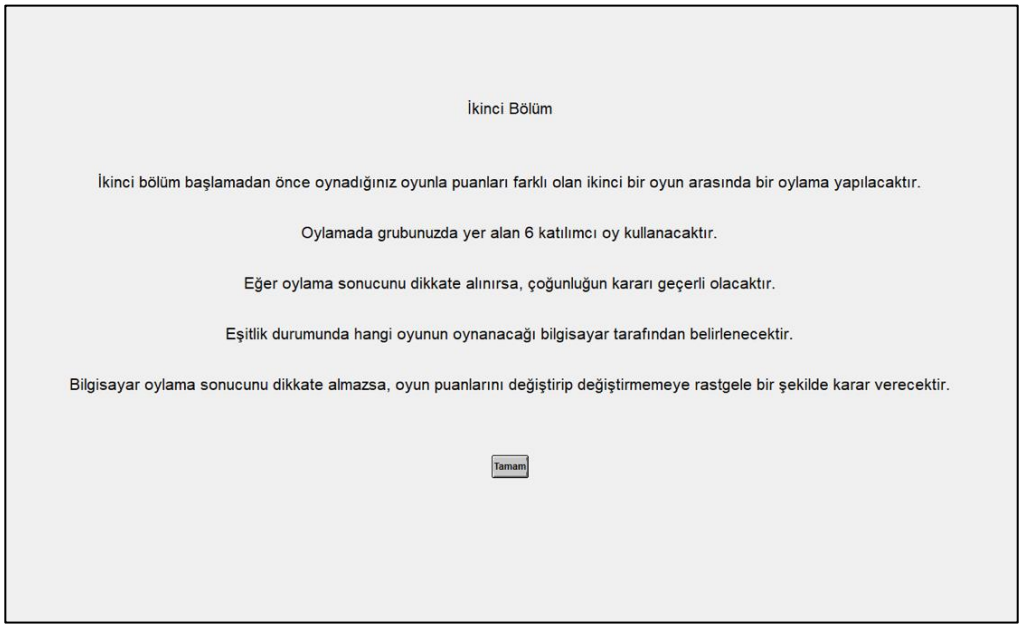
Welcoming screen:



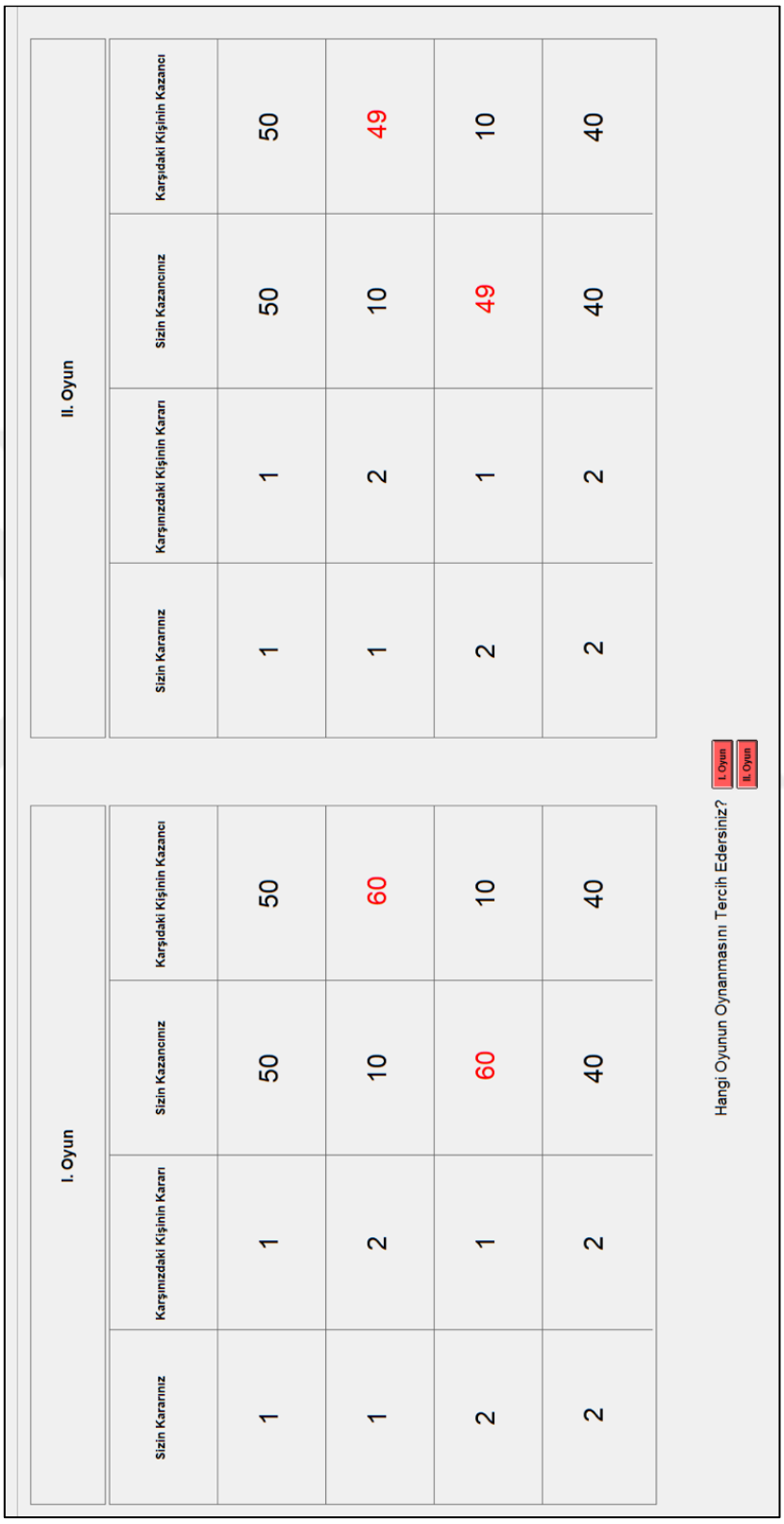
Coordination game:

Information screen shown after each round:

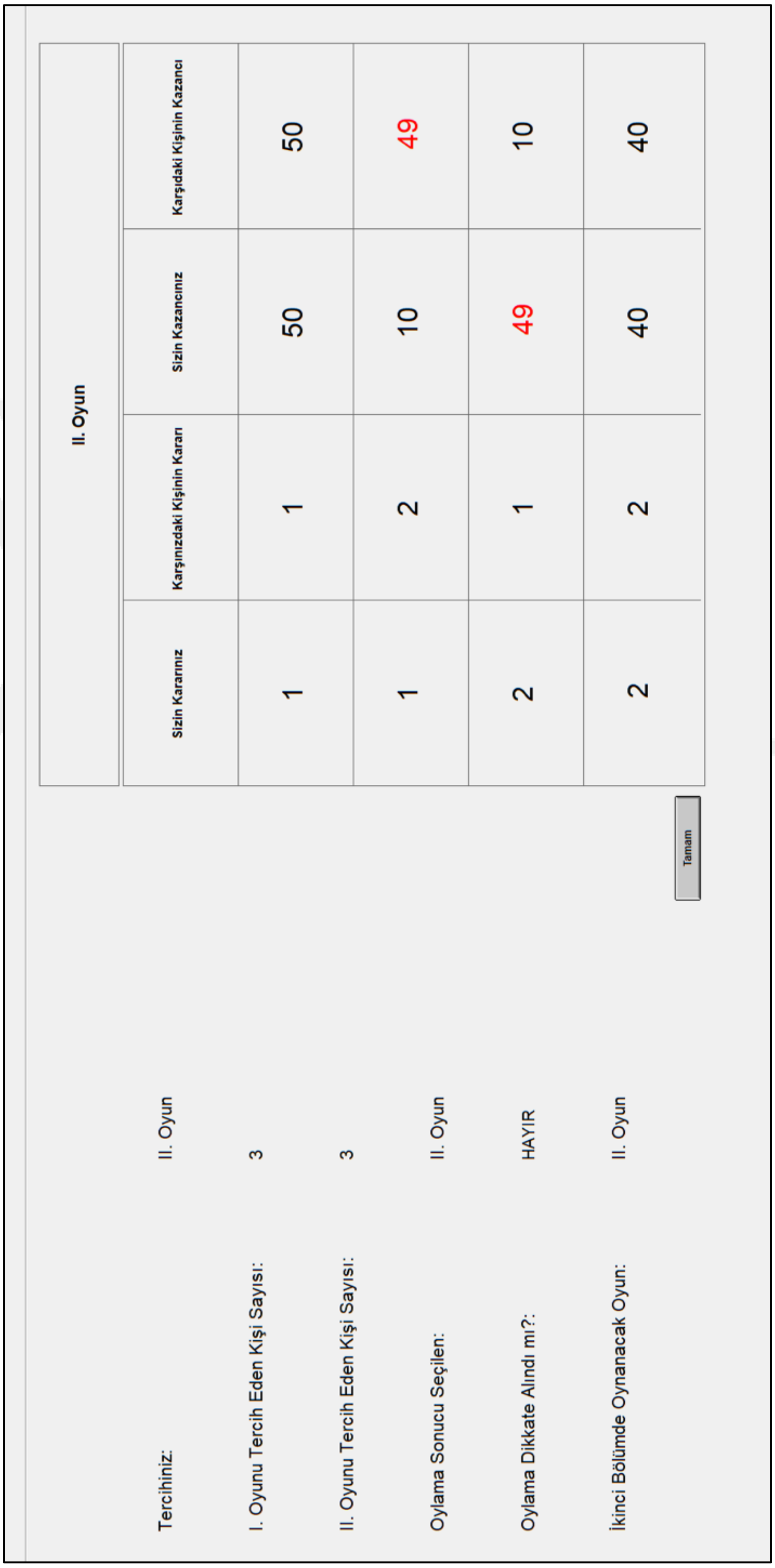
Explanation for the voting stage:



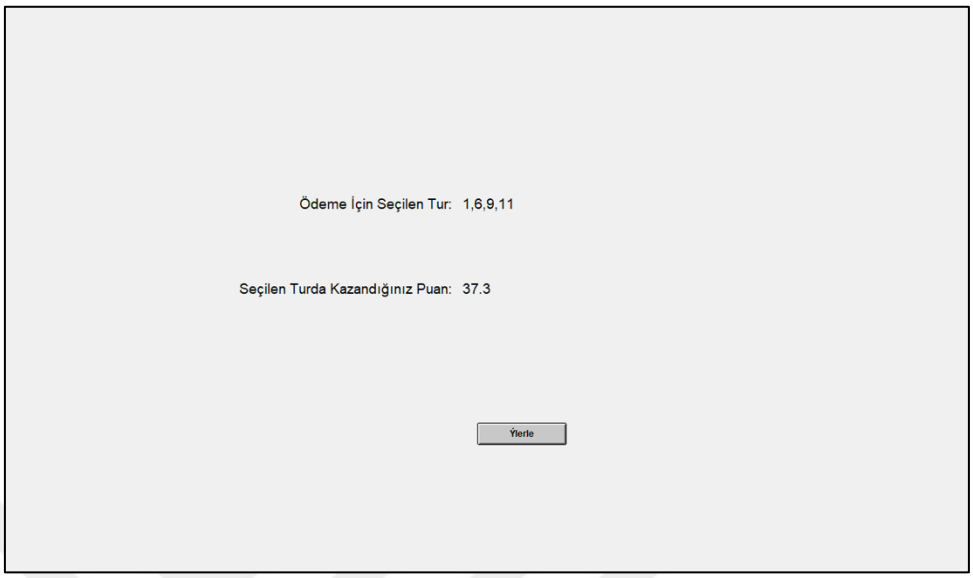
Voting Screen:



Result of the voting stage:



Total Payoff Earned:



Oylamada nasýl karar verdiðinizi kýsaca açýklar mýsýnýz?

Yaþýnýz?

Cinsiyetiniz:
- Kadýn
- Erkek

Hangi fakültede okuyorsunuz?
- Hukuk Fakültesi
- Yönetim Fakültesi
- Yönetme Fakültesi
- Mühendislik ve Doða Bilimleri Fakültesi
- Saðlýk Bilimleri Fakültesi
- Sosyal ve Beþeri Bilimler Fakültesi
- Yüksekokul/Meslek Yüksekokulu

ÖSYM burs durumunuzu belirtiniz.
- Tam Burslu
- %75 Burslu
- %50 Burslu
- %25 Burslu
- Burssuz

Babanýzýn son mezun olduðu eðitim kurumunu hangisi en iyi ifade eder?
- Hiç okula gitmemiþ
- Ýlk veya orta öðretim
- Lise
- Ön lisans/Meslek Yüksek Okulu
- Üniversite (lisans)
- Yüksek lisans
- Doktora

Annenizin son mezun olduðu eðitim kurumunu hangisi en iyi ifade eder?
- Hiç okula gitmemiþ
- Ýlk veya orta öðretim
- Lise
- Ön lisans/Meslek Yüksek Okulu
- Üniversite (lisans)
- Yüksek lisans
- Doktora

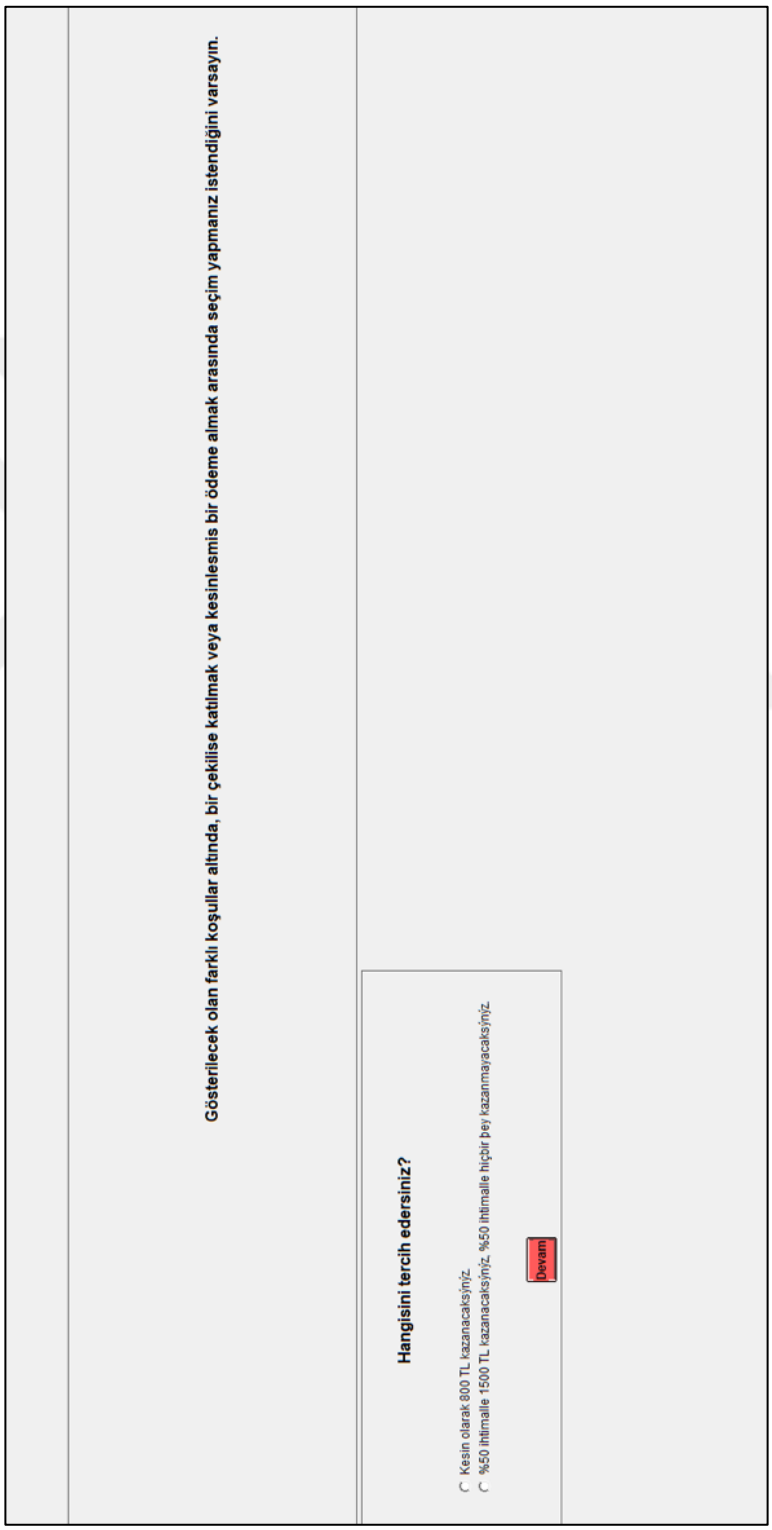
Daha önce laboratuvarda bir deneye katýldýnýz mý?
- Evet
- Hayýr

Aldýðýnýz herhangi bir derste "Oyun Teorisi" konusunu gördünüz mü?
- Evet
- Hayýr

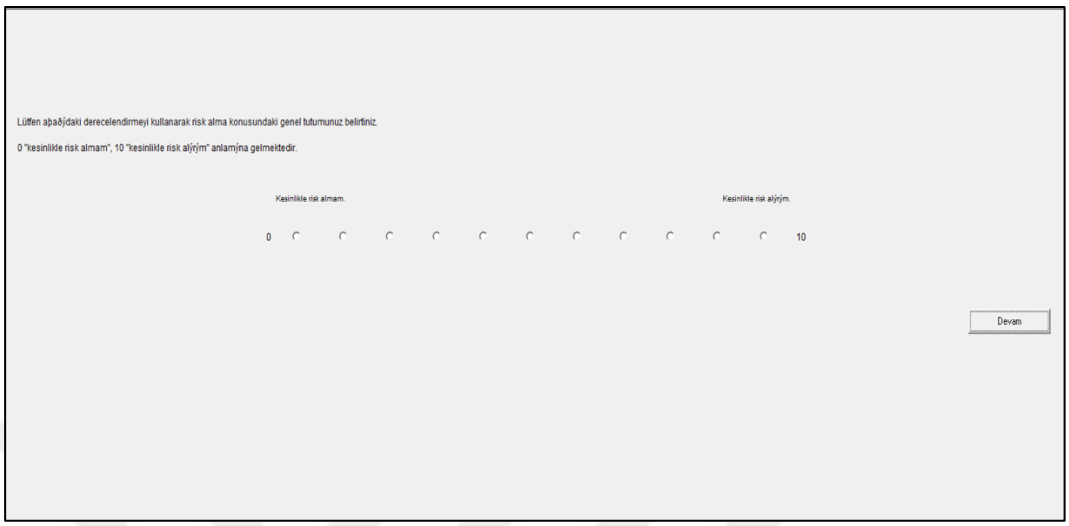
Devam

Risk Questions:

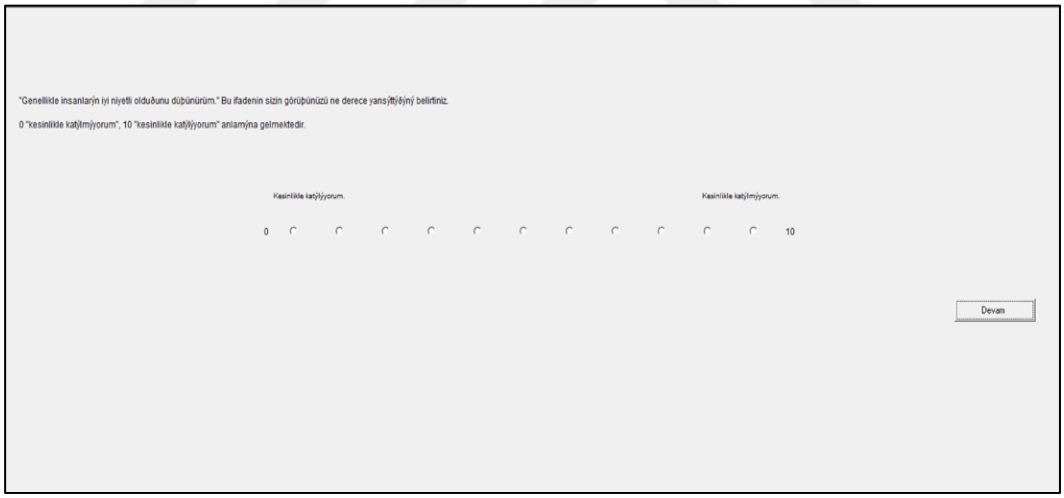
Staircase method:



Self-assessment question:



Trust Question:



Final Earnings Screen:

Appendix III: Instructions for the Treatment Without Voting

Deney Yönergesi

Bu bir karar alma deneyidir ve bilimsel bir projenin parçasıdır.

Deney tamamlanıp laboratuvardan ayrılıncaya kadar diğer katılımcılarla iletişim kurmanız yasaktır. Deneyin herhangi bir aşamasında bir sorunuz ya da sorununuz olduğunda, lütfen elinizi kaldırın ve deney görevlilerinden birinin yanınıza gelmesini bekleyin. Sorularınızı yüksek sesle sormayın, diğer katılımcıların dikkatini dağıtacak hareketlerde bulunmaktan kaçının.

Deneyde elde edeceğiniz kazanç alacağınız kararlara bağlıdır. Kazancınızın ne şekilde belirleneceği bu yönergede detaylı bir şekilde açıklanmıştır. Bu nedenle, yönergeyi dikkatle okumanız ve anlamanız önemlidir.

Deney süresince aldığınız kararlar ve verdiğiniz cevaplar tamamen anonimdir, hiçbir kimlik bilgisi ile eşleştirilmemektedir.

Deney, her turda laboratuvardaki başka bir katılımcıyla rastgele eşleşeceğiniz 20 turdan oluşmaktadır. Her turda eşleştiğiniz katılımcıyla aynı anda iki seçenekten (1 ya da 2) birini seçmeniz istenecektir. Kazandığınız puan aşağıda açıklandığı gibi hem sizin kararınıza hem de eşleştiğiniz katılımcının kararına bağlı olacaktır.

- Eşleştiğiniz katılımcı 1'i seçerse ve siz de 1'i seçerseniz, **50** puan kazanacaksınız. Bu durumda, eşleştiğiniz katılımcı da **50** puan kazanacaktır.
- Eğer eşleştiğiniz katılımcı 1'i seçerse ve siz 2'yi seçerseniz, **49** puan kazanacaksınız. Bu durumda, eşleştiğiniz katılımcının kazancı **10** olacaktır.
- Eşleştiğiniz katılımcı 2'yi seçerken siz 1'i seçerseniz, **10** puan kazanacaksınız. Bu durumda, eşleştiğiniz katılımcı **49** puan kazanacaktır.
- Eşleştiğiniz katılımcı 2'yi seçerse ve siz de 2'yi seçerseniz, **40** puan kazanacaksınız. Bu durumda, eşleştiğiniz katılımcının kazancı da **40** puan olacaktır.

20. turun bitiminde kısa bir anket cevaplamanız istenecektir ve devamında deney sona erecektir.

Deneyin sonunda, 20 turdan 4 tanesi rastgele seçilecektir. Daha sonra bu turlarda kazandığınız puanların ortalaması alınacak ve bu ortalama 0.5 TL ile çarpılarak deney sonu kazancınız belirlenecektir. Elde edeceğiniz kazanç için ödeme, deney oturumunun bitiminde hemen ve nakit olarak yapılacaktır. Kazancınız hakkında diğer katılımcılara bilgi verilmeyecektir.

Appendix IV: Instructions for the Large Group Treatment

Deney Yönergesi

Bu bir karar alma deneyidir ve bilimsel bir projenin parçasıdır.

Deney tamamlanıp laboratuvardan ayrılıncaya kadar diğer katılımcılarla iletişim kurmanız yasaktır. Deneyin herhangi bir aşamasında bir sorunuz ya da sorununuz olduğunda, lütfen elinizi kaldırın ve deney görevlilerinden birinin yanınıza gelmesini bekleyin. Sorularınızı yüksek sesle sormayın, diğer katılımcıların dikkatini dağıtacak hareketlerde bulunmaktan kaçının.

Deneyde elde edeceğiniz kazanç alacağınız kararlara bağlıdır. Kazancınızın ne şekilde belirleneceği bu yönergede detaylı bir şekilde açıklanmıştır. Bu nedenle, yönergeyi dikkatle okumanız ve anlamanız önemlidir.

Deney süresince aldığınız kararlar ve verdiğiniz cevaplar tamamen anonimdir, hiçbir kimlik bilgisi ile eşleştirilmemektedir.

Deney, iki bölümden oluşmaktadır. Birinci bölümde, her turda laboratuvardaki başka bir katılımcıyla rastgele eşleşeceğiniz 10 tur olacaktır. Her turda eşleştiğiniz katılımcıyla aynı anda iki seçenekten (1 ya da 2) birini seçmeniz istenecektir. Kazandığınız puan aşağıda açıklandığı gibi hem sizin kararınıza hem de eşleştiğiniz katılımcının kararına bağlı olacaktır.

- Eşleştiğiniz katılımcı 1'i seçerse ve siz de 1'i seçerseniz, **50** puan kazanacaksınız. Bu durumda, eşleştiğiniz katılımcı da **50** puan kazanacaktır.
- Eğer eşleştiğiniz katılımcı 1'i seçerse ve siz 2'yi seçerseniz, **60** puan kazanacaksınız. Bu durumda, eşleştiğiniz katılımcının kazancı **10** olacaktır.
- Eşleştiğiniz katılımcı 2'yi seçerken siz 1'i seçerseniz, **10** puan kazanacaksınız. Bu durumda, eşleştiğiniz katılımcı **60** puan kazanacaktır.
- Eşleştiğiniz katılımcı 2'yi seçerse ve siz de 2'yi seçerseniz, **40** puan kazanacaksınız. Bu durumda, eşleştiğiniz katılımcının kazancı da **40** puan olacaktır.

10. turun sonunda, oynadığınız oyunla puanları farklı olan ikinci bir oyun arasında bir oylama yapılacaktır. Oylamada laboratuvardaki tüm katılımcılar oy kullanacaktır. Eğer puanlar değişirse;

- Eşleştiğiniz katılımcı 1'i seçerse ve siz de 1'i seçerseniz, **50** puan kazanacaksınız. Bu durumda, eşleştiğiniz katılımcı da **50** puan kazanacaktır.
- Eğer eşleştiğiniz katılımcı 1'i seçerse ve siz 2'yi seçerseniz, **49** puan kazanacaksınız. Bu durumda, eşleştiğiniz katılımcının kazancı **10** olacaktır.
- Eşleştiğiniz katılımcı 2'yi seçerken siz 1'i seçerseniz, **10** puan kazanacaksınız. Bu durumda, eşleştiğiniz katılımcı **49** puan kazanacaktır.
- Eşleştiğiniz katılımcı 2'yi seçerse ve siz de 2'yi seçerseniz, **40** puan kazanacaksınız. Bu durumda, eşleştiğiniz katılımcının kazancı da **40** puan olacaktır.

İlk olarak, iki oyun arasında oylama yapılacaktır. Ardından, bilgisayar oylama sonucunu dikkate alıp almamaya karar verecektir. Eğer oylama sonucu dikkate alınırsa, çoğunluğun kararı geçerli olacaktır. Eşitlik durumunda hangi oyunun oynanacağı bilgisayar tarafından belirlenecektir. Bilgisayar oylama sonucunu dikkate almazsa, oyun puanlarını değiştirip değiştirmemeye rastgele bir şekilde karar verecektir. Oylamadan sonra, oylama sonucunun dikkate alınıp alınmadığı, oyun puanlarının değişip değişmediği ve oy sayıları konusunda size bilgi verilecektir.

Oylamadan sonra ikinci bölüme geçilecektir. Bu bölüm, seçilen oyunu her turda laboratuvardaki başka bir katılımcıyla rastgele eşleşerek oynayacağınız 10 turdan oluşmaktadır. 10 turun sonunda kısa bir anket cevaplamanız istenecektir. Böylece, deney sona ermiş olacaktır.

Deneyin sonunda, 20 turdan 4 tanesi rastgele seçilecektir. Daha sonra bu turlarda kazandığınız puanların ortalaması alınacak ve bu ortalama 0.5 TL ile çarpılarak deney sonu kazancınız belirlenecektir. Elde edeceğiniz kazanç için ödeme, deney oturumunun bitiminde hemen ve nakit olarak yapılacaktır. Kazancınız hakkında diğer katılımcılara bilgi verilmeyecektir.