

ECONOMIC COOPERATION IN TURKISH CULTURE:
PUBLIC GOODS GAMES AND LONELY ELEPHANTS

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JUNE 2010

ECONOMIC COOPERATION IN TURKISH CULTURE:
PUBLIC GOODS GAMES AND LONELY ELEPHANTS

A THESIS SUBMITTED TO
THE GRADUATE SCHOOL OF SOCIAL SCIENCES
OF
IZMIR UNIVERSITY OF ECONOMICS

BY

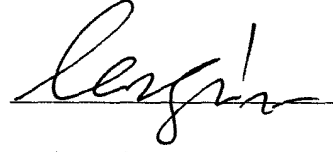
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IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF ARTS

IN
THE GRADUATE SCHOOL OF SOCIAL SCIENCES

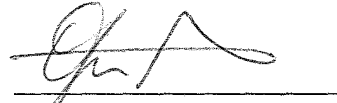
JUNE 2010

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ABSTRACT

ECONOMIC COOPERATION IN TURKISH CULTURE:
PUBLIC GOODS GAMES AND LONELY ELEPHANTS

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June 2010, 87 pages

While the public good experiment has been used to analyze cooperation among various groups in Western Europe and North America, it has not been extensively used in other contexts such as Turkey. This thesis seeks to rectify that and explore how Turkish university students informally self govern. By employing the public good experiment among a cohort of students attending universities in Izmir, Turkey and Adiyaman, Turkey, we hope to quantitatively analyze the factors which lead to altruistic punishment, to antisocial punishment, and ultimately to enhanced cooperation in Turkish society.

Keywords: Cooperation; Free Riding; Altruism; Punishment; Trust; Experimental Economics; Public Good Experiments

ÖZET

TÜRK KÜLTÜR'DE EKONOMİ İŞBİRLİĞİ:

KAMU MALLARI OYUNLARI VE YALNIZ FİLLER

Beranek, Benjamin

Finans Ekonomi Yüksek Lisans, Sosyal Bilimler Enstitüsü

Tez Yöneticisi: Yrd. Doç. Dr. Alper DUMAN

Haziran 2010, 87 sayfa

Kamusal mal deneyi uygulamaları Batı Avrupa ve Amerika'da toplumsal işbirliği analiz yöntemleri arasında başvurulan en önemli metodlardan biridir. Bunun yanı sıra bu uygulamalar Türkiye'de çok fazla kullanılmamaktadır. Bu tez, kamusal mal deneyi analizi yöntemlerini kullanarak Türkiye'de İzmir ve Adıyaman illerinde öğrenim gören üniversite öğrencilerinin ortak yatırım projelerine katılımları ve kararlarını analiz etmeyi amaçlamaktadır. İki aşamalı olan bu analizlerin ilk aşamasında öğrencilerin bireysel ekonomik karar mekanizmaları ikinci aşamada ise takım davranışları "altruistic" cezalandırma, anti-sosyal cezalandırma ve işbirliği kapsamında niceliksel olarak değerlendirilecektir.

Anahtar Kelimeler: İşbirlik; Hazıra Konanlar; Altruizm Ceza; Anti-Sosyal Ceza; Güven;

DeneySEL Ekonomi; Kamusal Mal Deneyi, Oyun Teorisi

To My Father

who encouraged me to come to Turkey
with eyes wide open and learn all that I could.

May you find in death the peace that is so elusive in life.

ACKNOWLEDGEMENTS

This thesis would not be possible without the help and support of many people and organizations. Knowing that I am certainly forgetting many important people, I nonetheless offer thanks to the following individuals and organizations:

- Asst. Prof. Dr. Alper Duman, Lecturer Dr. Gul Ertan, Assoc. Prof. Dr. Ayla Oğuş, Asst. Prof. Dr. Efe Postalıcı, and Assoc. Prof. Dr. Hakan Yetkiner of Izmir University of Economics
- Prof. Dr. Fatih Dođanođlu and Asst. Prof. Dr. Bayram Erzurumluođlu of Adiyaman University
- Professor Simon Gaechter and Dr. Benedikt Herrmann of Nottingham University
- Bařak Turhan of the Izmir University of Economics' Office of Scientific Research Projects and Tayfun etinkaya of the Izmir University of Economics' Information Technology Office
- Izmir University of Economics Research Assistants Neriman Keske, Fatih Akici, Hakan Gngr, İstemi Berk, and Emrah Karaođuz
- My good friends Nathan, Mailin, and Luka Young, Don, Michelle, and Eliana Kim, and Can Yilmaz who have all been like family to me in Turkey
- Last, but not least, my loving mother, Marcia Beranek, my wonderful sister, Katie Gillis, and my supportive brother-in-law, Patrick Gillis

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CHAPTER 1: INTRODUCTION

Economics is an academic discipline that seeks to describe “how individuals and societies choose to use the scarce resources that nature and previous generations have provided,” (Case and Fair 2007). Most economic decisions lie beyond the control of just one individual. Rather, a smooth functioning economy requires trust and cooperation between separate individual entities who are often anonymous parties. Traditional economic theory tells us that somehow these individual entities are able to effortlessly make utility-maximizing decisions which are both completely rational and also fully account for all possible externalities. Theory leads us to believe that this alchemy of economic agents seeking their own self-interest ultimately leads to the optimal allocation of scarce resources.

Sixteenth century English poet John Donne wrote the famous words: “No man is an island, entire of itself; every man is a piece of the continent.” This sentiment is as true today as it was when it was written. As the forces of industrialization and urbanization transform the world, individuals have had no choice but to become involved in a rapidly increasing number of anonymous economics interactions. Further accelerating this trend, globalization has led the world’s economies to become more and more integrated and has increased the quantity and velocity of anonymous economic interaction. The result of these trends has been mixed with an absolute decrease of people in poverty while at the same time a potential increase in relative poverty. Yet regardless of these interpretations, few would argue that an optimal allocation of scarce resources currently exists.

When considering why we would do well to remember the equally famous and true words of English philosopher Thomas Hobbes, Donne’s contemporary, who wrote:

“The life of man, solitary, poor, nasty, brutish, and short.” Modern life requires human beings to interact with one another, but often interactions between strangers are not positive. It is at this juncture, the point where people interact with one another as anonymous parties, that the potential for conflict arises leading to suboptimal allocation of scarce resources. The tragedy of the commons – that which occurs when people make rational utility-maximizing decisions without fully accounting for the actions of others and/or all the possible externalities – is unfortunately all too common in our world. Furthermore, it is not difficult to think of examples where individuals act irrationally or, as Hobbes would put it, nastily and brutish. Illicit drug use and its repercussions on individuals and communities is a common example. Broken lives, broken homes, broken communities, and the inhumane infrastructure needed to support the illicit drug industry all too often illustrate Hobbes’ observations.

And so we’re left in a bit of confusion. While traditional economic theory generally explains our world, in certain contexts there are some definite gaps. On a micro scale, these gaps are most apparent in instances where individuals are non-cooperative and/or take advantage of one another’s trust. Each instance is like a small piece of grit or sand which enters the massive gears of the economy and slows down the entire machine. On a macro scale, the end results of all these tiny instances of non-cooperation and/or broken trust is retarded economic growth and a sub-optimal allocation of scarce resources.

Experimental economics is able to explore trust and cooperation in anonymous economic interactions, as well as the tenuous equilibrium which exists balancing cooperators and noncooperators together. Multilateral cooperation problems can be modeled in public goods games in which participants individually make decisions about their level of cooperation independent of the choices of other participants. Experimental results have identified a variety of factors that enhance and discourage cooperation. These

experimental results have helped to distinguish between the behavior of actual human beings and that of idealized human beings found in traditional economic theory.

Further refinement has occurred as economists have broadened the populations included in these experiments. Great variety exists in the ways people of various backgrounds, various positions in society, and various cultures make decisions in these public goods game experiments. One area where this diversity is strongly seen is in the aggregate differences between developed and developing countries including Russia, former Soviet countries, and the countries of the Muslim world.

A few explanations have been given for these differences – weakness of the rule of law, weak norms of civic cooperation, etc – but these differences have not been explored in significant detail (Herrmann et al. 2008). Furthermore, these explanations are limited to exploring the differences in between various societies. An area ripe for exploration is the diversity of behavior within these societies with an emphasis on determining whether there are individual characteristics which distinguish cooperative participants from free loaders. Understanding the diversity of behavior as well as the distinguishing characteristics between cooperative participants and free loaders enables evolutionary economics to further understand the structure and growth of the economy.

The purpose of this thesis is to examine trust and cooperation within Turkey through the public goods game and to attempt to identify individual characteristics which distinguish cooperative participants from free loaders. In order to capture geographical and cultural variations of cooperation levels among Turkish university students, two different locations were selected (Izmir in the West and Adiyaman in the East). The fieldwork was completed during May 2010. The project was supported by a grant from Izmir University of Economic's Office of Scientific Research.

The structure of the thesis is as follows: this first chapter gives an introduction to the purpose of the study and a brief outline of what is to come. The second chapter offers

a general background exploring the field of experimental economics in general and the public goods game specifically. A review of the relevant literature is conducted providing the context for this study. The third chapter explores the study background. In particular the methodology of the study is explained. Thereafter, the research design is elaborated with particular emphasis on the experiment and the accompanying questionnaire. Finally background information is given on the two locations as well as on the participants including general socio-economic characteristics, the results of trust measures, and the interactions between the two. The fourth chapter discusses and analyzes the results of the experiment. Particular emphasis is given to contribution behavior, response to punishment, and punishment behavior. This chapter includes the results of various econometric analyses such as ordinary least squares (OLS) estimation, censored Tobit estimation, and Wilcoxon signed-rank tests. The fifth chapter is the conclusion and includes concluding thoughts as well as further research questions. References and a few explanatory appendices follow. Interspersed throughout are chapter headings retelling a classic Turkish Nasreddin Hoca story with surprising relevance to trust and cooperation in Turkish culture.

CHAPTER 2: GENERAL BACKGROUND

Once upon a time, Timur brought back from one of his conquests of Central Asia an elephant and entrusted its care to the villagers of the Anatolian city of Akşehir. Much to their dismay not only did the elephant have a monstrous appetite, it also wandered haphazardly wherever it pleased smashing the city's vegetable gardens, vineyards, and fields. Timur's gift quickly became a burden and the residents knew not what to do. How could they take care of such an independent minded animal? Would they have to return the gift to Timur? How do you return such a gift without offense to a conqueror so powerful and fearsome?

This chapter will briefly examine the main ideas of the relatively new area of experimental economics. The history of experimental economics' development and methods will be summarized followed by a brief overview of the Turkish researchers who are currently engaged in experimental economic research. Following this brief overview, a more in depth review of the research involving the public goods game will be conducted. A literature review will summarize the main findings of public goods game related studies. Furthermore, areas ripe for further investigation will be identified. It is from these identified areas ripe for further investigation that this study draws its inspiration.

The literature review will specifically look to identify cooperation enhancing and discouraging factors. Furthermore, the diversity of behavior in public goods games will be explored with particular emphasis given to the behavior of participants in non-Western cultures. Additionally, scientific approaches to measuring trust will be reviewed and trust's effects on performance in experimental games will be examined.

2.1 Experimental Economics

The academic discipline of economics can be easily broken down into two main branches: microeconomics and macroeconomics. Under each of these main branches there are a variety of research areas. Microeconomics, an area concerned with the decisions of households and firms, studies supply and demand, market failure, and opportunity costs in areas such as industrial organization, urban economics, labor economics, health economics, financial economics, and so on. On the other hand, macroeconomics, an area concerned with the aggregation of economic activity, studies inflation, unemployment, and the general economic growth of the entire economy.

In order to study these areas, economists have over time made use of a variety of tools. One of the first tools used by researchers to study economic questions was mathematics. Mathematics provided economists with a clear, scientific language to describe economic observations. The use of mathematics, starting in the 19th century, allowed economists to construct numerical models to explain the behavior of the economy. This mathematical language enabled economists to express the vagaries of theory in a consistent way and provided a firm foundation for accumulation of economic knowledge.

Supplementing the use of mathematics, econometrics was adopted as a tool by economists in the early 20th century. Ragnar Frisch was a co-winner, along with Jan Tinbergen, of the very first Nobel Memorial Prize in Economics in 1969 and he received this honor primarily because of his work in developing econometrics. Econometrics is the use of quantitative and statistical analysis to better understand the economy. Economic theory is evaluated by statistically analyzing the relevant economic data. Whereas mathematical economics provided economists with a unified language to describe economic phenomena, econometrics provides economists with a tool to say whether or not

their descriptions were actually describing the functioning of the economy in the real world with any accuracy.

The majority of economic data is made up of past observations – that is, economics differs from most other sciences in that it is left to infer reality from past observation. In contrast, most of scientific disciplines use the scientific method to experimentally confirm or deny hypotheses and theories. This peculiarity has led to the development of a unique subcategory of statistics known as econometrics which specializes in drawing out the causality of complicated relationships from past observation alone. Econometrics is one of the most important tools of economists and its use has exponentially increased our understanding of economics. Econometrics is so important that at least 8 of the past 64 recipients of the Nobel Memorial Prize in Economics have been awarded the prize for their specific contribution to economics through econometrics.

A third tool used by economists is experimental economics. While most economic data is past observation, sometimes experiments can be developed and used to investigate the theories developed by traditional mathematical and econometric models. These experiments can confirm theory by seeing whether or not the explanations offered by theory play out in the “real world” and/or whether there are other factors at play. While the academic discipline of economics is built upon the assumptions of these mathematical and econometric theories, it is valuable when possible to probe more deeply these assumptions. To that end, experimental economics provides researchers with a laboratory in which to test these assumptions and to further refine the traditional theory.

This relatively newer tool in economics is quickly gaining prominence as demonstrated by the winning of the Nobel Memorial Prize in Economics by Vernon Smith and Daniel Kahneman in 2002 and by Elinor Ostrom and Oliver Williamson in 2009 respectively, who all made significant use of experimental methods in their research. The growth of experimental economics is not only demonstrable by the award recipients in this

area, but also by the number of publications. The first experimental economics publications were seen in the late 1940s, but significant numbers of such publications were not seen until the 1980s where the number of publications per year jumps from around 20 to nearly 250 by 1998 (Holt 1999). The publication trends have if anything increased since then.

The very first areas in which experimental economics were used as a tool were individual decision-making, game theory, and industrial organization (Akin and Urhan 2010). From these areas, experimental economics has spread to include such areas as coordination games, market games, finance, and social preferences among others. Additionally, experimental economics is also frequently used as a tool in mechanism design to confirm that a given model satisfies the intentions of its creators. Each of these areas lends itself to the experimental method in which a controlled, repeatable experiment can be designed to test and enhance the theoretical hypotheses.

Within experimental economics, there are some basic principles experimenters follow in the design and implementation of their experiments including reward, design, methodology, and ethics (Ertac 2009). Participants in experiments must be rewarded saliently with real cash rewards of a significant level so that true economic true preferences are drawn out. Additionally, experiments should be intentionally designed to be as simple as possible. It is difficult to interpret the results of overly complex experiments. Likewise, extreme specificity is to be avoided so that as general applications as possible can be drawn from the results. In this way, researchers are encouraged to design more general experiments that apply to a broader context. Also, experimental methods should be written out and strictly obeyed so that experiments can be replicated allowing the results to be independently confirmed. Finally, researchers are not allowed to use deception in experiments. Experiments are to be conducted with utmost transparency.

There are also a variety of settings for experiments each with their own advantages and disadvantages. A spectrum reflecting the degree to which they take place in the real world and their cohort make-up exists for the four most common types of experiments: conventional lab experiments, artefactual field experiments, framed field experiments, and natural field experiments (Reiley and List 2007).

Conventional lab experiments are the most common type of experiments. The cohorts of these experiments are made up of the relatively affluent, university students most easily accessible to economics researchers. Additionally, most of these experiments involve students interacting with one another through computers in networked laboratories. The advantages of conventional lab experiments are the ease of access to subjects that the researchers have and the researchers' ability to control the testing environment. This participants in this study took part in a conventional lab experiment. They played a public goods game via computers in a university laboratory.

Artefactual field experiments are very similar to conventional lab experiments in that the participants are generally interacting with one another in a controlled environment such as a networked computer lab in a university. The main difference is that the subjects themselves are non-standard. In artefactual field experiments the subjects are not university students as in conventional lab experiments, but are a different segment of the population. These artefactual field experiments afford the experimenter greater control than real life with a more realistic cohort than students would be. Half of the subject in a public goods game in rural and urban Russia to be discussed in further detail later participated in an artefactual experiment (Gächter et al. 2004). An example of an artefactual field experiment would be having a non-student cohort come into a university computer laboratory to play a public goods game.

A framed field experiment involves a non-standard cohort in an actual field context. In this case, the experiment occurs in a real environment involving simulated, but

realistic economic transactions in which the participants would normally engage. Unlike real life, however, the participants are aware that they are participating in an experiment throughout the activity. An example of this would be conducting an experiment regarding the purchase of vegetables at a local bazaar or farmer's market. Another example would be conducting an experiment regarding securities trading with actual security traders on a securities trading floor using real equipment in an off hours session. These experiments approximate reality with real populations, but lack the same rigor of control that the laboratory provides researchers.

One final type of experiment is a natural field experiment. These are thought to be the ideal type of experiment providing unbiased results. These experiments occur in the real world with participants who are unaware that they are even participating in an economic experiment. While it is assumed that the participants of these experiments are a random sample and the results of these experiments are free from experimental error, it is rare to find natural field experiments that overlap directly with the primary areas of researcher interest. In this way, natural field experiments are of great scientific value and, unfortunately, often are of limited applicability to the questions researchers are asking. An example of a natural field experiment is the analysis of charitable giving behavior under various treatments after the fact when the donors aren't even aware of their participation.

A pleasant development of recent years is the growth of experimental economics in developing countries. Experimental economics continues to gain prominence not only in the West, but is also being adopted and used by researchers in Turkey as well. Some researchers in Turkey doing experimental work include Dr. Kevin Hasker and Dr. Zafer Akin of Bilkent University, Dr. Seda Ertaç of Koç University, Dr. Ayça Ebru Giritligil of Bilgi University, and Dr. Gökhan Karabulut of Istanbul University. In addition to the work of these national researchers, Turkey has also been selected as a location for a variety of experiments by international researchers.

2.2 Public Goods Games

Cooperation and trust are essential components of a healthy, functioning economy. As life becomes more and more interdependent, our even seemingly anonymous and trivial interactions with one another increase in significance. On an interpersonal level, cooperation and trust ensure that our business relationships and interactions function. Contracts are unable to contain provisions for every possibility. At some point, one must take a leap of faith and believe that the other party will make good on their commitment. Without this mutual trust and cooperation, individuals in society would be paralyzed and unable to move forward. Nonetheless, examples of broken trust and non-cooperation are unfortunately common. When a system leaves room to be manipulated, people tend to take advantage of it. A question economists and public policy makers seek to answer is how society should best react to and work to reduce these instances of broken trust and non-cooperation.

Beyond the interpersonal level, there are societal and even global issues that require deep levels of cooperation and trust between multiple parties to solve. Examples of multilateral issues requiring trust and cooperation abound and include such issues as global warming, climate change, and environmental protection; public resource management of fisheries, forests, and grazing land; collective action including support of charities, product boycotts, and labor relations including strikes; functional governance including tax compliance, voting, and neighborhood/park safety and cleanliness; teamwork in instances like collective hunting, warfare, and sports; and so on. Each of these instances requires cooperation for progress.

As demonstrated by the recent strikes in Greece over the newly adopted austerity measures, cooperation and trust in our governments is quite important and a lack of it can

paralyze a country leading to unfortunate results. Throughout Izmir there are several reminders of the importance of cooperation and trust. Signaling the importance of cooperation on the city level, the Izmir Büyükşehir Belediyesi (the greater Izmir Municipality) put up billboards this spring with the words, “Birlikte Güçlüyüz,” which mean “Together We are Strong” and encourage residents of Izmir to cooperate for the good of the community. Likewise, the Izmir building of the Central Bank of Turkey building has the words, “Vergi Kalkınmanın Temeldir,” which mean, “Taxes are the Foundation of Development,” and is intended to encourage people to support the development of Turkey by paying their taxes. All these examples show that cooperation or lack thereof has significant impact on society for good or for bad.

Having established that cooperation is important on both a micro and a macro level in society in general and in the economy in particular, it is important to study cooperation and trust. What factors facilitate it? What hinders it? What are the economic benefits of cooperation or costs of a lack thereof? Does cooperation look the same everywhere or are there cultural variations to it? How can policy makers encourage cooperation and how can individuals seek it out in their relationships? While it may be easy to solicit opinions about these questions, it's much more difficult to study these questions in an empirical way. Fortunately, for researchers an economic tool exists to study just these issues: the public goods game.

Simply, a public goods game involves a group of people each with his or her own endowment who decide simultaneously to contribute it, or a portion of it, into a group project. Whatever is invested in the group project is multiplied by a fixed growth factor and then returned in equal proportions to all the group members regardless of their initial contribution to the project and added to whatever remains of each member's original endowment. The growth factor is set such that the return from each unit invested in the group project to the individual is less than one, but the returns to the individual when all

group members have invested together into the group project are greater than one. In this way, it is always in one's interest to not contribute to the group project. However, the growth unit is set such that if everyone were to invest into the group project then everyone would receive more than they had put in.

Consider for example the situation when there are four members in a group each of whom receives an endowment of 20 units and the growth factor is set at 0.4. Ayşe could choose to contribute no units to the group project. If her other three group members choose likewise not to contribute to the group project, then Ayşe would receive nothing from the group project and would end the period with the original 20 units left in her endowment (as would the other members of her group). If instead her other three group members were to contribute their entire endowments (a group total of 60 units) to the group project, then Ayşe would receive 24 units from the group project (the group total of 60 units multiplied by the growth factor of 0.4) in addition to the 20 units left in her endowment for a total of 44 units. Her other three group mates having contributed their entire endowments to the group project would receive a total of 24 units each all from the group project.

Now consider the opposite situation where Ayşe contributes all her 20 units into the group project. If no other group members contributes to the group project, then Ayşe would end the period with a total of 8 units all of which she would receive from the group project (the group total of 20 units multiplied by the growth factor of 0.4) having contributed her entire endowment in the group project. In contrast her group members would each add 8 units they received from the group project to the 20 units left in their endowments for a total of 28 units each. Finally, if Ayşe as well as her three other group members each contributed their entire endowments of 20 units to the group project then they would each receive 32 units from the project (the group total of 80 units multiplied by the growth factor of 0.4).

As can be seen in this example, Ayşe is always better not contributing anything to the group project. If no one else contributes, the 20 units Ayşe chooses not to contribute to the group project would be greater than the 8 units she would receive had she fully contributed her entire endowment to the group project. Likewise, if everyone else contributes the maximum amount in the project, the 44 units Ayşe receives by not contributing anything to the project would be greater than the 32 units she would have received had she fully contributed her endowment to the group project. One point to be aware of: while Ayşe's individual total is maximized when everyone else, but her fully contributes to the group project; the groups total is maximized when everyone fully contributes to the group project (116 units vs. 132 units). In this instance of complete group cooperation the maximum wealth is created. Even though the group as a whole does best when everyone invests the maximum amount in the project, Ayşe's dominant strategy, in the language of game theory, is to never contribute in the group project and the Nash equilibrium of a public goods game is for there to be no contributions by any group member to the group project.

The public goods game is able to model multilateral cooperation problems as individuals simultaneously and independently make contribution choices. The public goods game forces participants to act in an entirely self-interest way by keeping one's endowment and not contributing anything to the group project or in a cooperative, group-interested way by contributing from one's endowment to the group project. Through the decisions made in public goods games by participants, experimental economists are able to further study more fully the ephemeral characteristics of trust and cooperation. Researchers are able to explore these characteristics through various modifications to the treatments of these games and through analysis of individual performance together with survey/questionnaire responses. Public goods games are a tool that enables economists to

study trust and cooperation not *in vitro* as is done in theoretical work, but rather *in vivo* in real world performance of participants.

The *in vivo* real world performance of participants has overall proven to be different, at least in initial periods of play, than what the Nash equilibrium for a public goods game implies. General observations are that most people contrary to the dominant strategy choose to contribute a fairly significant portion of their endowment to the group project. While initial contributions to the group project start higher than expected, over time the level of contributions decrease. This decrease in contribution over time has been explained as the response of conditional cooperators to the behavior free riders. Free riders are those participants who do not contribute to the group project, but share in its benefits. In addition to these general observations, a variety of additional studies have identified factors that enhance, discourage, or have no effect on contribution.

Gächter and Herrmann (2008) conducted an extensive review of the literature and identified the factors that most significantly effect contribution levels. Factors that increase contributions to the public goods games are reputation effects, repeated encounters, multiple periods of play with the same group members, communication, and a higher group project growth multiplier (although this change in multiplier does not alter the dominant strategy of non-contribution). Anonymity, one-shot play, perpetually changing group membership, and a lack of communication all tend to discourage contribution. It does not appear that group size has a significant impact on contribution behavior. These findings will be further examined below.

Reputation effects occur when behavior is directly associated with the one who exhibits it. When play is anonymous and group members don't know with whom they are playing, contributions are lower. In contrast, when group member identities are common knowledge, contributions increase (Gächter and Fehr 1999). These reputation effects play out most when there is some degree of group identity which acts "like a 'lubricant' that

makes social exchange effective.” Reputation effects have also been seen in other research regarding cooperative behavior (even when reputation effect is implied) (Andreoni and Petrie 2004; Haley and Fessler 2005; Semmann et al. 2005; and Milinski et al. 2002).

The frequency of game play – whether the game is a one-shot encounter or a repeated series of encounters – also significantly effects the contribution levels of the participants. The benefits of repeated play are further enhanced when group members remain the same in consecutive rounds of play (Fehr and Gächter 2000; Sonnemens et al. 1999). However, even group composition randomization throughout the successive rounds of play did not entirely negate the positive effects gained by repeated interactions. A somewhat unexpected observation is that contributions are still present beyond a superficial level even in one-shot, non-repeated encounters where there is seemingly no reason for one to cooperate (Gächter and Herrman 2010). In spite of the anonymity of these interactions, reputation effects – even though reputation is only known to one’s own self – are nonetheless strong enough to lead to increased contribution levels.

Finally, one of the factors that most significantly increases the level of contribution in public goods games is the ability for group members to communicate with one another during play (Ostrom et al. 1992; Brosig et al. 2003; and Charness and Dufwenberg 2006). As participants communicate with one another, they are able to coordinate their actions before the game begins and express appreciation (or disappointment) after the game concludes. The research implies that individuals in these games tend to prefer the avoidance of guilt to the receipt of praise.

Regardless of the factors that significantly impact contribution levels, research has shown that over additional rounds of anonymous play contributions to the group project often decrease sometimes entirely. This phenomenon has been explained by the theory that most people are conditional cooperators (Kelley and Stahelski 1970; Dufwenberg et al. 2006; and Gächter and Herrmann 2010). A conditional cooperator is a person who is

willing to cooperate – in this case by contributing to a group project – so long as the other participants in the group are also cooperating. When everyone cooperates there is a positive feedback loop which can maintain high levels of contributions. However, when conditional cooperators are in the same group as free loaders, the free loaders lack of contribution (and equal share of the group project benefits) decreases the willingness of conditional cooperators to contribute to the group project.

Fischbacher et al. undertook a study in 2001 to determine what proportion of the population are conditional cooperators versus free riders. According to their study of 44 Swiss university students, the population was made up of roughly half conditional cooperators, a third free riders, and with the remaining classified as nontraditional participants. Whether these proportions are unique to Swiss students or are similar elsewhere is an interesting question for future research. Öneş and Putterman conducted a similar study in 2005 grouping participants by type – top cooperators in one group, free loaders in another, etc – and discovered that indeed group outcomes are predicated on group type and that when grouped together top cooperators achieve near ideal results.

In light of the prevalence of free riders is there then no hope for increasing (or even sustaining) levels of cooperation in public goods games? Research has shown us a potential solution: introducing a punishment treatment. Such a treatment enables group members to punish one another. In a typical punishment treatment, punishment is costly to both the punisher and the punished. The punisher pays a fee for each punishment unit, that is for every punishment unit a punisher gives the total number of his or her own units decrease by one unit. Meanwhile, for each punishment unit the punished person receives, his or her total units are reduced (often by a multiple of the punishment units received). When researchers introduce a punishment treatment to public goods games, they find that cooperation is prevented from deteriorating. Not only is the punishment treatment a stopgap which prevents the deterioration of contribution levels, in certain circumstances

over time the punishment treatment even leads to increased levels of contribution (Yamagishi 1986; Ostrom et al. 1992; and Fehr and Gächter 2000).

As is expected, punishment is used across the board to punish free riders. When the punishment treatment is introduced in a common goods game conditional cooperators have an alternative response to free riders (Herrmann et al. 2008). Whereas previously, conditional cooperators could either endure unmerited rewarding of free riders by choosing to continue to contribute to the group project or alternatively they could choose to retain more of their endowment by reducing their own contributions to the group project. As was explained above, conditional cooperators in groups containing free riders eventually reduce their contributions to zero. With the introduction of the punishment treatment, conditional cooperators have a new option of continuing to cooperate while at the same time being able to express their dissatisfaction with free riders through costly punishment, which negatively impacts the unmerited returns of free riders.

The punishment treatment increases and/or stabilizes cooperation at higher levels than would be expected in a treatment without punishment (Boyd et al. 2003). This is an especially interesting finding, because evolutionary theorists had previously theorized that such “altruistic punishment” would not be present in large groups of nonrelatives. Whereas one might incur a personal cost for the benefit of a group of one’s kin, previous theories concluded that individuals would not choose to engage in similar costly activity when the primary beneficiaries were a large group of nonrelated people. That altruistic punishment exists even in large groups of nonrelatives indicates that something beyond evolutionary self-preservation is at play.

Altruistic punishment is able to create a positive feedback loop whereby punishment of free riders leads to increased contributions over repeated interactions (Fehr and Gächter 2000; Masclet et al. 2003). Wondering whether it was just the adverse monetary consequences of punishment that led to increased contributions, Masclet et al.

offered participants in another treatment the opportunity to assign a “non-monetary” punishment unit at no personal cost. They discovered that even a “non-monetary” punishment unit led to an increase in overall group contributions, although, not as significant or lasting an increase as monetary punishment did.

While altruistic punishment looks to be an ideal solution to the free rider problem in public goods games, the reality is more complicated. It is true that punishment treatments lead to stabilized and sometimes increased contributions. However, it is important to remember that punishment is costly, that is punishment comes at a price. Usually public goods games last for no more than ten periods and in that duration the monetary costs of punishments, both the costs incurred by assigning punishment and the punishment costs themselves to received by the punished, are greater than the increased contributions that punishment encourages (Fehr and Gächter 2000). Overall, punishment results in net losses, at least in games with limited numbers of periods, and therefore is not a very efficient way of increasing contributions. Herrmann et al. conducted public goods games in sixteen different countries in a study in 2008 and in thirteen of the sixteen countries participants accumulated less points in the punishment treatment than in the non-punishment treatment. In order for punishment to be an efficient means of increasing group wealth, an important equilibrium needs to be realized between punishment’s cooperation enhancing effects and wealth destroying costs.

Over a long enough time frame punishment does become an effective. While punishment is not effective at enhancing cooperation in most public goods games which last for no more than ten periods, as the number of periods of play increase so does the effectiveness of punishment. When the number of periods was expanded to fifty, punishment was found to be an efficient way to enhance participant contributions and overall cooperation increased compared to a non-punishment treatment (Gächter et al 2008). Beyond laboratory experiments, there is no reason to think that in real life situations

altruistic punishment, while certainly costly especially at first, wouldn't reap dividends over the long term as well.

A natural question to ask is what exactly is it that punishment is doing. How does altruistic punishment lead to increased contribution and cooperation? Masclet et al. (2003) propose that punishment is effective for two reasons: (1) participants realize that punishment can make free-riding unprofitable and therefore, seeking to maximize their individual payoffs, former free riders increase their contributions in an act of self-interest and/or (2) punishment is a way of communicating in an environment where otherwise communication is not allowed and this communication leads to increased contributions. Participants are able to express through their assignment of punishment points (or lack thereof) their feelings about other group members' levels of participation. This expression of feelings through the assignment of punishment points can in turn cause the recipient to feel of shame for being labeled as a free rider. Those who were shamed through the receipt of punishment points might then be motivated to make larger contributions in the following rounds in an effort to reduce one's shame and increase one's reputation. In a sense, peer pressure is activated through the punishment treatment and this motivates participants to behave more cooperatively (Kandel and Lazear 1992).

While punishment is primarily used altruistically as a tool to punish those who contribute less than average to the group project, group members are not restricted to using punishment in this way. It turns out that punishment is a double-edged sword. Sometimes punishment is used for reasons other than punishing free rider. Consider for example the situation where one resident of an apartment complex goes above and beyond the call of duty to clean the stairwell. Normally such an individual would be appreciated or even rewarded for her efforts. However, it is conceivable that such an individual would instead be punished. It's not difficult to imagine an especially persnickety resident who in lieu of gratitude creates a mess in front of our good Samaritan's door. Whether out of

shame or aggressiveness or something else, this persnickety resident has anti-socially punished the good Samaritan resident.

We see this same phenomenon in public goods games when those who contribute less than average to the group project punish those who contribute more than average. While such behavior might be some sort of non-rational idiosyncrasy, another explanation might be that perhaps the punisher is using punishment as a means to retaliate against previously received punishments (Nikiforakis 2007). While post hoc theories about the motivation of anti-social punishment certainly do exist, an interesting research topic would be to investigate punishment motivations in real time. Whereas the punishment of free riding generally increases cooperation, this anti-social punishment of high contributors generally has the opposite effect and reduces cooperation. Furthermore, when extensive opportunities exist to avenge received sanctions over several rounds of punishment, contributions decrease and there are net losses (Denant-Boemont et al. 2007).

Anti-social punishment was observed prevalently in a cross-cultural study conducted by Herrmann et al. in 16 different participant pools in 2008. Similar levels of altruistic punishment of free riders was observed throughout all the various participant pools. However great diversity existed in the extent to which the various participant pools engaged in anti-social punishment. As was written earlier, punishment didn't always enhance outcomes (in thirteen of the countries in the Herrmann study, participants accumulated less points in the punishment treatment than in the non-punishment treatment). Figure 1 below geographically illustrates the participant pools where anti-social punishment was most prevalent.

Figure 1: Prevalence of Anti-Social Punishment (Herrmann et al. 2008)



This map was created using Google Maps and ZeeMaps.

The blue pins indicate participant pools where punishment was predominantly altruistic with limited amounts of anti-social punishment. The red pins indicate pools where in addition to altruistic punishment, anti-social punishment was observed with significant frequency. It should be noted that the blue pins are located primarily in developed, western countries home to the majority of public goods games research. Anti-social punishment was much more prevalent in non-Western, developing countries (countries in which previous public goods game research had not been conducted). Potentially, the countries where the majority of public goods game research has been conducted might be the exception and not the norm of typical punishment behavior.

Herrmann et al. went on to econometrically analyze the punishment behavior (both altruistic and anti-social) on a societal level with criteria commonly used by social scientists in the classification of countries. They found that strong norms of civic cooperation in a country are associated with more stringent punishment of free riders and that anti-social punishment was significantly correlated with weak norms of civic cooperation and weakness of the rule of law. Norms of civic cooperation and weakness of

the rule of law explain the variations on a cross-cultural level, but variations of punishment behavior on an individual level are left unexplained.

A study conducted in 2004 by Gächter et al. in rural and urban Russia – one of the countries identified in the Herrmann et al. study which had a significant level of anti-social punishment – compared individual participants' socio-economic background as well as certain measurements of trust with their performance in a public goods game. On an individual level, Gächter et al. attempted to see whether these criteria explained contribution behavior in two one-shot public goods games (one with and one without a punishment treatment). They found that contribution behavior was not directly impacted by socio-economic background, but instead was significantly impacted by trust attitudes which were in turn influenced by socio-economic background. Furthermore, three trust attitude variables (*GSS Fair*, *GSS Trust*, and *Trust Strangers*, to be explained in more detail later) were shown to significantly impact contribution behavior.

CHAPTER 3: STUDY BACKGROUND

The villagers of Akşehir decided to seek the help of local wise man Nasrettin Hoca. "Hoca Effendi," the villagers began, "What can we do with this elephant, this gift of Timur which is ruining our lives? You alone are unafraid of Timur. Perhaps you can convince him to take back this burden. Please go tell him that we no longer want his 'gift' and that we've had enough."

"I can see that you are indeed right," Nasrettin Hoca replied, 'And something certainly needs to be done or else our village will be destroyed. But even I am afraid of how Timur will react. The best thing to do, I think, is to go altogether as a group to Timur tomorrow and share our concerns. If we go as a group, he can't be upset with any one of us.'" The villagers agreed and planned to meet the next morning at Nasrettin Hoca's home.

This section explains the methodology, research design, and background information of this particular study. Drawing on the lessons learned and the questions posed by previous research, this particular study's methodology was refined. The research design includes both the particulars of the experiment itself as well as detailed information about the accompanying questionnaire. Finally, the background information section briefly shares about the two locations of the study as well as detailed subject pool details including socio-economic backgrounds, trust measures, and the interactions there between. Additionally, the subject pool of this study is briefly compared with subject pools of similar studies revealing some interesting point of similarity and contrast.

3.1 Study Aims

This study drew inspiration from three studies in particular referenced to in the literature review above. These three studies are:

- Gächter et al.'s 2004 study in Russia using one-shot public goods games to compare trust and voluntary cooperation among rural and urban participants drawn from both student and non-student populations.
- Herrmann et al.'s 2008 study using repeated public goods games with and without punishment to compare the contribution behavior, altruistic punishment, and anti-social punishment of 16 participant pools drawn from countries around the world with great cross-societal variation.
- Gächter and Herrmann's 2009 study investigating the effects of cultural background in four cities in Russia and Switzerland on cooperative behavior one-shot public goods games.

Each of these studies observed a significant amount of anti-social punishment – that is the punishment of participants who behaved pro-socially. Gächter et al.'s 2004 study and Gächter and Herrmann's 2009 study focused primarily on contribution behavior in locations with varied cultural backgrounds. They sought to parse out what factors were influencing the levels of contributions investigating areas such as socio-economic background, trust measures, cultural differences, etc. Herrmann et al.'s 2008 study similarly analyzed contribution behavior across a variety of contexts, but also sought to understand the prevalence of free-rider punishment (altruistic punishment) and anti-social punishment.

This study continues investigating similar questions, but with a few new variations. First, this study is conducted entirely in a Muslim country. Similar research

has been done in both the developed world as well as in a few developing countries (most notably Russia), but to the author's knowledge no study analyzing contribution and punishment behavior with regards to socio-economic, trust measures, and cultural differences has been conducted specifically in a Muslim country. As globalization continues throughout the world and Western countries and Muslim countries continue to be deeply involved (politically, militarily, and commercially) with one another, the understanding of the similarities and the differences in the way that cooperation works in the West and in the Muslim world is of significant importance.

Second, not only is contributive behavior analyzed in light of socio-economic and various trust measures, so also is punishment behavior. A variety of explanations have been theorized for why individuals choose to exercise punishment on other group members, especially on the inter-societal level, but very few studies have attempted to analyze punishment behavior of participants in light of socio-economic, trust measures, and culture differences. Providing a greater context to the backgrounds of subjects who contribute to public goods projects as well as engage in punishment behavior both altruistic and anti-social can only help to further explain these phenomena.

Third, Turkey is a country in the process of fairly rapid reform and development. In particular, the Western parts of the country have experienced significant development in recent decades while the Eastern parts of the country have to some extent lagged behind. These variations in development provide a natural laboratory to examine the effects of this form of development on the cooperative behavior of Turkish students. As can be seen in Figure 1 above, the majority of countries with low incidence of anti-social punishment are Western, developed countries. The significant differences in development level here within Turkey provide us with a natural way to observe whether this trend of lower incidence of anti-social punishment in Western-oriented, more developed areas is more than mere coincidence.

3.2 Research Design

This study was designed as a conventional lab experiment. A total of 116 students participated from two universities (Adiyaman University and Izmir University of Economics). The experiment was conducted using Fischbacher's "z-Tree" software package (2007). In the spirit of cooperation, this study was conducted very similarly to Herrmann et al.'s 2008 study. One of the sixteen various locations that showed a fairly significant level of anti-social punishment in Herrmann et al.'s study was Boğaziçi University in Istanbul, Turkey. Seeking to complement their dataset for potential future collaborations and create a further profile of cooperative behavior in Turkey, this study adopted the standard research procedures used by Herrmann et al. in their 2008 study.

Participants in the experiment joined one of five 90-minute sessions made up of anywhere from 12 to 32 students (the average session contained 23.2 students). The sessions were conducted in computer labs where the desktop computer towers served as pseudo-separators between the flat panel computer monitors. The students were recruited by randomly approaching students at Izmir University of Economics and with the assistance of Asst. Prof. Dr. Bayram Erzurumluoğlu at Adiyaman University. These students were randomly and anonymously assigned to groups of 4. Before, during, and after the experiment the identities of group members were not revealed to the participants.

Throughout the experiment, communication of any kind was not allowed. The participants played two 10-period public goods games, but during the first game the participants were not aware that there was a second game. In each period of the experiment participants received an endowment of 20 points. The total points contributed to the public good were multiplied by a growth factor of 0.4 and then distributed equally

to all group members. The payoff for each group member is shown via the following equation:

$$p_i = 20 - c_i + 0.4 \sum_{j=1}^n c_j$$

where c_i is equal to the group member's contribution to the public project, n is equal to the number of group members, and $\sum_{j=1}^n c_j$ is equal to the sum of all contributions to the public good.

In the first 10-period public goods game there was no punishment option available. The second 10-period public goods game included a punishment treatment. Following the contribution stage, participants were shown the contributions of their fellow group members and could assign between 0 and 10 punishment points to each. Each punishment point cost the punisher 1 point and reduced the punished group member's total by 3 points. Like all interactions in the experiment, the punishments were conducted simultaneously and anonymously. An interesting variation for future study would be to display the mean and variance of the previous period's contributions as well in addition to just the contributions.

All experiments were run under the supervision of the author who speaks Turkish fluently along with the support of Turkish assistants – Research Assistant Neriman Keske and Asst. Prof. Dr. Bayram Erzurumluoğlu. Each participant received a show-up fee of 8 TL (about \$5 USD). Furthermore, each experimental point was equal to 0.03 TL (about \$0.02 USD) and students were paid according to their performance in the public goods game. The average payout was approximately 19 TL (\$12 USD)¹ which is approximately equal to one day's wages at the Turkish minimum wage. Detailed experimental instructions written in Turkish were given to the students before each round of play and

¹ This study has been supported in the scope of project numbered C0902001 which was accepted by Izmir University of Economics Scientific Research Projects Committee. The author is very grateful for their generous support and flexibility throughout the project.

before each of the two rounds of play began all the students in every session had to individually and successfully complete a worksheet of control questions to ensure that they understood the experiment and the payout structure. Detailed copies of the instructions can be found in Appendix A.

Beyond the public goods game experiment, participants also answered a questionnaire that consisted of three parts. The first part was a survey of socio-economic background, the second was a standard trust questionnaire developed and used by social scientists, and the third was an implicit association test measuring nationalism. Each of the three parts along with the results will be summarized in the following section.

3.3 Background

Students from Boğaziçi University in Istanbul, Turkey were one of the 16 populations included in Herrmann et al.'s 2008 study that displayed significant levels of anti-social punishment. Intrigued to see if similar levels of anti-social punishment existed throughout Turkey, this study sought to investigate two other cities: Adiyaman and Izmir. The white pins in Figure 2 shows the geographic location of these two cities with Adiyaman in the East and Izmir in the West and the red pin shows the location of Istanbul.

Figure 2: Map of Turkey Highlighting the Locations of Adiyaman and Izmir



This map was created using Google Maps and ZeeMaps.

Adiyaman is a small city in southeastern Turkey. Formerly known by an Arabic name which the Turkish population found difficult to pronounce, the city was renamed Adiyaman which literally means the city with the “Difficult” or “Terrific Name.” Adiyaman is one of the few cities in Turkey where oil has been discovered and thereafter Adiyaman experienced greatly increased development. The population of Adiyaman grew from around 100,000 people in 1990 to nearly 200,000 today. However, the economy is primarily agrarian based with a small amount of tourism resulting from nearby Mount

Nemrut. The GDP/capita in Adiyaman is 1,112 TL (\$918 USD) (TUIK 2001). Furthermore, the population of Adiyaman, as of most of Southeastern Turkey is a mix of ethnicities including Turks, Kurds, and Arabs.

Izmir formerly known as Smyrna is the third largest city of Turkey. The population of Izmir is approximately 3 million people. It is a highly developed and cosmopolitan city. Historically, the population of Izmir has been quite diverse, but the expatriate population in the 20th century decreased from the heights of previous centuries. Nonetheless, Izmir is still quite diverse for Turkey with many residents who have come to Izmir from other parts of the country seeking greater opportunities. Izmir is a highly industrialized city with significant textile, import/export, and tourism sectors. The GDP/capita in Izmir is 3,894 TL (\$3,215 USD) (TUIK 2001). Izmir is also one of the leading university cities in the country with 7 different universities (3 public and 4 private). A more liberal form of Islam is common in Izmir which has sometimes led to isolation from the more Islamic leaning national government. Izmir is known for its tolerance and openness, so much so that it is sometimes referred to as "Gavur Izmir" or "Infidel Izmir."

In order to attend university in Turkey, students participate in a national exam. According to their performance on this exam, students are offered positions for study in specific departments in the various higher educational institutions in the country. In Turkey, public universities are subsidized and charge students only a nominal tuition fee (at most a few hundred Turkish Lira per year). In contrast, private universities charge students substantial tuition (generally around \$8,000 - \$25,000 USD per year) and in exchange for the substantial tuition, they offer students greater flexibility to enter the department of their choice. In contrast, students' choice of academic department at public universities is limited to their national exam results.

Izmir University of Economics was the first private school in Izmir and was founded in 2001. The student population is primarily made up of upper middle class

residents of Izmir and the Aegean region. The student population is approximately 6,000 students and the tuition fee for the 2010-2011 school year is \$8,600.

Adiyaman University was formed when an assortment of different vocational schools were merged together in 2006. The student population of Adiyaman University is approximately 10,000 students. Adiyaman University is one of the largest universities in Southeastern Turkey and draws students from all over the region. Its student population reflects the diversity of Southeastern Turkey with significant numbers of Turkish, Kurdish, and Arab students.

These differences in location are reflected in the socioeconomic profiles the participants in our subject pool. Table 1 lists these various socioeconomic details. A summary of selected questions from the questionnaire is found in Appendix B.

Table 1: Subject Pool Details

City	Our Data			Herrmann et al. (2008)
	Overall (AU & IUE together)	Adiyaman University	Izmir University of Economics	Istanbul Bogazici University
Exchange Rate	TRY 0.3	TRY 0.3	TRY 0.3	TRY 0.4
Total Number of Subjects	116	64	52	64
% Female	43.10	45.31	40.38	31.3
Mean Age	21.07	21.03	21.12	20.4
% Turk	70.69	56.25	88.46	--
% Only Child	9.48	4.69	15.38	10.9
% Eldest Child	31.90	15.63	51.92	--
% Urban Background	69.83	68.75	71.15	82.8
% Middle Class	59.48	34.38	90.38	65.6
% Religious Practice	38.58	44.27	31.57	--
% Membership	63.80	53.13	76.92	87.5
% Known Participants	46.14	60.78	28.13	11.4
% Nationalist	68.75	72.00	53.33	--
% Against Turban	52.29	31.25	78.85	--
% High Self-Described Religiosity	53.45	57.42	48.56	--

Notes: The dummy variables Female, Turk, Only Child, and Eldest Child indicate the percentage of cases that match the criteria. Urban background identifies the percentage of cases coming from a city with a population greater than 10,000 people. Middle Class indicates the percentage of cases that self-identified as at least middle class or higher. Religious practice identifies the percentage of religious obligations fulfilled. Membership indicates the percentage of cases involved in at least one voluntary association. Known Participants indicates the percentage of other participants known in the experiment. Nationalist indicates the percentage of cases that displayed a moderate to strong automatic preference of Turkey to America in an IAT test. Against Turban identifies the percentage of cases that are against lifting the ban of wearing of headscarves in public buildings. High Self-Described Religiosity identifies the percentage of cases who identify themselves as highly religious.

As can be seen in Table 1, significant differences exist in the two cities of the study. The cohort in the Izmir study was made up of significantly more Turks, only children, and eldest children compared to the cohort of the Adiyaman study. Both Adiyaman and Izmir had more female participants than the reference Istanbul study. Surprisingly, most participants in both Adiyaman and Izmir were from urban background with only a minor difference between the two. A significantly higher percentage of the participants in Izmir were from the middle class compared with both Adiyaman and even Istanbul (90.38% in Izmir versus 34.38% in Adiyaman and 65.6% in Istanbul). This variation likely is explained by the fact that Izmir University of Economics is a private university where students pay tuition while both Adiyaman University and Boğaziçi University are public universities with subsidized tuition. The tuition costs of Izmir University of Economics preclude significant numbers of lower income students from attending. In Adiyaman, a much higher percentage of participants knew one another than in Istanbul and Izmir. This is likely the case because of the manner in which the university recruited the participants.

There is increased religious practice and self-described religiosity in Adiyaman compared with Izmir². This makes sense in that Izmir is known as a more cosmopolitan, less religious city (remember the “Infidel Izmir” moniker) whereas Adiyaman is a much more traditional and conservative city. Interestingly, but not entirely surprising, self-described religiosity was significantly higher than the performance of religious obligations in both Adiyaman and Izmir, although the discrepancy was smaller in Adiyaman than in Izmir. Izmir participants were significantly more likely to be involved in at least one voluntary association (like participants in Istanbul). It is possible that differences in voluntary organization participation are attributable more to access rather than preference.

² Religious practice, self-described religiosity, and the headscarf questions were adapted from a survey developed and conducted by Konda Research and Consulting, a Turkish consulting firm. Standard measures of religion used in public goods games were rejected because of their irrelevance in a Muslim context.

Nationalism was measured using the Countries Demo Test of the Turkish version of Harvard University and Project Implicit's Implicit Association Test. This test measures implicit association via the microseconds of hesitation in associating positive and negative words with words and images associated with both Turkey and the United States. From the variation between these microseconds of hesitation, the test is able to identify the degree of implicit preference one has for Turkey. For example, if one hesitates for 20 microseconds when associating the word "good" with an American flag, but only hesitates for 10 microseconds when associating it with a Turkish flag, then an implicit preference towards Turkey is shown. By the length of hesitation, or conversely the quickness of association, the test is able to tease out some implicit preferences. This measure of implicit association is likely a more accurate measure than self-assessment. Therefore, in this study implicit association measure is used as a measure of nationalism.

Surprisingly, the participants in Adiyaman were more nationalistic than the participants in Izmir. This is surprising given the ethnic make-up of the participants in Izmir. One would assume that ethnically Turkish participants would be more nationalistic than non-Turks, but these findings (and later analysis of these findings in Table 4) do not support this. An alternative explanation might be that due to the structure of the test, participants in Izmir who have more positive exposure to America through expatriate friends and travel abroad displayed not less preference for Turkey, but less hesitation in expressing positive associations with America.

Finally, the participants were asked about a current hot topic in Turkey – whether the ban on wearing headscarves in public places (such as universities and government buildings) should be continued. Not surprisingly only 31.25% of participants in Adiyaman supported the continuation of the ban compared with 78.85% of participants in Izmir.

The effects of socio-economic characteristics on self-described religiosity, the headscarf question, and nationalism will be analyzed below. First, however, the results of

a trust questionnaire will be examined. We asked eight different standard questions used by social scientists to measure trust. These questions are summarized in Table 2 and the results are shown in Table 3.

Table 2: Eight Measures of Trust

Variable	Description	Response
GSS trust	Generally speaking, would you say that people can be trusted or that you can't be too careful in dealing with people?	1: Most people can be trusted; 2: You can't be too careful; 1.5: Depends; --: No answer/Don't know
GSS fair	How often do you think that people would try to take advantage of you if they got a chance, and how often would they try to be fair?	1: Would take advantage of you; 2: Would try to be fair; 1.5: Depends; --: No answer/Don't know
GSS help	Would you say that most of the time people try to be helpful, or that they are mostly just looking out for themselves?;	1: Try to be helpful; 2: Just look out for themselves; 1.5: Depends; --: No answer/Don't know
Trust strangers	Do you agree with the following statement: 'You can't count on strangers anymore.'?	0: More or less agree; 1: More or less disagree
Door unlocked	How often do you leave your door unlocked?	1: Very often; 2: Often; 3: Sometimes; 4: Rarely; 5: Never
Lend money	How often do you lend money to friends?	1: More than once a week; 2: Once a week; 3: Once a month; 4: Once a year or less
Lend possessions	How often do you lend personal possessions to friends?	1: More than once a week; 2: Once a week; 3: Once a month; 4: Once a year or less
Trustworthiness	Do you agree with the following statement: 'I am trustworthy.'?	1: Disagree strongly; 3: Disagree somewhat; 4: Agree somewhat; 6: Agree strongly

As is evident from Table 3, Turkish participants indicate higher trust on several trust measures than their Russian and American counterparts. In the GSS Trust measure, the GSS Help measure, and the Door Unlocked measure, Turkish participants had significantly lower scores than their counterparts indicating greater trust. Turkish participants seem to believe that generally people can be trusted. Furthermore, the difference in the GSS Help measure scores between Turks and their Russian and American counterparts was significant. Whereas most Russian and American students thought that people just look out for themselves, most Turkish participants thought that most of the time people try to be helpful. Anecdotally, the author in Turkey frequently observes this

Table 3: Comparison of Trust Measures with Other Studies

Variable [sign indicates direction of higher trust]	Data from Turkey			Gachter et al. (2004)	Glaeser et al. (2000)
	Overall	Adiyaman	Izmir	Rural and Urban Russia University Students	Harvard University Students
Observations	116	64	52	339	189
GSS Trust [-]	1.34 (0.29)	1.39 (0.28)	1.27 (0.29)	1.51 (0.35)	1.51 (0.50)
GSS Fair [+]	1.46 (0.31)	1.40 (0.32)	1.54 (0.29)	1.44 (0.33)	1.56 (0.49)
GSS Help [-]	1.24 (0.31)	1.25 (0.34)	1.23 (0.27)	1.58 (0.31)	1.61 (0.49)
Trust Strangers [+]	0.56 (0.50)	0.69 (0.47)	0.40 (0.50)	0.63 (0.48)	0.39 (0.50)
Door Unlocked [-]	2.68 (1.39)	2.81 (1.44)	2.52 (1.32)	3.45 (1.27)	4.26 (1.11)
Lend Money [-]	2.66 (0.98)	2.80 (0.95)	2.48 (1.00)	2.77 (0.86)	2.85 (1.15)
Lend Possessions [-]	2.58 (1.15)	2.67 (1.25)	2.46 (1.02)	2.98 (1.01)	2.44 (1.18)
Trustworthiness [+]	4.65 (1.19)	4.50 (1.27)	4.85 (1.08)	4.66 (1.33)	5.31 (0.93)

Notes: We report the average scores for the whole survey as well as a breakdown by city. These scores are compared with scores gathered by Gachter et al. among rural and urban Russian university students as well as Glaeser et al. among Harvard University students. The symbol inside the brackets indicates the scores which reflect higher trust. The symbol [+] indicates that higher scores reflect more trust. The symbol [-] indicates that lower scores indicate more trust.

in instances when Turks are looking for directions. Whereas an American would likely consult a map or call a friend when in need of directions, Turks often will approach complete strangers on the street and seek help from them trusting them for good advice. The final measure was the Door Unlocked measure. Turkish participants fairly often leave their doors unlocked whereas Russian participants sometimes and American participants rarely do the same.

Between the two Turkish cities we saw significant differences in trust measure scores for the GSS Fair measure, the Trust Strangers measure, the Lend Money measure, and the Lend Possessions measure. The participants in Adiyaman thought that people would more likely take advantage of them if given the chance than the participants in Izmir. In contrast, the participants in Adiyaman generally thought that strangers could be trusted or at least disagreed with its opposite to a greater extent than the participants in Izmir. Likewise when questions about the applications of these trust beliefs were asked it turns out that Adiyaman participants were more likely to lend their money and their possessions to their friends than those of Izmir. The participants from Adiyaman seemed to have a more communal based understanding of the world. They are more open to risky interactions, but were also tempered with the understanding the people in general look first to their own self interest. One interesting note is that both Adiyaman and Izmir participants like their American counterparts, but unlike their Russian counterparts were more likely to lend money to their friends compared with lending possessions.

Finally we analyzed the effects of socio-economic characteristics on these trust measures, nationalism, and self-described religiosity. Table 4 describes these relationships through estimations made using ordinary least squares.

Table 4: Effects of Socio-Economic Characteristics on Trust, Nationalism, and Self-Described Religiosity

	Dependent Variable									
	GSS Trust	GSS Fair	GSS Help	GSS Index	Trust Strangers	Lend Money	Trustworthiness	Nationalism	Against Turban	Self Described Religiosity
Female	0.149 (0.193)	-0.013 (0.2)	-0.338 (0.197)*	-0.143 (0.211)	-0.207 (0.187)	-0.385 (0.192)**	0.223 (0.189)	0.389 (0.183)**	0.015 (0.082)	0.064 (0.121)
Age	-0.013 (0.071)	-0.116 (0.075)	-0.04 (0.071)	-0.098 (0.079)	-0.038 (0.068)	-0.003 (0.07)	-0.128 (0.07)*	-0.037 (0.067)	0.054 (0.03)*	-0.034 (0.045)
Ethnicity	0.044 (0.226)	0.113 (0.234)	0.369 (0.226)*	0.192 (0.245)	-0.038 (0.216)	0.409 (0.222)*	-0.542 (0.219)**	-0.144 (0.221)	0.12 (0.095)	0 (0.141)
Only Child	-0.899 (0.371)**	0.263 (0.394)	0.188 (0.374)	-0.364 (0.424)	-0.378 (0.349)	-0.54 (0.359)	-0.232 (0.354)	0.134 (0.325)	0.168 (0.153)	-0.416 (0.227)*
Eldest Child	0.126 (0.24)	0.005 (0.25)	0.406 (0.244)*	0.255 (0.259)	-0.229 (0.233)	-0.041 (0.24)	-0.257 (0.236)	-0.124 (0.233)	0.008 (0.102)	0.195 (0.152)
Urban Background	-0.145 (0.072)	0.117 (0.076)	0.005 (0.073)	-0.024 (0.081)	-0.064 (0.069)	0.006 (0.071)	-0.095 (0.07)	0.048 (0.075)	0.028 (0.03)	-0.05 (0.045)
Middle Class	-0.006 (0.106)	-0.002 (0.107)	0.044 (0.105)	0.014 (0.114)	0.009 (0.101)	-0.103 (0.104)	-0.043 (0.102)	-0.135 (0.116)	0.058 (0.044)	0.03 (0.066)
Religious Practice	-0.039 (0.038)	-0.047 (0.038)	0.025 (0.038)	-0.032 (0.041)	0.059 (0.036)*	0 (0.037)	0.024 (0.036)	0.045 (0.037)	-0.061 (0.016)***	0.187 (0.023)***
Membership Index	-0.02 (0.028)	0.00 (0.03)	-0.044 (0.029)	-0.025 (0.031)	-0.057 (0.027)**	0.009 (0.028)	-0.049 (0.027)*	-0.022 (0.033)	-0.003 (0.012)	-0.037 (0.018)**
Adiyaman	0.338 (0.274)	-0.264 (0.281)	0.375 (0.279)	0.126 (0.295)	0.298 (0.263)	0.273 (0.271)	-0.678 (0.267)***	-0.144 (0.267)	-0.228 (0.116)**	0.084 (0.171)
C	0.537 (0.625)	0.216 (0.638)	-0.474 (0.622)	0.369 (0.678)	0.249 (0.595)	0.036 (0.612)	1.615 (0.604)***	2.931 (0.61)***	0.416 (0.262)	1.465 (0.387)***
Observations	113	108	111	103	116	116	116	96	116	116
R²	0.14	0.12	0.12	0.06	0.17	0.12	0.15	0.11	0.36	0.47

Notes: All trust variables are normalized and resigned such that higher coefficients indicate more trust. The estimations were conducted using OLS. Robust standard errors are given in parenthesis. Female, Ethnicity, Only Child, and Eldest Child are dummies. Urban Background, Middle Class, Religious Practice, and Membership Index are integer values. Adiyaman is a dummy for the corresponding city.

* Denotes significance at 10 percent.

** Denotes significance at 5 percent.

***Denotes significance at 1 percent.

As can be seen in Table 4, socio-economic characteristics seem to have some effects on certain measures of trust, nationalism, and self-described religiosity in this population. Being an only child reduced participants' trust in others. Females generally believed more so that people tend to look out for themselves. In contrast, Turks and eldest children believed more so that people generally try to be helpful. Religious practice seems to encourage trust in strangers while group membership has the opposite effect. Perhaps experience in groups increases one's awareness of the self interest in others leading to decreased trust whereas religious practice gives one the fortitude to take the risk in trusting strangers nonetheless. Men are more likely to loan money as are Turks. Another unexpected observation was females tended to be more nationalistic than males that according to our data.

Interestingly socio-economic characteristics substantially affect one's self-evaluation of being trustworthy. Being older, being a Turk, being involved in voluntary groups, and being from Adiyaman all significantly decreased the degree to which one agreed with the statement: "I am trustworthy." Perhaps participants learn their own personal failings as they age and are involved in voluntary groups. The reasons for the ethnic associations and differences in self-evaluation between the two cities are less clear.

Religious practice, in addition to being more prevalent in Adiyaman students, was strongly associated with opposition to the headscarf ban. This association between religious practice and opposing the headscarf ban seems self-explanatory. The difference of opinion between participants in Adiyaman and Izmir might be related to the religious make-up of the two cities. Because Adiyaman is a more traditional city, it is likely that the those from Adiyaman more often know someone adversely effected by the headscarf ban than participants from cosmopolitan Izmir and therefore more likely to oppose it.

Finally, self-described religiosity is common and positively associated with religious practice. It is negatively associated with group membership and being an only

child. It is possible that group membership is an alternative way to meet spiritual needs. Likewise, only children are likely to come from families that follow proactive family planning rather than those associated with traditional values.

CHAPTER 4: RESULTS AND ANALYSIS

A large group of villagers from Akşehir gathered the next morning in front of Nasrettin Hoca's house ready to go share their concerns about the elephant with Timur. With Nasrettin Hoca leading the way, the crowd made their way towards Timur's home. As they neared Timur's home, the villagers slipped away one by one fearing Timur's rage. As Nasrettin Hoca entered the formidable gates of Timur's compound he realized he was no longer in a group, but rather alone. "The cowards have left me alone to face Timur all by myself," he thought to himself.

"Nasrettin Hoca," bellowed Timur just then, "To what do I owe the honor of your presence in my home today?"

"Mighty Timur," Nasrettin Hoca answered as he gathered up his courage, "I come bearing greetings from Akşehir. We wanted to thank you for your generosity. We love your gift the elephant. He is the apple of our eye. However, Mighty Timur, we are a bit worried... We are a bit afraid our beloved elephant is..."

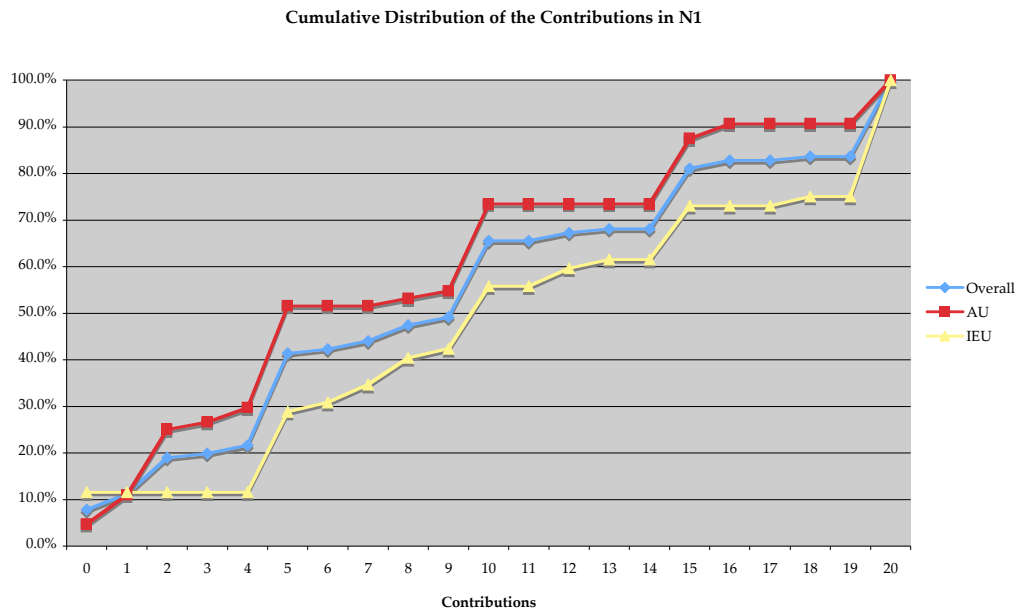
This results and analysis section will look at three specific behaviors: contribution behavior, response to punishment behavior, and punishment behavior. The contribution behavior will examine first period contributions, overall contributions in the N-experiment, the period effect in the N-experiment, the changes in contribution between N- and P-experiments, the period effect in the P-experiment, and average earnings in the N- and P-experiments.

The response to punishment behavior will examine the mean contributions per subject pool to the N- and P-experiments, the relative earnings in the P- and N-experiments over time, punishment's effect on next round contribution if the person who received the punishment's contribution was below group average, and likewise if the punished person's contribution was above group average. Finally, punishment behavior itself will be analyzed including the mean punishment expenditures, the punishment frequencies, the effects of game play on the punishment of free riding and on anti-social punishment, and the effects of trust measures, nationalism, and self-described religiosity on free riding punishment and on anti-social punishment.

4.1 Contribution Behavior

Participants had the option of contributing between 0 and 20 points to the group project. The cumulative distribution of actual contributions in period N1 are shown in Graph 1. The N1 period is the first period of play and so it serves as a base level of contribution. We observe very few people choosing the dominant strategy of no contributions (less than 10% overall). Contributions break along the expected boundaries of 0, 5, 10, 15, and 20. It's interesting to note that contributions in Izmir were significantly higher than contributions in Adiyaman. The participants in Adiyaman more fully were playing the dominant strategy. In contrast, the participants in Izmir exhibited more conditional cooperative behavior (that is, they were more trusting).

Graph 1: Cumulative Distribution of the Contributions in N1



But to more fully understand the contribution behavior it would be helpful to compare N1 contribution to the trust attitudes discussed earlier. The results of this analysis are shown in Table 5 on the following page.

Table 5: The effects of trust attitudes, nationalism, and self described religiosity as well as socio-economic characteristics on N1 contribution

	Dependent Variable N1 Contribution											
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 8	Model 11	Model 12	Model 13	Model 14	
GSS Trust (Insignificant)		0.42 (0.825)										
GSS Fair (Insignificant)			1.072 (0.824)									
GSS Help (Insignificant)				0.436 (0.800)								
GSS Index (Insignificant)					0.792 (0.822)							
Trust Strangers (Insignificant)						-0.969 (0.804)						
Door unlocked (Insignificant)												
Lend Money							-1.308 (0.779)*					
Lend Possessions (Insignificant)												
Trust Index (Insignificant)												
Trustworthiness (Insignificant)								-0.058 (0.806)				
Nationalism (Insignificant)									-0.13 (1.022)			
Against Turban (Insignificant)										0.231 (1.825)		
Self Described Religiosity (Insignificant)												-1.088 (0.998)
Female	2.869 (1.568)*	2.645 (1.618)*	2.944 (1.654)*	2.675 (1.630)*	2.301 (1.709)	2.579 (1.569)*	2.423 (1.57)	2.878 (1.573)*	3.676 (1.783)**	2.859 (1.57)*	2.284 (1.266)*	
Age	0.816 (0.564)	0.887 (0.578)	0.958 (0.62)	0.958 (0.572)*	1.051 (0.63)*	0.781 (0.559)	0.795 (0.557)	0.809 (0.572)	0.965 (0.627)	0.803 (0.573)	0.655 (0.459)	
Ethnicity	-4.128 (1.796)**	-4.124 (1.86)**	-4.414 (1.928)**	-4.347 (1.846)**	-4.3 (1.955)**	-4.12 (1.778)**	-3.601 (1.801)**	-4.16 (1.849)**	-4.086 (2.113)**	-4.151 (1.805)*	-3.135 (1.438)**	
Only Child	-4.705 (2.889)*	-4.368 (3.138)	-6.367 (3.254)**	-5.519 (3.000)*	-6.767 (3.416)**	-5.093 (2.879)*	-5.326 (2.88)*	-4.726 (2.904)*	-5.49 (3.134)*	-4.745 (2.905)*	-3.649 (2.373)	
Eldest Child	-0.791 (1.94)	-0.613 (1.984)	-0.606 (2.055)	-0.890 (2.002)	-0.393 (2.079)	-0.955 (1.926)	-0.917 (1.918)	-0.805 (1.95)	1.031 (2.257)	-0.788 (1.939)	-0.25 (1.57)	
Urban Background	-0.22 (0.569)	-0.242 (0.602)	-0.277 (0.63)	-0.063 (0.582)	-0.139 (0.645)	-0.285 (0.566)	-0.215 (0.563)	-0.226 (0.576)	0.058 (0.705)	-0.227 (0.572)	-0.139 (0.463)	
Middle Class	-0.358 (0.819)	-0.26 (0.858)	-0.146 (0.86)	-0.337 (0.828)	-0.088 (0.884)	-0.35 (0.811)	-0.502 (0.814)	-0.361 (0.82)	-0.164 (1.093)	-0.372 (0.826)	-0.222 (0.671)	
Religious Practice	0.17 (0.297)	0.237 (0.31)	0.278 (0.318)	0.046 (0.305)	0.236 (0.328)	0.229 (0.298)	0.173 (0.294)	0.172 (0.298)	0.454 (0.355)	0.184 (0.316)	0.256 (0.302)	
Membership Index	-0.021 (0.223)	-0.011 (0.228)	-0.114 (0.242)	-0.065 (0.236)	-0.106 (0.244)	-0.068 (0.224)	-0.01 (0.221)	-0.023 (0.225)	-0.244 (0.308)	-0.02 (0.223)	-0.055 (0.186)	
Adiyaman	-7.552 (2.472)***	-7.651 (2.561)***	-7.593 (2.654)***	-7.741 (2.516)***	-7.82 (2.614)***	-7.443 (2.447)***	-7.092 (2.457)***	-7.612 (2.61)***	-7.497 (3.312)**	-7.503 (2.501)***	-5.459 (1.984)***	
Number Known	0.08 (0.078)	0.09 (0.08)	0.1 (0.084)	0.092 (0.079)	0.118 (0.083)	0.095 (0.078)	0.07 (0.077)	0.081 (0.08)	0.11 (0.107)	0.081 (0.078)	0.048 (0.064)	
C	13.866 (4.865)***	12.984 (5.095)***	12.77 (5.159)***	13.669 (4.959)***	11.907 (5.341)**	13.974 (4.816)***	14.042 (4.812)***	13.956 (5.024)***	9.96 (6.404)	13.768 (4.925)***	13.89 (4.222)***	
Observations	116	113	108	111	103	116	116	116	96	116	116	
R²	0.15	0.15	0.18	0.16	0.18	0.17	0.17	0.16	0.16	0.15	0.16	

Notes: All trust variables are normalized and resigned such that higher coefficients indicate more trust. The estimations were conducted using censored Tobit estimation. Robust standard errors are given in parenthesis. Female, Ethnicity, Only Child, and Eldest Child are dummies. Urban Background, Middle Class, Religious Practice, and Membership Index are integer values. Adiyaman is a dummy for the corresponding city. Number known refers to the number of other participants in the session.

* Denotes significance at 10 percent.

** Denotes significance at 5 percent.

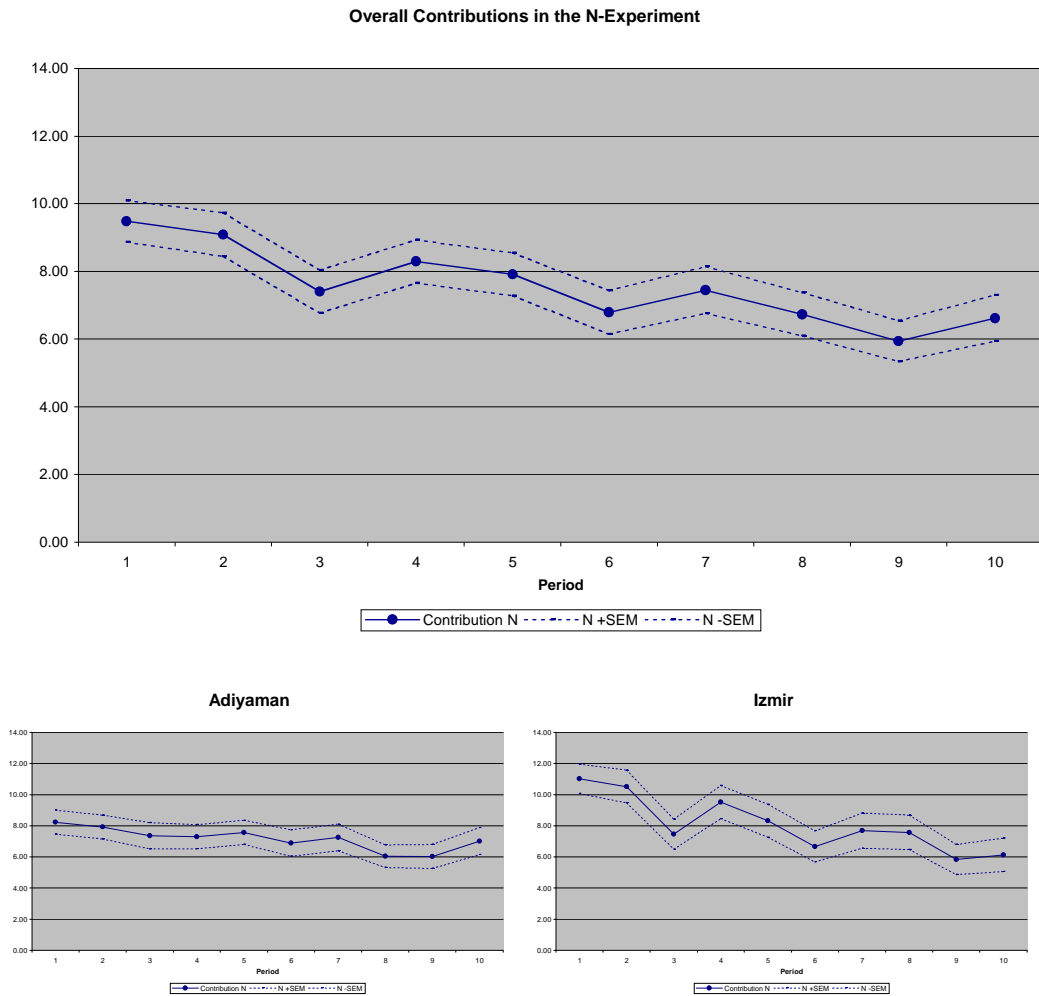
*** Denotes significance at 1 percent.

As shown in Table 5, there are several socio-economic characteristics that effected N1 contribution, but only one trust attitude (all the trust attitudes previously discussed were tested but only selected ones were listed). The only socio-economic factor that increased one's N1 contribution was gender. Females made higher N1 contributions than males. They exhibited greater trust being more willing to take a risk than men were. Two socio-economic factors led to decreased N1 contributions. These were ethnicity and whether or not one was an only child. According to our results, Turks and only children made smaller N1 contributions than non-Turks and participants with siblings. Furthermore, there were significant differences in the N1 contribution levels between Adiyaman and Izmir. Participants in Adiyaman contributed some 7.5 less points in the N1 round to the public project than did their Izmir counterparts.

The one trust attitude which was significant was Lend Money. Participants who more frequently gave monetary loans to their friends *contributed 1.3 points less* than others in the N1 round. This finding had a significance level of 10%. This result seems a bit counter-intuitive, but the trust attitude question asked loaning money to friends and not about contributing anonymously to a group project with strangers. Obviously these participants viewed the group project differently than they viewed loaning friends money.

Graph 2 shows the contributions to the N-experiment over time. From this graph one can easily see that contributions decreased across the board over time. The effect is especially pronounced in the Izmir group. The Izmir group began contributing an average of 11 points in the N1 period and finished the N10 period contributing about 6 points. The Adiyaman group began contributing less, around 8 points in the N1 period, and experienced a less steep decline in contributions ending up contributing around 6.5 points in the N10 period. The Adiyaman participants seem to be playing the game in a rather tempered way.

Graph 2: Contributions to the N-Experiment



The performance of the Adiyaman group is unexpected. The participants in Adiyaman were not as significantly discouraged by the free rider effects as participants in Izmir or in other populations have been. This unique finding indicates that perhaps the conditional cooperators of Adiyaman have a higher tolerance for the inequity of free riding than participants elsewhere.

It is possible to see the average period effects in the N-experiment by performing a Tobit estimation. Using this test, the effects of each successive period on contribution levels can be teased out. Table 6 shows the results of this analysis.

Table 6: Period effects on contribution in the N-Experiment

	Dependent Variable Contribution		
	Overall	Adiyaman	Izmir
Period	-0.551 (0.119)***	-0.34 (0.128)***	-0.883 (0.237)***
Final Period	1.292 (1.148)	1.608 (1.233)	0.682 (2.3)
C	10 (0.667)***	8.55 (0.72)***	12.144 (1.324)***
Observations	1160	640	520
R²	0.02	0.01	0.03

Notes: The estimations were conducted using censored Tobit estimation. Robust standard errors are given in parenthesis. Final Period is a dummy value.

* Denotes significance at 10 percent.

** Denotes significance at 5 percent.

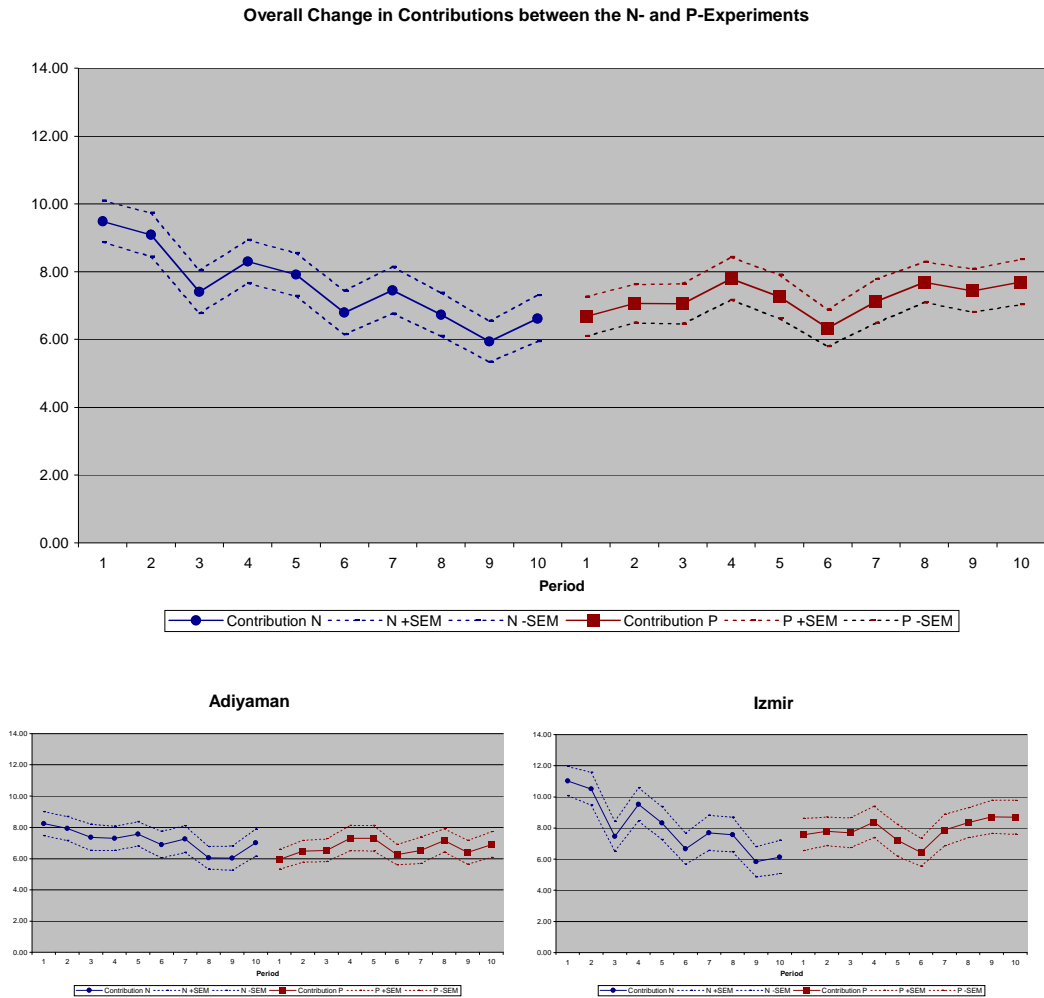
***Denotes significance at 1 percent.

The period effect is obviously very significant (at a level of 1 %) in our data for both Adiyaman and Izmir. For every passing period, contributions decreased by 0.34 points in the Adiyaman group. An even more pronounced effect is seen in the Izmir group. For each passing period contributions decrease by 0.88 points (nearly a point a period) in the Izmir group. From this analysis the substantial deterioration of contribution levels over time in this the non-punishment treatment is seen.

What is the effect on contribution levels when punishment is introduced? As has been demonstrated elsewhere, punishment stabilizes the contribution levels in both Adiyaman and Izmir. In Adiyaman contribution levels in period P1 were just about 6 points. By period P10, contribution levels had increased to nearly 7 points. In Izmir we saw an even more pronounced effect. Contribution levels began around 7.5 points in period P1 for the Izmir group and finished period P10 at approximately 9 points.

Graph 3, below, illustrates the changes in contribution between the N- and the P- experiments overall and for both Adiyaman and Izmir individually.

Graph 3: Change in Contributions between N- and P- Experiments



Punishment appears to stabilize contribution levels and even slightly increase these levels in the Izmir population. However, significant increases in contribution levels are not seen. An area of interest for future study would be the longer-term effect of punishment. Perhaps over a long enough time frame punishment might induce increased overall contribution levels.

In a way similar to Table 6, what the period effects on contribution were in the P-experiment can be investigated. Remember that in each successive period in the N-experiment treatment the level of contributions significantly decline by 0.55 point on average. What effect does the introduction of punishment have on this deteriorating period effect in the P-experiment? The analysis is shown in Table 7.

Table 7: Period effects on contribution in the P-Experiment

	Dependent Variable Contribution		
	Overall	Adiyaman	Izmir
Period	0.058 (0.109)	0.05 (0.119)	0.059 (0.213)
Final Period	0.519 (1.049)	0.146 (1.138)	1.131 (2.046)
C	6.29 (0.615)***	5.979 (0.668)***	6.69 (1.197)***
Observations	1160	640	520
R²	0.00	0.00	0.00

Notes: The estimations were conducted using censored Tobit estimation. Robust standard errors are given in parenthesis. Final Period is a dummy value.

* Denotes significance at 10 percent.

** Denotes significance at 5 percent.

***Denotes significance at 1 percent.

As can be seen in Table 7, the period effect has disappeared. Where as the overall loss of 0.55 points per period was significant at 10 percent, there is no significant period effect in the P-experiment. Introduction of punishment has completely eliminated the deteriorating period effect and solved, to some extent, the free rider problem. As noted above though, it does not appear that punishment significantly increases contribution level. Rather, punishment is more a stabilizer of contributions and means of preventing further contribution deterioration.

So if contribution level has been effectively stabilized, does that mean that the average earnings in the P-experiment increased? Average earnings are total points received at the end of each period, i.e. the sum of the points distributed from the group project and points retained from the initial endowment. Table 8 shows the answer to that question by comparing the average earnings in the N-experiment and the P-experiment.

Table 8: Average Earnings in the N- and P-Experiments

	Average earnings in		Percentage change relative to N-experiment
	N-experiment	P-experiment	
Overall	24.54	10.58	-56.88%
Adiyaman	24.30	12.45	-48.75%
Izmir	24.85	8.28	-66.66%

Average earnings in the P-experiment were much lower than average earnings in the N-experiment. Overall there was a 57% decrease in earnings in the P-experiment. The

Izmir group experienced the largest percent decline seeing a 67% reduction in average earnings from nearly 25 points to nearly 8 points. As to why earnings were so much lower in the P-experiment than in the N-experiment, it is important to remember that punishment is costly. It consumes resources to punish someone while punishment itself is a destruction of resources. Although contribution levels have stabilized in the P-experiment, the costs of that stabilization through punishment are greater than the costs of the free-riding problem at least in the short term of this 10 period experiment.

Furthermore, at this point it is well worth remembering the dominant strategy in a public goods game. As elaborated above, the dominant strategy in a public good game is for each individual to not contribute any points from his or her endowment into the group project. When punishment is introduced, the dominant punishment strategy is never to exercise any punishment. Had the participants in the P-experiment strictly followed the dominant strategy, they would have earned nearly twice as many points as they actually did.

4.2 Response to Punishment

We've seen so far that punishment, at significant costs, prevents the deteriorating period effect and stabilizes contributions in this experiment. Let's look more deeply as to what it is that punishment is doing. Table 9 summarizes the mean contributions in the N- and the P-experiments both in period 1 and over all the periods.

Table 9: Mean contributions per subject pool in the N- and P-Experiments

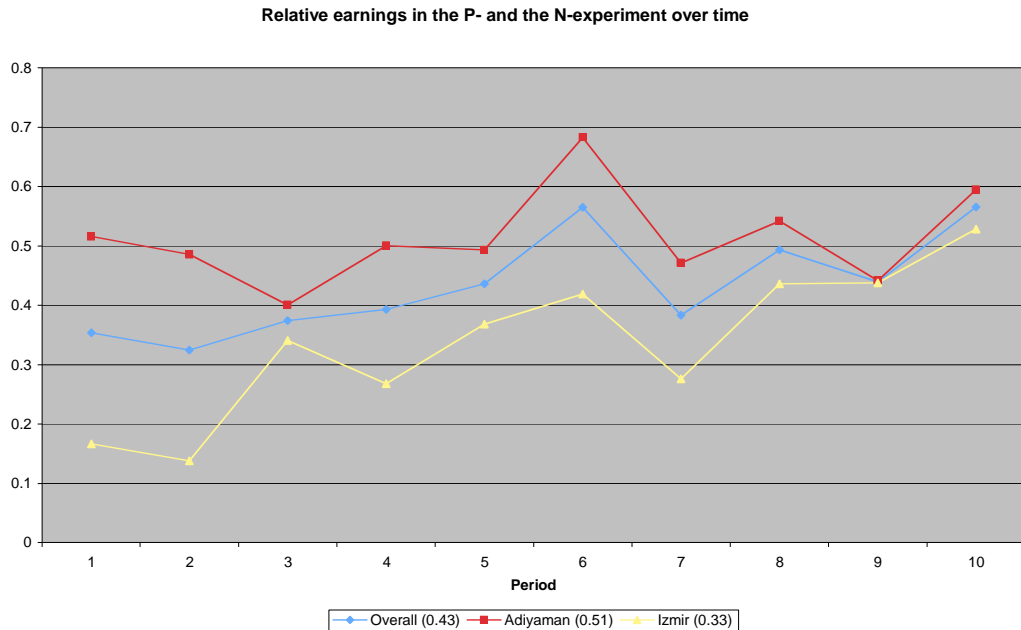
	Contribution in period 1			
	N-Exp	P-Exp	Percentage Change	p-value
Overall	9.5	6.7	-29.55%	0.000
AU	8.2	6.0	-27.70%	0.009
IEU	11.0	7.6	-31.24%	0.000
	Contribution over all periods			
	N-Exp	P-Exp	Percentage change	p-value
Overall	7.6	7.2	-4.73%	0.002
AU	7.2	6.7	-6.74%	0.319
IEU	8.1	7.9	-2.52%	0.073

Notes: The p-values were determined by a Wilcoxon signed-rank test.

As can be see above, punishment leads to significant differences in contribution levels. The differences in period one contributions between the N- and the P-experiments are stark. There was a 30% decline in contributions from the N- to the P-experiment in period one. When this is compared with the mean contributions over all periods, we see that the negative percent change has decreased. The changes in contributions from the N- to the P-experiments in Izmir were the most dramatic. In period one, there was a 31% decrease in contributions between the N- and P-experiments; whereas, when all periods were considered the mean contribution saw only a 2.5% decrease. If the experiment would have run for a few more periods, it's quite possible that the percentage changes could have become positive indicating increased giving in the P-experiment.

Graph 4 visually illustrates this idea comparing the relative earnings over time in both Adiyaman and Izmir. When this number is equal to zero then it means that the costs of the punishment treatment have been covered by the corresponding gains in efficiency.

Graph 4: Relative earnings in the P- and the N-experiment over time



While the relative earnings in the P- and the N-experiment do not reach zero in the 10 periods of this experiment – they reach just under 0.6 – there is a definite positive trend that given enough time would likely reach the zero mark and potentially progress to positive efficiency.

So what effect does punishment have on various contributors? In any punishment circumstance the punished person could have contributed in one of two ways. They could have contributed below the group average or they could have contributed equal to or above the group average. The effects of punishment on both of these cases will now be investigated.

In the first case, the punished person contributed less than the group average, that is the person was a free rider. We looked to see what the effect of altruistic punishment would be on a free riders' contribution in the next round. In this analysis a positive change

in contribution means that the punished person increased their contributions in the next round, while a negative change in contribution means that the punished person decreased their contribution. Table 10 summarizes our findings.

Table 3: Punishment's effect on next round contribution if present contribution was below average

	Dependent Variable Change in Contribution		
	Overall	Adiyaman	Izmir
Reduction	-0.077 (0.016)***	-0.082 (0.021)***	-0.064 (0.026)***
Period	-0.079 (0.096)	-0.151 (0.12)	0.015 (0.158)
Final Period	0.344 (0.781)	1.735 (0.986)*	-1.442 (1.259)
C	1.35 (0.538)***	1.433 (0.649)**	1.394 (0.931)
Observations	542	307	235
R²	0.04	0.06	0.04

Notes: The estimations were conducted using censored Tobit estimation. Robust standard errors are given in parenthesis. Final Period is a dummy value.

** Denotes significance at 10 percent.*

*** Denotes significance at 5 percent.*

****Denotes significance at 1 percent.*

As can be seen in Table 10, altruistic punishment overall increased contributions in the next round. The constant term indicates that those who contributed less than average would increase their contributions by 1.35 on average following punishment (with significance at 1 percent for the overall group and significance at 5 percent for the Adiyaman group). Interestingly, the greater the amount of altruistic punishment (represented as reduction in the table) was, the smaller the increase in contribution. This trend was significant at 1 percent across the board. It's as if the punished party while recognizing his or her need to increase contributions did not respond particularly well to receiving punishment, especially punishment of significant size.

Table 11 investigates the opposite case where anti-social punishment as opposed to altruistic punishment is employed. The effects are what might be expected. In general, anti-social punishment decreases the future contribution of conditional cooperators. Strangely the magnitude of punishment had a highly significant, but unexpected result for the overall group and the Izmir group. For each anti-social punishment point received,

conditional cooperators from those two locations actually reduced the size of their contribution reduction (that is, a conditional cooperator who was punished more severely reduced his or her future contribution *less* than a one who was punished less severely). This phenomenon is quite unexpected and may be some form of opposite spite.

Table 4: Punishment's effect on next round contribution if present contribution was above average

	Dependent Variable Change in Contribution		
	Overall	Adiyaman	Izmir
Reduction	0.075 (0.021)***	-0.028 (0.038)	0.126 (0.026)***
Period	0.099 (0.119)	-0.033 (0.166)	0.253 (0.168)
Final Period	0.003 (0.988)	-0.137 (1.359)	0.122 (1.411)
C	-1.767 (0.656)***	-1.866 (0.898)**	-1.925 (0.95)**
Observations	502	269	233
R²	0.03	0.00	0.11

Notes: The estimations were conducted using censored Tobit estimation. Robust standard errors are given in parenthesis. Final Period is a dummy value.

* Denotes significance at 10 percent.

** Denotes significance at 5 percent.

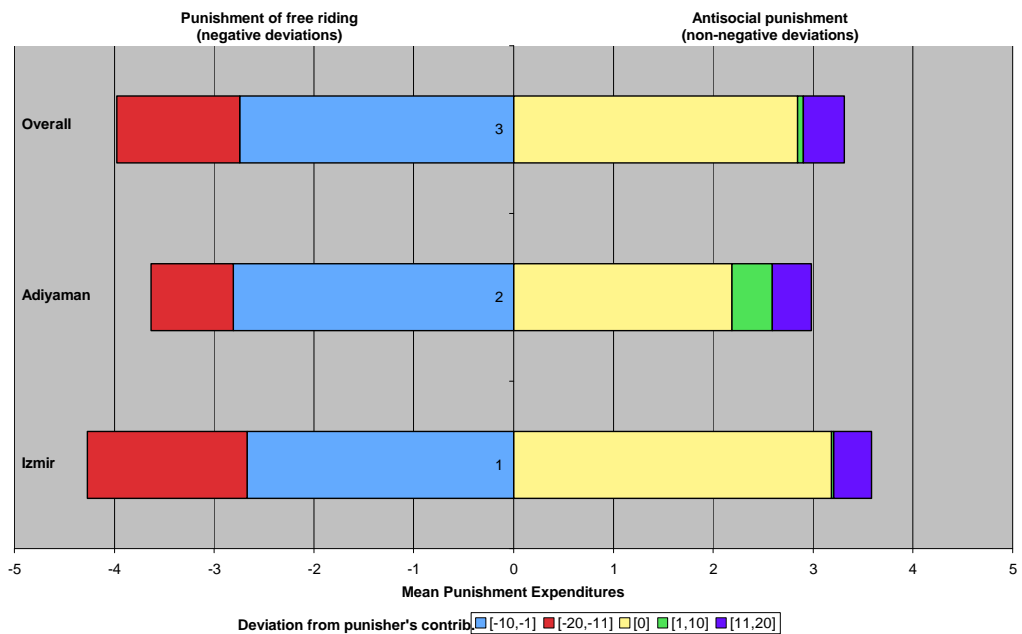
***Denotes significance at 1 percent.

As you can see, punishment – both altruistic and anti-social – has significant effects on next round contribution behavior in of this population. One further area to investigate is that of punishment behavior.

4.3 Punishment Behavior

The mean punishment expenditures are shown in Graph 5. The left side of this graph represents altruistic punishment or the punishment of free riders. The right side of this graph in contrast represents anti-social punishment or the punishment of participants who are contributing more than the punishers. The various colors represent the size of deviation between the punisher and the punished party.

Graph 5: Mean Punishment Expenditures

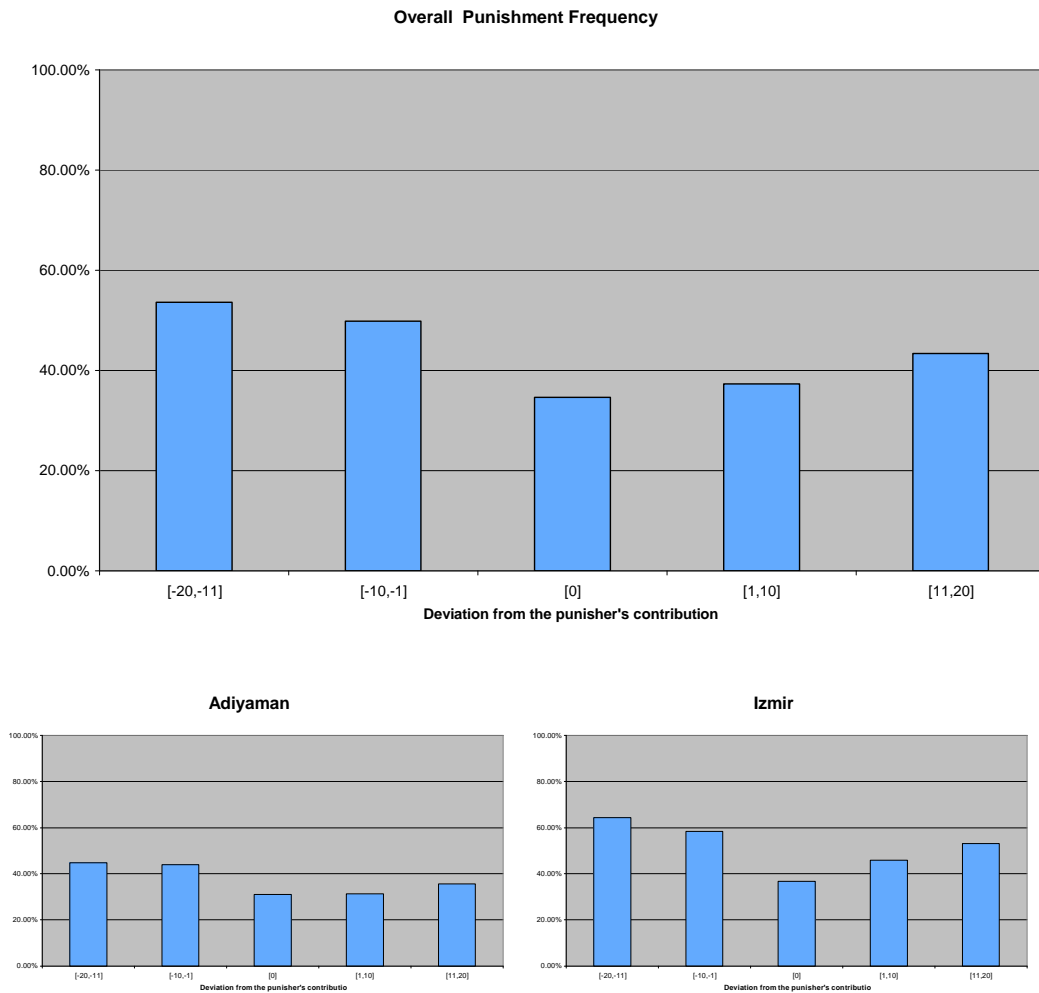


Notes: Participants in the P-experiment had the option of punishing their other group members. This is a graph of mean punishment expenditures for those who exercised that option and it excludes those who chose not to exercise punishment in order to emphasize the amount of punishment exercised.

It can be seen here that altruistic punishment was generally more severe than anti-social punishment. However, anti-social punishment was very present. These results are very similar to those reached by Herrmann et al. in their experiment in their experiments at Boğaziçi University in Istanbul, Turkey (2008). One observation to note is that in Adiyaman there was less of both altruistic punishment and anti-social punishment (just as there were less contributions overall).

If these are the mean punishments when punishment was exercised, then at what frequency was punishment exercised? Graph 6 shows the punishment frequencies.

Graph 6: Punishment Frequencies



Overall altruistic punishment was exercised more often than anti-social punishment. In Izmir, altruistic punishment was exercised approximately 60% of the time. In contrast, altruistic punishment was only exercised approximately 45% of the time in Adiyaman. In both Izmir and Adiyaman, anti-social punishment was exercised less frequently than altruistic punishment, but it was still significantly present. Interestingly punishment on the extremes of maximum variation was practiced more frequently than in cases of less variation. This would be expected for altruistic punishment, but is somewhat surprising for anti-social punishment.

Table 12: Free Riding Punishment Explained by Game Play

	Dependent Variable Punishment		Overall	Overall	Adiyaman	Izmir
	Overall Pooled	Overall Pooled				
Punished Contribution	-0.079 (0.03)***	-0.078 (0.03)***	-0.138 (0.032)***	-0.061 (0.03)**	-0.195 (0.05)***	0.022 (0.039)
Punishers' Contribution	0.024 (0.02)	0.025 (0.02)	0.084 (0.022)***	-0.009 (0.022)	-0.041 (0.033)	0.021 (0.03)
Other Group Members Contrib.	0.104 (0.022)**	0.107 (0.022)***	0.048 (0.024)**	0.09 (0.023)***	0.132 (0.035)***	0.029 (0.029)
Received Punishment T-1		0.017 (0.028)	-0.131 (0.027)***	0.038 (0.029)	0.043 (0.044)	0.041 (0.036)
Period	0.245 (0.043)***	0.257 (0.048)***	-0.101 (0.046)**	0.208 (0.05)***	0.481 (0.081)***	0.036 (0.063)
Final Period	-0.665 (0.419)	-0.681 (0.42)	-0.336 (0.445)	-0.396 (0.423)	-0.472 (0.612)	-0.253 (0.575)
Accumulated Earnings	-0.029 (0.002)***	-0.029 (0.003)***		-0.032 (0.003)***	-0.049 (0.005)**	-0.024 (0.003)***
Adiyaman	-0.015 (0.216)	-0.005 (0.217)				
C			-0.634 (0.347)*	1.061 (0.347)***	1.236 (0.501)***	1.568 (0.486)***
Observations	1490	1490		1490	1490	865
Log Likelihood	-2491.92	-2491.74				
R²			0.05	0.15	0.14	0.18

Notes: The pooled estimates were conducted using OLS estimation. The remaining estimations were conducted using censored Tobit estimation. Robust standard errors are given in parenthesis. Final Period is a dummy value. Adiyaman is a dummy value for the corresponding city.

* Denotes significance at 10 percent.

** Denotes significance at 5 percent.

***Denotes significance at 1 percent.

Table 13: Anti Social Punishment Explained by Game Play

	Dependent Variable Punishment		Overall	Adiyaman	Izmir	
	Overall Pooled					
Punished Contribution	0.029 (0.02)	0.036 (0.021)*	0.057 (0.024)**	0.046 (0.022)**	0.036 (0.03)	0.042 (0.032)
Punishers' Contribution	-0.042 (0.028)	-0.047 (0.028)*	-0.052 (0.03)*	-0.044 (0.028)	0.01 (0.042)	-0.074 (0.039)*
Other Group Members Contrib.	0.048 (0.022)**	0.058 (0.023)**	0.053 (0.026)**	0.074 (0.024)**	0.077 (0.034)**	0.073 (0.034)**
Received Punishment T-1		0.064 (0.029)**	-0.19 (0.029)**	0.047 (0.031)	0.048 (0.046)	0.07 (0.042)*
Period	0.239 (0.043)**	0.294 (0.05)**	-0.081 (0.051)	0.345 (0.055)**	0.339 (0.08)**	0.299 (0.077)**
Final Period	0.184 (0.441)	0.049 (0.446)	-0.069 (0.488)	-0.111 (0.46)	-0.43 (0.605)	0.308 (0.681)
Accumulated Earnings	-0.034 (0.002)**	-0.037 (0.003)**		-0.037 (0.003)**	-0.03 (0.004)**	-0.042 (0.004)**
Adiyaman	-0.689 (0.224)**	-0.667 (0.224)**				
C			-2.573 (0.376)**	-0.914 (0.353)**	-1.609 (0.455)**	-0.004 (0.547)
Observations	1990	1990	1990	1990	1055	935
Log Likelihood	-2712.523	-2710.15				
R²			0.03	0.16	0.10	0.17

Notes: The pooled estimates were conducted using OLS estimation. The remaining estimations were conducted using censored Tobit estimation. Robust standard errors are given in parenthesis. Final Period is a dummy value. Adiyaman is a dummy value for the corresponding city.

* Denotes significance at 10 percent.

** Denotes significance at 5 percent.

***Denotes significance at 1 percent

Tables 12 and 13 look at punishment in light of game play. Table 12 shows that free riding punishment is consistently and highly significantly related to the contribution of the punished participant. The more the punished participant contributed, the lower the free riding punishment they received. The contributions of the other two group members, the period, and the accumulated earnings of the punisher were also significant factors. Interestingly, one of the most significant factors across the board was the amount of accumulated earnings. The greater one's total profit from all the previous rounds, the less one was likely to punish free riders. The wealthy were less likely to engage in the refereeing and disciplining of free riders and instead either ignored free riding or relied on others to carry out the job of policing the group.

Table 13 shows that there is less anti-social punishment in Adiyaman than in Izmir. In Izmir, a slightly increased amount of punishment was consistently and significantly associated with the punishment received in the previous round. Punishment received in the previous period slightly increased the amount of anti-social punishment given for the participants in Izmir indicating that revenge could have been a factor for anti-social punishment. Another observation was that greater contributions to the group project by punishers led to smaller amounts of anti-social punishment for the Izmir participants. Furthermore, in both Adiyaman and Izmir, greater contributions by the other group members' led to increased anti-social punishment. Unexpectedly, anti-social punishment was only slightly related to the level of contribution to the group project by the person receiving the punishment. Also, interesting was the increase of both free riding and anti-social punishments in the later periods. Perhaps the most influential variable effecting anti-social punishment behavior was the punishers' accumulated earnings. The more one accumulated, the less inclined they were to punish anti-socially. This confirms what was observed above in regards to free riding punishment. It turns out that wealth and its preservation, especially over time, trumps other motivating factors.

Beyond the game play explanations, Tables 14 and 15 explore the effects of socio-economic characteristics, trust attitudes, nationalism, and self-described religiosity on both free riding punishment and anti-social punishment through Tobit estimations.

According to our analysis certain socio-economic traits influence the punishment of free riders. The following effects were observed at a high level of statistical significance (significance at 1 percent). Older participants assigned free riders fewer punishment points, as did only children. People from larger cities punish free riders less severely, as did those who had higher levels of religious practice. Participants knew more people in the experiment assigned fewer punishment points to free riders. Also, female participants and members of civic groups punished free riders with fewer punishment points than did male participants (at a significance level of 5%).

Several factors from our trust survey effected the punishment of free riders. Participants who scored highly on the GSS Fair, GSS Help, GSS Index, and/or Trust Strangers, categories punished free riders less stringently. In contrast, participants who scored high on the GSS Trust and/or Trustworthiness categories assigned free riders more punishment points. All of these relationships are significant at 1 percent. Participants who scored highly on the IAT country test, that is more nationalistic participants, were also more likely to assign free riders more punishment points than others (at a level of 10 percent). In contrast, participants who supported the law banning headscarves in public places were less likely to assign punishment points to free riders (at a level of 10 percent) as were participants with a high self-described level of religiosity (at a level of 1 percent).

Considering the socio-economic make up of anti social punishers, we see that female participants and Turks (at a 1 percent level of significance), and voluntary group members (at a 5 percent level of significance) all assigned more anti-social punishment

Table 14: The effects of trust attitudes, nationalism, and self-described religiosity as well as socio-economic characteristics on free riding punishment

Dependent Variable Free-Riding Punishment													
	Model 1	Model 1.5	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 11	Model 12	Model 13	
GSS Trust			0.289 (0.119)**										
GSS Fair				-0.507 (0.119)***									
GSS Help					-0.39 (0.118)***								
GSS Index						-0.393 (0.12)***							
Trust Strangers							-0.25 (0.116)**						
<i>Door unlocked (Insignificant)</i>								0.086 (0.121)					
<i>Lend Money (Insignificant)</i>									0.166 (0.113)				
<i>Lend Possessions (Insignificant)</i>													
<i>Trust Index (Insignificant)</i>													
Trustworthiness										0.427 (0.117)***			
Nationalism											0.287 (0.156)*		
Against Turban												-0.664 (0.265)***	
<i>Self Described Religiosity (Insignificant)</i>													
Punished Contribution		-0.078 (0.03)***	-0.065 (0.031)**	-0.079 (0.031)***	-0.078 (0.03)***	-0.065 (0.031)**	-0.077 (0.03)***	-0.079 (0.03)***	-0.08 (0.03)***	-0.086 (0.03)***	-0.094 (0.032)***	-0.08 (0.03)***	
<i>Punisher Contribution</i>		0.022 (0.022)	0.021 (0.023)	0.04 (0.023)*	0.028 (0.022)	0.036 (0.024)	0.019 (0.023)	0.021 (0.022)	0.024 (0.023)	0.019 (0.022)	0.041 (0.024)*	0.016 (0.023)	
Others Average Contribution		0.072 (0.023)***	0.08 (0.023)**	0.079 (0.023)***	0.074 (0.023)**	0.081 (0.023)***	0.072 (0.023)***	0.07 (0.023)***	0.071 (0.023)***	0.064 (0.023)***	0.089 (0.025)***	0.071 (0.023)***	
<i>Received Punishment T-1</i>		0.041 (0.028)	0.06 (0.029)*	0.051 (0.03)*	0.027 (0.028)	0.045 (0.03)	0.036 (0.028)	0.04 (0.028)	0.042 (0.028)	0.035 (0.028)	0.067 (0.03)**	0.04 (0.028)	
Period		0.166 (0.049)***	0.186 (0.05)***	0.173 (0.05)**	0.161 (0.049)**	0.197 (0.051)***	0.161 (0.049)***	0.167 (0.049)***	0.166 (0.049)***	0.157 (0.049)***	0.196 (0.055)***	0.171 (0.049)***	
<i>Final Period</i>		-0.309 (0.416)	-0.29 (0.418)	-0.334 (0.435)	-0.484 (0.415)	-0.502 (0.44)	-0.299 (0.416)	-0.299 (0.416)	-0.29 (0.416)	-0.27 (0.415)	-0.178 (0.435)	-0.311 (0.415)	
Accumulated Earnings		-0.028 (0.003)***	-0.028 (0.003)***	-0.028 (0.003)***	-0.025 (0.003)***	-0.027 (0.003)***	-0.027 (0.003)***	-0.028 (0.003)***	-0.028 (0.003)***	-0.027 (0.003)***	-0.028 (0.003)***	-0.028 (0.003)***	
Female	-0.534 (0.246)**	-0.455 (0.233)**	-0.569 (0.234)**	-0.584 (0.24)**	-0.598 (0.241)***	-0.591 (0.245)**	-0.515 (0.235)**	-0.429 (0.236)*	-0.402 (0.236)*	-0.555 (0.234)**	-0.728 (0.265)***	-0.509 (0.233)**	
Age	-0.414 (0.093)***	-0.426 (0.087)***	-0.417 (0.088)***	-0.501 (0.091)***	-0.449 (0.085)***	-0.501 (0.091)***	-0.445 (0.088)***	-0.418 (0.087)***	-0.424 (0.087)***	-0.379 (0.087)***	-0.479 (0.088)***	-0.391 (0.088)***	
Ethnicity	-0.356 (0.277)	-0.385 (0.258)	-0.683 (0.266)***	-0.472 (0.274)*	-0.259 (0.258)	-0.623 (0.273)**	-0.391 (0.258)	-0.396 (0.258)	-0.476 (0.266)*	-0.173 (0.263)	-0.54 (0.286)*	-0.268 (0.261)	
Only Child	-2.979 (0.517)***	-2.299 (0.484)***	-1.146 (0.533)**	-1.129 (0.581)**	-2.147 (0.48)***	-1.202 (0.577)**	-2.326 (0.487)***	-2.297 (0.483)***	-2.243 (0.485)***	-2.021 (0.486)***	-2.618 (0.478)***	-2.132 (0.488)***	
<i>Eldest Child</i>	-0.08 (0.307)	-0.004 (0.285)	0.034 (0.283)	-0.106 (0.287)	0.098 (0.284)	-0.002 (0.284)	-0.054 (0.286)	0.026 (0.287)	0.003 (0.284)	-0.007 (0.283)	0.459 (0.313)	-0.025 (0.284)	
Urban Background	-0.42 (0.087)***	-0.303 (0.082)***	-0.202 (0.086)**	-0.213 (0.087)**	-0.344 (0.082)***	-0.284 (0.089)***	-0.323 (0.083)***	-0.299 (0.082)***	-0.312 (0.082)***	-0.258 (0.083)***	-0.423 (0.098)***	-0.289 (0.082)***	
<i>Middle Class</i>	0.095 (0.124)	0.001 (0.116)	-0.124 (0.122)	-0.09 (0.121)	-0.012 (0.113)	-0.112 (0.122)	0.02 (0.116)	0.027 (0.122)	0.023 (0.117)	-0.022 (0.116)	0.109 (0.144)	0.048 (0.117)	
Religious Practice	-0.174 (0.047)***	-0.146 (0.044)***	-0.158 (0.046)***	-0.16 (0.045)**	-0.097 (0.045)**	-0.143 (0.047)***	-0.138 (0.044)***	-0.142 (0.045)***	-0.146 (0.044)***	-0.162 (0.044)***	-0.176 (0.05)***	-0.186 (0.047)***	
Membership Index	-0.048 (0.034)	-0.065 (0.032)**	-0.061 (0.032)*	-0.055 (0.034)*	-0.049 (0.033)	-0.041 (0.033)	-0.08 (0.033)**	-0.071 (0.033)**	-0.064 (0.032)**	-0.046 (0.033)	-0.031 (0.043)	-0.068 (0.032)**	
Adiyaman	-1.075 (0.376)***	-0.256 (0.356)	-0.451 (0.356)	-0.522 (0.359)	-0.308 (0.355)	-0.353 (0.355)	-0.176 (0.358)	-0.22 (0.359)	-0.353 (0.362)	0.013 (0.361)	0.038 (0.471)	-0.376 (0.359)	
Number Known	-0.031 (0.012)***	-0.028 (0.011)***	-0.029 (0.011)***	-0.027 (0.012)**	-0.029 (0.011)***	-0.032 (0.012)***	-0.025 (0.011)**	-0.03 (0.012)***	-0.027 (0.011)**	-0.037 (0.012)***	-0.023 (0.015)	-0.028 (0.011)***	
C	5.117 (0.787)***	5.214 (0.799)***	5.433 (0.82)***	5.495 (0.816)***	4.891 (0.789)***	5.55 (0.823)***	5.255 (0.8)***	5.116 (0.809)***	5.235 (0.799)***	4.925 (0.799)***	4.473 (0.962)***	5.547 (0.809)***	
Observations	1490	1490	1490	1424	1398	1420	1304	1490	1490	1490	1490	1198	1490
R²	0.06	0.17	0.17	0.17	0.19	0.19	0.18	0.17	0.17	0.17	0.18	0.15	0.18

Notes: All trust variables are normalized and resigned such that higher coefficients indicate more trust. The estimations were conducted using censored Tobit estimation. Robust standard errors are given in parenthesis. Female, Ethnicity, Only Child, and Eldest Child are dummies. Urban Background, Middle Class, Religious Practice, and Membership Index are integer values. Adiyaman is a dummy for the corresponding city. Number known refers to the number of other participants in the session.

* Denotes significance at 10 percent.

** Denotes significance at 5 percent.

*** Denotes significance at 1 percent.

Table 15: The effects of trust attitudes, nationalism, and self-described religiosity as well as socio-economic characteristics on anti-social punishment

	Dependent Variable Anti-Social Punishment											
	Model 1	Model 1.5	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 11	Model 12	Model 13
GSS Trust			0.561 (0.129)***									
GSS Fair				-0.275 (0.135)**								
<i>GSS Help (Insignificant)</i>					0.159 (0.128)							
<i>GSS Index (Insignificant)</i>						0.097 (0.131)						
Trust Strangers							-0.483 (0.132)***					
Door unlocked								0.245 (0.122)**				
Lend Money									-0.491 (0.123)***			
<i>Lend Possessions (Insignificant)</i>												
<i>Trust Index (Insignificant)</i>												
Trustworthiness										0.497 (0.135)***		
Nationalism											0.237 (0.14)*	
Against Turban												0.475 (0.287)*
<i>Self Described Religiosity (Insignificant)</i>												
Punished Contributions		0.036 (0.022)*	0.028 (0.022)	0.03 (0.023)	0.026 (0.022)	0.023 (0.023)	0.037 (0.022)*	0.033 (0.022)	0.03 (0.022)	0.029 (0.022)	0.065 (0.023)***	0.035 (0.022)*
<i>Punisher Contributions</i>		-0.041 (0.028)	-0.042 (0.028)	-0.054 (0.029)*	-0.036 (0.028)	-0.056 (0.029)*	-0.047 (0.028)*	-0.039 (0.028)	-0.037 (0.028)	-0.037 (0.028)	-0.041 (0.029)	-0.041 (0.028)
Others Average Contribution		0.04 (0.024)*	0.033 (0.024)	0.038 (0.026)	0.063 (0.025)***	0.062 (0.026)**	0.042 (0.024)*	0.035 (0.024)	0.034 (0.024)	0.035 (0.024)	0.052 (0.026)**	0.043 (0.024)*
<i>Received Punishment T-1</i>		0.024 (0.03)	0.023 (0.031)	0.015 (0.033)	0.018 (0.03)	0.016 (0.032)	0.025 (0.03)	0.026 (0.03)	0.019 (0.03)	0.021 (0.03)	0.029 (0.031)	0.024 (0.03)
Period		0.308 (0.054)***	0.31 (0.055)**	0.308 (0.058)***	0.292 (0.054)**	0.305 (0.057)**	0.306 (0.054)***	0.315 (0.054)***	0.317 (0.054)**	0.314 (0.054)**	0.287 (0.058)***	0.308 (0.054)***
<i>Final Period</i>		-0.042 (0.448)	-0.044 (0.447)	-0.072 (0.469)	-0.047 (0.443)	-0.201 (0.463)	-0.019 (0.447)	-0.05 (0.447)	0.015 (0.448)	-0.056 (0.447)	-0.232 (0.468)	-0.04 (0.448)
Accumulated Earnings		-0.033 (0.003)***	-0.032 (0.003)***	-0.033 (0.003)***	-0.032 (0.003)***	-0.031 (0.003)***	-0.033 (0.003)***	-0.034 (0.003)***	-0.034 (0.003)***	-0.033 (0.003)***	-0.03 (0.003)***	-0.033 (0.003)***
Female	1.101 (0.261)***	0.903 (0.247)***	0.781 (0.25)***	0.797 (0.261)***	0.763 (0.255)***	0.614 (0.259)**	0.723 (0.251)***	0.955 (0.249)***	0.695 (0.252)***	0.873 (0.247)***	0.818 (0.265)***	0.87 (0.248)***
Age	-0.253 (0.094)***	-0.235 (0.087)***	-0.239 (0.087)***	-0.287 (0.098)***	-0.247 (0.085)***	-0.244 (0.094)***	-0.238 (0.087)***	-0.21 (0.087)**	-0.246 (0.087)***	-0.183 (0.088)**	-0.284 (0.088)***	-0.259 (0.088)***
Ethnicity	1.067 (0.313)***	1.221 (0.291)***	1.28 (0.293)***	1.388 (0.311)***	1.14 (0.29)***	1.231 (0.304)***	1.166 (0.291)***	1.185 (0.291)***	1.378 (0.293)***	1.574 (0.308)***	0.984 (0.322)***	1.186 (0.292)***
Only Child	-2.872 (0.495)***	-1.136 (0.472)**	-0.714 (0.483)	-1.753 (0.526)***	-1.353 (0.486)**	-2.17 (0.545)***	-1.546 (0.487)***	-1.149 (0.469)***	-1.379 (0.475)***	-1.073 (0.47)**	-1.283 (0.474)***	-1.165 (0.472)***
Eldest Child	0.559 (0.305)*	0.234 (0.285)	0.058 (0.288)	0.349 (0.302)	0.048 (0.282)	0.235 (0.297)	0.126 (0.286)	0.255 (0.284)	0.225 (0.284)	0.45 (0.29)	0.693 (0.303)**	0.199 (0.286)
Urban Background	-0.651 (0.098)***	-0.421 (0.091)***	-0.37 (0.093)***	-0.465 (0.102)***	-0.425 (0.092)***	-0.457 (0.101)***	-0.488 (0.094)***	-0.428 (0.091)***	-0.408 (0.091)***	-0.381 (0.092)***	-0.503 (0.107)***	-0.43 (0.092)***
<i>Middle Class</i>	-0.141 (0.153)	-0.301 (0.144)**	-0.248 (0.146)*	-0.29 (0.149)**	-0.332 (0.142)**	-0.264 (0.147)*	-0.333 (0.144)**	-0.247 (0.146)*	-0.33 (0.143)**	-0.237 (0.145)*	-0.333 (0.164)**	-0.324 (0.145)**
<i>Religious Practice</i>	0.041 (0.048)	0.042 (0.046)	0.055 (0.046)	0.091 (0.05)*	0.052 (0.046)	0.099 (0.049)**	0.072 (0.046)	0.048 (0.046)	0.056 (0.046)	0.033 (0.046)	0.137 (0.049)***	0.07 (0.049)
Membership Index	0.073 (0.039)*	0.08 (0.037)**	0.11 (0.037)**	0.096 (0.04)**	0.117 (0.038)**	0.093 (0.039)**	0.049 (0.038)	0.072 (0.037)**	0.083 (0.037)**	0.106 (0.037)**	0.13 (0.048)***	0.08 (0.037)**
Adiyaman	-1.869 (0.427)***	-0.848 (0.404)**	-1.158 (0.409)***	-1.148 (0.434)***	-0.995 (0.4)**	-1.102 (0.411)***	-0.929 (0.403)**	-0.858 (0.404)**	-0.599 (0.406)	-0.271 (0.43)	-1.152 (0.489)**	-0.707 (0.412)*
<i>Number Known</i>	-0.006 (0.014)	-0.007 (0.013)	0.004 (0.013)	0.003 (0.014)	-0.012 (0.012)	-0.001 (0.013)	0.002 (0.013)	-0.008 (0.013)	-0.01 (0.013)	-0.014 (0.013)	0.009 (0.015)	-0.006 (0.013)
C	1.2 (0.799)	1.025 (0.788)	0.75 (0.794)	1.017 (0.828)	1.327 (0.784)*	0.977 (0.82)	1.397 (0.793)*	0.889 (0.79)	1.026 (0.785)	0.052 (0.831)	-0.055 (0.92)	0.768 (0.804)
Observations	1990	1990	1966	1843	1910	1786	1990	1990	1990	1990	1990	1990
R²	0.08	0.20	0.21	0.21	0.22	0.22	0.21	0.21	0.21	0.2	0.21	0.2

Notes: All trust variables are normalized and resigned such that higher coefficients indicate more trust. The estimations were conducted using censored Tobit estimation. Robust standard errors are given in parenthesis. Female, Ethnicity, Only Child, and Eldest Child are dummies. Urban Background, Middle Class, Religious Practice, and Membership Index are integer values. Adiyaman is a dummy for the corresponding city. Number known refers to the number of other participants in the session.

* Denotes significance at 10 percent.

** Denotes significance at 5 percent.

*** Denotes significance at 1 percent.

points than their counterparts. Older participants and those from urban backgrounds (at a 1 percent level of significance) and only children, participants from the middle class, and participants from Adiyaman (at a 5 percent level of significance) all assigned fewer anti-social punishment points.

Looking to the effects of items from the trust survey, a few measures were significant in regards to anti-social punishment. Those who scored higher on the GSS Fair item (at a 5 percent level of significance) and the Trust Strangers and the Lend Money items (at a 1 percent level of significance) assigned fewer anti-socially punishment points. Those who scored higher on the GSS Trust and the Trustworthiness items (at a 1 percent level of significance), the door unlocked item (at a 5 percent level of significance), and the nationalism and against turban items (at a 1 percent level of significance) assigned more anti-social punishment points.

CHAPTER 5: CONCLUSIONS

And with a twinkle in his eye, Nasrettin Hoca continued, "We are a bit afraid our beloved elephant is lonely and in need of companionship. If it were not too much trouble, perhaps you could bring a friend for him, maybe even a female elephant to keep him company. Together they could walk in our fields and gardens and, İnşallah, one day they could maybe even have a family. In this way, our joy will be complete."

The Nasrettin Hoca story can be compared to a public goods game. Nasrettin Hoca along with the villagers of Akşehir are all entering into a public goods game together. In this game, the risky behavior is coming along to share the concerns of the village regarding the elephant with the mighty Timur. The way that individuals contribute "points from their endowment" into the "group project" is by joining the group to speak with Timur. As the villagers turn away one by one, the omniscient reader realizes first that the villagers are "free riding" on Nasrettin Hoca's contributions and second that "the returns of the group project" are going to be smaller than they could have been had everyone come along.

From Nasrettin Hoca's perspective, this public goods game was performed anonymously. It wasn't until the results of the "group project" were revealed, that Nasrettin Hoca realized that he was the only one who had actually made a "contribution." Having arrived at Timur's home alone to lodge the complaint of the villagers of Akşehir, Nasrettin Hoca himself finds himself in the position of a "conditional cooperator." Is he going to ignore the "free-riding behavior" of the villagers and make their request anyway

or will he instead choose to engage in a bit of “altruistic punishment” of the “free riders” by asking Timur to exasperate rather than solve the community’s problem? True to form, Nasrettin Hoca finds a way to ingratiate himself with Timur while at the same time “altruistically punish” the “free riders” who had betrayed his trust.

The first aim of this study was to compare the similarities and differences between the performance of public goods games in the West and in a country of the Muslim world. In contrast to Gächter et al.’s 2004 study of Russian students, Turkish participants’ contributions were not significantly increased in response to higher scores on the GSS Fair, GSS Help, GSS Index, or Trust Strangers measures. In fact, higher scores on the Trust Strangers measure was insignificantly associated with *lower* contributions. One trust measure that was significant in the Turkish population, but not the Russian population was the Loan Money measure. Counter intuitively the greater the frequency Turkish participants loaned money to their friends, the lower their N1 contributions.

An additional area of contrast was the effect of socio-economic background on contributions. Gächter et al. (2004) found no effect of socio-economic background on contributions in their study of Russian participants whereas we found significant effects in this study of Turkish participants. According to the results of our study, females made higher N1 contributions whereas Turks, only children, and participants from Adiyaman made lower N1 contributions. Overall, N1 contribution levels were higher in Turkey than in Russia (13.866 points and 8.308, respectively). However, higher N1 contributions have been observed in other countries as well (Herrmann et al. 2008). Furthermore, this study confirms the phenomenon observed by Herrmann et al. (2008). There is a substantial degree of both altruistic, but also anti-social punishment in Turkey. There is significantly more anti-social punishment here in Turkey than in other Western countries. While, this study quantitatively observes this to be the case and describes the trust attitudes and socio-economic characteristics of those who punish anti-socially, it did not explore these

participants' motives. An interesting question for additional research would be to investigate the thought processes and motivations of those who punish anti-socially contrasted with those who choose not to punish in this way.

A second aim of this study was to analyze both contribution behavior and also punishment behavior in light of socio-economic and various trust measures. The results of this analysis are shown below in Table 16.

Certain trends are observed in this table. From the N1 contributions perspective, a higher Female variable increases contributions while higher Turk, Only Child, Adiyaman, and Lend Money variables decrease contributions. From the punishment perspective, higher Trustworthiness, Nationalism, and GSS Trust variables increase punishment across the board. Likewise, the higher the GSS Fair, Trust Strangers, Accumulated Earnings, Age, Only Child, and Urban Background variables the lower the punishment was across the board. High scores on the Female, Membership, and Against Turban variables were the worst variables from the punishment perspective because they each decreased altruistic punishment and increased anti-social punishment. Higher GSS Help, GSS Index, Religious Practice, and Number Known variables all decreased altruistic punishment. Higher Lend Money, Middle Class, and Adiyaman variables all decreased anti-social punishment whereas higher Door Unlocked and Turk variables increased it.

Table 16: The effects of trust attitudes, nationalism, and self-described religiosity as well as socio-economic characteristics on participant behavior

1. N1 Contribution Behavior (C = 13.866***)	
<i>Increased Contributions (Positive)</i>	<i>Decrease Contributions (Negative)</i>
<ul style="list-style-type: none"> ○ Female (2.869*) 	<ul style="list-style-type: none"> ○ Turk (4.128**) ○ Only Child (4.705*) ○ Adiyaman (7.552***) ○ Lend Money (1.308***)
2. Free Riding Punishment (C = 5.214***)	
<i>Increased Punishment (Positive)</i>	<i>Decreased Punishment (Negative)</i>
<ul style="list-style-type: none"> ○ Others' Contribution (0.072***) ○ Period (0.166***) ○ GSS Trust (0.289***) ○ Trustworthiness (0.427***) ○ Nationalism (0.287*) 	<ul style="list-style-type: none"> ○ Punished Contribution (0.078***) ○ Accumulated Earnings (0.028***) ○ Female (0.455**) ○ Age (0.4276***) ○ Only Child (2.299***) ○ Urban Background (0.303***) ○ Religious Practice (0.146***) ○ Membership (0.065**) ○ Number Known (0.028***) ○ GSS Fair (0.507***) ○ GSS Help (0.390***) ○ GSS Index (0.393***) ○ Trust Strangers (0.250***) ○ Against Turban (0.664*)
3. Anti-Social Punishment	
<i>Increased Punishment (Negative)</i>	<i>Decreased Punishment (Positive)</i>
<ul style="list-style-type: none"> ○ Punished Contribution (0.036*) ○ Others' Contribution (0.040*) ○ Period (0.308***) ○ Female (0.903***) ○ Turk (1.221***) ○ Membership (0.080**) ○ GSS Trust (0.561***) ○ Door Unlocked (0.245**) ○ Trustworthiness (0.497***) ○ Nationalism (0.237*) ○ Against Turban (0.475*) 	<ul style="list-style-type: none"> ○ Accumulated Earnings (0.033***) ○ Age (0.235***) ○ Only Child (1.136**) ○ Urban Background (0.421***) ○ Middle Class (0.301**) ○ Adiyaman (0.848**) ○ GSS Fair (0.275**) ○ Trust Strangers (0.483***) ○ Lend Money (0.491***)

Notes: All trust variables are normalized and resigned such that higher coefficients indicate more trust. The estimations were conducted using censored Tobit estimation. Robust standard errors are given in parenthesis. Female, Ethnicity, Only Child, and Eldest Child are dummies. Urban Background, Middle Class, Religious Practice, and Membership Index are integer values. Adiyaman is a dummy for the corresponding city. Number known refers to the number of other participants in the session. Italicized results are trust attitudes, nationalism, and self-described religiosity variables which are not associated with the C terms or socio-economic terms given in Table 16. For the relevant terms, see Tables 5, 14, and 15.

* Denotes significance at 10 percent.

** Denotes significance at 5 percent.

***Denotes significance at 1 percent.

The third aim of this study was to compare the effects of development on the cooperative behavior of Turkish students. Using the natural laboratory provided by the

differing levels of development in Adiyaman and Izmir, we were able to examine the effects development had on both N1 contributions as well as altruistic and anti-social punishment. Several trends were identified in both contribution behavior and punishment behavior.

In regards to contribution behavior, the participants in Izmir contributed significantly more in the N1 period (12.144*** in Izmir versus 8.55*** in Adiyaman). These differences are more striking when you compare the frequencies of certain N1 contributions. In the N1 period, 50% of Adiyaman students contributed 5 points or less compared with only 29% of Izmir students. Likewise, 25% of Izmir students contributed a full 20 points in the N1 period compared with only 10% of Adiyaman students.

Izmir participants were significantly more sensitive to free riders than were Adiyaman participants. During the N-experiment, the contributions of Izmir participants decreased by 0.833*** points per period whereas the contributions of Adiyaman participants decreased by less than half that amount (only 0.34*** points per period).

In regards to punishment, several observations can be made. Altruistic punishment led to greater next round contributions for both Adiyaman and Izmir. Interestingly, the greater the punishment received was, the smaller the next round increased contribution. Similarly, anti-social punishment led to decreased next round contributions for both Adiyaman and Izmir, but oddly the greater the punishment was for Izmir, the smaller the next round decrease. Both altruistic punishment and anti-social punishment were of greater frequency in Izmir compared to Adiyaman. While there weren't significant differences in the magnitude of altruistic punishment between Adiyaman and Izmir, anti-social punishment was 0.667*** points lower in Adiyaman compared to Izmir. Finally, comparing the average earnings change from N- to P-experiments, Adiyaman's average earnings decrease is less than Izmir's average earnings

decrease (48.75% and 66.67% respectively) reflecting lower levels of resource destruction through anti-social punishment.

These observations paint a picture of Adiyaman as a more temperate place than Izmir. Both contributions and punishment were less frequent and less severe (at least anti-social punishments were) in Adiyaman than they were in Izmir. These findings contrast with the previous observations that more Western, developed places are associated with lower incidence of anti-social punishment. Within Turkey, in this study, the opposite was found: mainly, that more Western and developed Izmir exhibited greater amounts of anti-social punishment.

When people take a risk for the benefit of the community, whether in contributions to a public goods game or in discussions with authorities regarding elephant problems, a certain level of reciprocity is expected. A lack of this reciprocity often leads to decreased risk taking in the group and/or self-regulation. However, self-regulation in the form of punishment contains the risks of a double-edged sword. While it can be used for good to punish free riders, it can also be used anti-socially to punish the cooperators as well. This study has confirmed both of these phenomena to be present in Turkey.

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APPENDICES

A. Instructions in Turkish

Genel Açıklamalar

Şu anda, çeşitli kuruluşların mali araştırma desteğiyle finanse edilen iktisadi bir deneye katılmaktasınız. Aşağıda yer alan **açıklamaları** dikkatlice okursanız, kararlarınıza bağlı olarak, kayda değer bir miktar para kazanabilirsiniz. O yüzden, bu **açıklamaları** dikkatli okumanız çok önemlidir.

Bu **açıklamalar** yalnızca kişisel kullanımınız içindir. **Deney sırasında diğer katılımcılarla iletişim kurmanız yasaklanmıştır.** Bir sorunuz olursa, lütfen bize sorunuz. Bu kuralı çiğnerseniz, deneyden çıkarılır ve tüm ücret hakkınızı kaybedersiniz. Deney sırasında TL cinsinden değil de PUAN cinsinden konuşacağız. Deney sırasında tüm kazançlarınız Puan cinsinden hesaplanacaktır. Deney sonunda kazandığınız toplam puan miktarı, şu tarifeden TL'ye çevrilecektir:

1 Puan = 3 Kuruş

Deney sonunda, deneyden elde ettiğiniz tüm kazançlarınıza **ek** olarak deneye katılmış olmanız nedeniyle 8 TL size **nakit** olarak ödenecektir.

Deney 10 ayrı turdan oluşmaktadır. Katılımcılar dörtlü gruplara ayrılacaktır. Şu halde siz, diğer 3 katılımcıyla birlikte bir grupta yer alacaksınız. **Grupların dağılımı 10 tur boyunca hep aynı kalacaktır.**

Aşağıdaki sayfalarda deneyi detaylı olarak anlatmaktayız.

Deney Hakkında Detaylı Bilgi

Her turun başında, her katılımcıya **20 puan** verilir. Buna katılımcının **sermayesi** adını veriyoruz. Sizin göreviniz bu **sermayeyi** nasıl kullanacağınıza karar vermektir. 20 puanın, kaçını bir projeye yatıracığınıza ve kaçını kendinize saklayacağınıza yani dağılımına karar vermek zorundasınız. Vereceğiniz kararın sonuçları aşağıda ayrıntılı olarak anlatılmaktadır.

Her turun başında aşağıdaki girdi-ekranı görünecektir:

Tur

1 Out Of 1

Kalan süre (saniye) 72

Sermayeniz 20

Projeye yatıracagınız miktar

TAMAM

YARDIM

Lutfen projeye ne kadar yatıracagınızı yazınız!

Hazır olduğunuzda, lutfen "OK" tusuna basın..

Ekranın sol üst köşesinde deneyin kaçınıcı turunda olduğunı görebilirsiniz. Sağ üst köşede ise puanlarınızın dağılımına karar vermek için kalan süreniz (saniye olarak) görünmektedir. Puan dağılımına karar vermeniz gereken süre, ilk iki turda 90 saniye, kalan turlarda ise 60 saniyedir. Kararınızı, süre 0 saniyeyi göstermeden önce vermelisiniz.

Sermayeniz her bir tur için 20 puandır. Bir projeye kaç puan yatıracagınıza, girdi alanına, 0 ile 20 arasında bir sayı yazarak, karar vermek zorundasınız. Bu alana; fareyle üzerine gelip tıklayarak erişebilirsiniz. Bir projeye yatıracagınız puan miktarına karar verirken, kendinize saklayacagınız puan miktarına da karar vermiş olursunuz: Bu "20- yatırdığınız puan"dır. Projeye katkınızı girdikten sonra O.K. butonuna basmalısınız. (fareyle ya da enter-tuşuna basarak). Bunu yaptıktan sonra, kararınızı bu turda bir daha deęiştiremezsiniz.

Tüm grup üyeleri karar verdikten sonra aşağıdaki ekranda 4 grup üyesinin projeye yatırdığı toplam puan miktarını görebilirsiniz (sizin yatırdığınız miktar dahil). Bu ekran, aynı zamanda, toplam olarak bu turda kaç Puan kazandığınızı size gösterir.

Tur1 Out Of 1Kalan süre (saniye) 40

Projeye yatıracagınız miktar

Projeye yatırılan toplam miktar

Elde kalan puanlardan edinilen gelir

Projeden elde edilen gelir

Bu turdan elde ettiğiniz toplam gelir

Bu tur dahil olmak üzere elde ettiğiniz toplam gelir

YARDIM

Bu turun sonuçlarını görebilirsiniz.

Zaman dolduktan sonra ya da NEXT tusuna bastığınızda deney devam edecektir.

Gördüğünüz gibi **geliriniz** iki parçadan oluşmaktadır:

1. Kendinize sakladığınız puanlar (“elde kalan puanlardan elde edilen gelir”) ki bu durumda **1 puan = 3 Kuruş** olarak alınır.
2. “Projeden elde edilen gelir”. Projeden elde edilen gelir aşağıdaki gibi hesaplanır:

Projeden elde edilen gelir = 0.4 çarpı projeye yatırılan toplam miktar

O halde bir turdaki **Puan cinsinden geliriniz:**

$$(20 - \text{projeye yatırdığınız miktar}) + 0.4 * (\text{projeye yatırılan toplam miktar})$$

Her bir grup üyesinin **projeden elde ettiği gelir** aynı yoldan hesaplanmaktadır; yani her bir grup üyesi projeden aynı geliri elde eder. Örnek olarak, tüm grup üyelerinin yatırdığı toplam miktarı 60 puan varsayalım. Şu durumda her bir grup üyesinin projeden elde ettiği gelir $0.4 * 60 = 24$ Puan olacaktır. Projeye yatırılan toplam miktar 9 puansa, siz ve diğer tüm grup üyelerinin elde ettiği gelir $0.4 * 9 = 3.6$ Puan olacaktır.

Kendinize sakladığınız her Puan için 3 Kuruş kazanırsınız. Onun yerine aynı puanı projeye yatırdığınızı varsayarsak, projeye yatırılan toplam miktar 1 puan kadar artar. Sizin projeden elde ettiğiniz gelir ise $0.4 * 1 = 0.4$ puan artar. Ancak diğer grup üyelerinin gelirleri de 0.4'er puan kadar artacaktır, ki grubun projeden elde

ettiği toplam gelir 1.6 puan (4.8 Kuruş) kadar artar. Şu halde sizin projeye yatırdığınız miktar diğer grup üyelerinin gelirini de artırır. Öte yandan diğer üyelerin projeye yatırdığı her puan için siz de gelir elde edersiniz. Herhangi bir üyenin yatırdığı bir puan için siz $0.4*1=0.4$ puan kazanırsınız.

Bu gelir ekranını görüntülemek için ilk iki turda 45, kalan turlarda ise 30 saniye süreniz vardır. Süre tamamlanmadan önce işiniz biterse lütfen “devam” butonuna basınız (yine fareyi kullanarak ya da enter tuşuna basarak).

Daha sonra diğer grup üyelerinin yatırdığı miktarları gösteren bilgi ekranı belirir.

Tur		1 Out Of 1				Kalan süre (saniye) 41	
Sermaye	20	20	20	20			
Projeye yatırılan miktar	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>			
Projeye yatırılan miktarın sermayeye oranı (%)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>			

devam

YARDIM
Burada diğer grup üyelerinin kararlarını görebilirsiniz. Hazır olduğunuzda lütfen OK tuşuna basınız.

Şu anda diğer her bir grup üyesinin projeye yatırdığı miktarları görmekteyiz. **Sizin yatırdığınız miktar birinci sütunda mavi olarak** gösterilmektedir, öte yandan diğer grup üyelerinin yatırdığı miktarlar kalan üç sütunda **rastgele bir düzene göre sıralanmış şekilde** gösterilmektedir. Mesela, ikinci sütundaki yatırım miktarı, her turda genellikle farklı bir grup üyesine ait olacaktır. Aynı durum diğer sütunlardaki miktarlar için de geçerlidir. Yatırılan mutlak miktarların yanında, yatırılan miktarın sermayeye oranı da yüzde olarak gösterilmektedir.

Sorunuz var mı?

Kontrol Soruları:

Lütfen bütün soruları cevaplayınız ve hesaplamalarınızı açık bir şekilde kagıda yazınız. Sorunuz olursa bize haber veriniz.

1. Her grup üyesinin 20 puan sermayesi vardır. Bir turda hiç kimse (siz dahil) projeye puan yatırmazsa, bu durumda

Sizin gelirin ne kadar olur?.....

Diğer grup üyelerinin her birinin geliri ne kadar olur?.....

2. Her grup üyesinin 20 puan sermayesi vardır. Bir turda siz projeye 20 puan yatırdınız. O turda diğer tüm grup üyeleri de projeye 20'şer puan yatırırlarsa,

Sizin gelirin ne kadar olur?.....

Diğer grup üyelerinin her birinin geliri ne kadar olur?.....

3. Her grup üyesinin 20 puan sermayesi vardır. Bir turda diğer grup üyelerinin projeye yatırdığı toplam miktar 30 puanken,
 - a. Siz o turda projeye 0 puan daha yatırırsanız (diğer grup üyelerinin projeye yatırdığı 30 puana ek olarak),

Sizin gelirin ne kadar olur?.....

- b. Siz o turda projeye 15 puan daha yatırırsanız (diğer grup üyelerinin projeye yatırdığı 30 puana ek olarak),

Sizin gelirin ne kadar olur?.....

4. Her grup üyesinin 20 puan sermayesi vardır. Bir turda sizin projeye yatırdığınız miktar 8 puanken,

- a. Diğer tüm grup üyeleri o turda projeye toplam 7 puan yatırırsa,

Sizin gelirin ne kadar olur?.....

- b. Diğer tüm grup üyeleri o turda projeye toplam 22 puan yatırırsa,

Sizin gelirin ne kadar olur?.....

İkinci Deney için Genel Açıklama

Şimdi deneyi tekrarlıyor ve bazı değişiklikler getiriyoruz. Her katılımcı tüm bölüm için deneyin başında (katılım için alınan 8 TL'ye ek olarak) toptan **25 Puan** miktarında bir ek ödenek alır. Bu bir-defalık ödenek deney sırasında oluşabilecek puan kayıplarını karşılamak içindir. **Ancak, deney sırasında vereceğiniz kararlarla olası para kaybını kesin olarak engelleyebilirsiniz.** Birbirini izleyen 10 turun sonunda tüm deney kesin olarak sonlanır ve sizin gelirsiniz:

İlk 10 turdan elde ettiğiniz gelir

+ ikinci 10 turdan elde ettiğiniz gelirinizi (25 Puan miktarındaki ek ödeme dahil)

= Toplam Puan miktarı

+ katılımınız için 8 TL

Bu (ikinci) deney her turda iki bölüm olmak üzere toplam 10 turdan oluşmaktadır. Birinci bölüm önceki (birinci) deneyin tamamen aynısıdır. İlk bölümde elinizdeki 20 puandan kaçını projeye yatıracağınıza karar vermek zorundasınız (böylelikle kaç puanı kendinize saklayacağınıza da karar vermiş olursunuz). Birinci bölümden elde ettiğiniz gelir, önceki deneyde elde ettiğiniz gelire aynı yoldan hesaplanacaktır.

Kendinize sakladığınız her bir puan için 3 Kuruş gelir elde edersiniz. Projeye yatırdığınız her puan için siz ve tüm diğer grup üyeleri 0.4'er Puan kazanır. Şu halde, diğer bir grup üyesinin projeye yatırdığı her bir puan da sizin gelirinizi 0.4 Puan arttırır.

Yeni Deneydeki Değişiklikler Nelerdir?

Şimdi birinci bölümdeki gelir ekranının görünümünü takiben bir **ikinci bölüm** sunulmaktadır.

İkinci Bölüm

İkinci bölümde önceki deneyde olduğu gibi her bir grup üyesinin projeye yatırdığı miktarı görebilirsiniz. Buna ek olarak, bu bölümde, **kesinti puanlarıyla** diğer her bir grup üyesinin gelirini azaltabilir ya da sabit bırakabilirsiniz. Diğer grup üyeleri de isterlerse **sizin** gelirinizi azaltabilirler. Bu durum ikinci bölümdeki girdi ekranına bakarak daha iyi anlaşılabilir:

İkinci Bölümdeki Girdi Ekranı

Period: 1 out of 1 Remaining time [sec]: 176

Sermaye	20	20	20	20
Projeye yatırılan miktar	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Projeye yatırılan miktarın sermayeye oranı (%)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
2. Bölümdeki kararınız		<input type="text"/>	<input type="text"/>	<input type="text"/>

Assign no points: 0
Assign negative points: negative number

Maliyet Hesabı

Dagıtılan kesinti puanlarının maliyeti -----

TAMAM

YARDIM
Lütfen kararınızı yazınız. Dagıtığınız kesinti puanlarının işaretini kontrol ediniz. "Maliyet hesabı" tusuna basınız.
Bitirdiğinizde "TAMAM" tusuna basınız.

Bu ekranda, bulunduğunuz tur ve kalan sürenin yanında, her bir grup üyesinin ilk bölümde projeye yatırdığı miktarı görebilirsiniz. **Sizin yatırdığınız miktar birinci sütunda mavi olarak** gösterilmektedir, öte yandan diğer grup üyelerinin yatırdığı miktarlar kalan üç sütunda gösterilmektedir. **Lütfen grup dağılımlarının her turda rastgele bir düzene göre yenilendiğini unutmayınız.** Mesela, ikinci sütundaki miktar, genellikle her seferinde farklı bir grup üyesine aittir. Aynı durum diğer sütunlardaki miktarlar için de geçerlidir. Bu yolla, yatırılan miktar bilginize sunulmakta, yatıran grup üyesinin kim olduğu ise bilginize sunulmamaktadır. Yatırılan mutlak miktarların yanında, yatırılan miktarın sermayeye oranı da yüzde olarak gösterilmektedir.

Sizin yapmanız gereken: diğer grup üyelerine kesinti puanları dağıtıp dağıtmayacağınıza ve eğer dağıtacaksanız diğer grup üyelerinin herbirine kaç kesinti puanı vereceğinize karar vermelisiniz. Her durumda, her bir grup üyesi için birer rakam girmeniz gerekmektedir. Eğer bir grup üyesinin gelirini değiştirmek istemiyorsanız; o zaman 0 girmelisiniz. Kesinti puanı dağıtırsanız, numaranın önüne bir **eksi işareti** koymalısınız (arada boşluk bırakmadan).

Bu karar için, ilk iki turda 180 saniye, kalan turlarda ise 120 saniye süreniz vardır. Bir girdi alanından diğerine tab-tuşuna (←) basarak ya da fareyi kullanarak geçebilirsiniz.

Kesinti puanı dağıtırsanız, dağıttığınız puan miktarına bağlı olarak gideriniz olacaktır. **Her bir grup üyesine -10 ve 0 arasında puan (tamsayı olarak) verebilirsiniz.** Ne kadar fazla kesinti puanı dağıtırsanız; gideriniz de o kadar artar. Aşağıdaki formül dağıtılan puanlar ve dağıtılan puanların maliyeti arasındaki bağıntıyı göstermektedir:

Dağıtılan kesinti puanlarının maliyeti = Dağıtılan kesinti puanlarının miktarı

Dağıttığınız her kesinti puanı size de 1 Puana mal olur. Örnek olarak, bir üyeye 2 kesinti puanı verirsiniz, bu size 2 Puana mal olur; buna ek olarak başka bir üyeye 9 kesinti puanı verirsiniz, 9 Puana mal olur; ve son grup üyesine 0 puan verirsiniz, bunun size maliyeti yoktur. Bu durumda toplam 11 kesinti puanı dağıtmış oldunuz ve bunun size **toplam maliyeti** de 11 Puana denk gelir (2+9+0).

Dağıttığınız kesinti puanlarının toplam maliyetini bilgisayardan öğrenebilirsiniz. Hesaplamayı yapmak için "**Maliyet hesabı**" butonuna basmalısınız (bkz. 2. bölümdeki girdi ekranı). Maliyet hesabını, bir girdi yaptıktan sonra gerçekleştirebilirsiniz. Ekranda, dağıttığınız kesinti puanlarının toplam maliyetini göreceksiniz. **OK-butonuna** basmadığınız sürece kararınızı (kalan süre içinde) değiştirebilirsiniz. Dağıttığınız puanlarda yaptığınız bir değişiklik sonrasında, maliyetleri yeniden hesaplamak için, maliyet hesabı butonuna yeniden basmanız yeterlidir.

Belirli bir grup üyesine 0 puan verirsiniz, onun gelirini değiştirmemiş olursunuz. Ancak bir grup üyesine **bir kesinti puanı** (yani -1 girerseniz) verirsiniz, bu grup üyesinin gelirini 3 Puan **azaltmış** olursunuz. Bir grup üyesine **2 kesinti puanı** dağıtırsanız (yani -2 girerseniz) grup üyesinin gelirini 6 Puan düşürmüş olursunuz. Bir başka grup üyesine verdiğiniz her bir kesinti puanı, onun gelirini 3 Puan azaltır.

İkinci bölümde, gelirin toplamda azalıp azalmayacağı ya da ne kadar azalacağı, diğer grup üyelerinden alınan kesinti puanlarına bağlıdır. Örnek olarak, birisi (bu turda tüm diğer grup üyelerinden) **toplamda 3 kesinti puanı** alırsa, onun geliri **9 Puan** azalır. Birisi toplam **4 kesinti puanı** alırsa, onun geliri **12 Puan** azalır. Bu durumda sizin iki bölümden elde ettiğiniz toplam gelir aşağıdaki gibi hesaplanmaktadır:

İkinci bölümün sonunda elde edilen toplam gelir (Puan cinsinden) = tur geliri =

= 1. bölümden elde edilen gelir (1)

- 3*(alınan negatif puan toplamı) (2)

- dağıttığınız kesinti puanlarının size maliyeti (1) + (2) 0'dan büyük ya da eşitse;

= 0 - dağıttığınız kesinti puanlarının size maliyeti (1) + (2) 0'dan küçükse

Verdiğiniz kesinti puanlarının size maliyeti; birinci bölümden elde ettiğiniz gelir eksi aldığınız kesinti puanlarından kaynaklanan gelir kaybı miktarını geçerse, ikinci bölüm sonunda Puan cinsinden gelirinizin negatif olabileceğine lütfen dikkat ediniz. **Ancak, deney sırasında vereceğiniz kararlarla para kaybını kesin olarak engelleyebilirsiniz.**

Tüm katılımcılar karar verdikten sonra, bu turdan elde ettiğiniz gelir aşağıdaki ekranda gösterilir:

İkinci bölüm sonunda gelir ekranı

Period

1 out of 1

Remaining time [sec]: 41

1. Bölümden elde ettiğiniz gelir

Dağıttığınız kesinti puanlarının size maliyeti

Size verilen kesinti puanlarının miktarı:

Kesinti puanlarından kaynaklanan gelir kaybı

Bu turda elde ettiğiniz gelir

Bu tur dahil olmak üzere elde ettiğiniz toplam gelir

devam

YARDIM

Şimdi 2. bölümün sonuçlarını görebilirsiniz. Zaman dolduğunda veya herkes "devam" tusuna bastığında deney devam edecek.

Sorunuz var mı?

Kontrol Soruları:

5. İkinci bölümde diğer grup üyelerine şu kesinti puanlarını dağıttınız:-9,-5,0. Dağıttığınız kesinti puanlarının size toplam maliyeti ne olur?.....
6. Toplam 0 puan dağıtırsanız bunun size maliyeti ne kadardır?.....

7. Dięer grup üyelerinden toplam 0 kesinti puanı alırsanız, birinci bölümden elde ettięiniz gelir kaç Puan deęiřir?.....
8. Dięer grup üyelerinden toplam 4 kesinti puanı alırsanız, birinci bölümden elde ettięiniz gelir kaç Puan deęiřir?.....
9. Dięer grup üyelerinden toplam 15 kesinti puanı alırsanız, birinci bölümden elde ettięiniz gelir kaç Puan deęiřir?.....

B. Selections from the Questionnaire

Variable	Description English	Description Turkish	Answer Range
<i>Socio-economic variables</i>			
Female			1: Yes; 0: no
Age			Positive real value
Only child			1: Yes; 0: no
Eldest child			1: Yes; 0: no
Urban background	How large was the community where you have lived the most time of your life?	Hayatınız büyük bir bölümünü geçirdiğiniz şehrin nüfusu nedir?	1: up to 2,000 inhabitants; 2: 2,000 to 10,000 inhabitants; 3: 10,000 to 100,000 inhabitants; 4: 100,000 to 400,000 inhabitants; 5: more than 400,000 inhabitants
Middle class	When you were 16 years of age, what was the income of your parents in comparison to other families in Turkey?	16 yaşınızdayken anne-babanızın geliri Türkiye'deki diğer ailelere göre nasıldı?	1: Far below average; 2: Below average; 3: Average; 4: Above average; 5: Far above average
Ethnicity	What is your ethnicity?	Etnik kökeniniz nedir?	1: Turk; 0: other
Dershane	Did you attend a dershane?	Üniversiteye hazırlanırken dershaneye gittiniz mi?	1: Yes; 0: no
Gülen dershane			1: Yes; 0: no
Religion self description	In terms of religiosity, which of the following would you described yourself as?	Dindarlık açısından kendinizi aşağıda okuyacaklarımdan hangisiyle tarif edersiniz?	0: Someone with no religious belief; 1: Someone who does not believe in religious obligations; 2: Someone who believes but cannot fulfill religious obligations; 3: Someone who is religious and striving to fulfill religious obligations; 4: Someone who is fully devout and fulfills all religious obligations"
Religion practice	To what extent do you fulfill the following religious obligations:	Aşağıda soracağım dinin icaplarını ne kadar yerine getirebiliyorsunuz?"	
Namaz	Performing namaz	Namaz kılmak	0: Never; 1: Sometimes; 2: Regularly
Ramazan	Fasting during Ramazan	Ramazan'da oruç tutmak	0: Never; 1: Sometimes; 2: Regularly

Variable	Description English	Description Turkish	Answer Range
Cuma	For males, going to Friday prayer	Erkekler için Cuma namazına gitmek	0: Never; 1: Sometimes; 2: Regularly; 3: Not Applicable
Cami	Going to mosque/cemevi	Camiye / cemevine gitmek	0: Never; 1: Sometimes; 2: Regularly
Dua	Praying	Dua etmek	0: Never; 1: Sometimes; 2: Regularly
Koran	Reading Koran	Kuran okumak	0: Never; 1: Sometimes; 2: Regularly
Turban	Do you agree or disagree with the following statement: the ban on turban at universities should be kept	Bu cümleyekatlüyor musun: Üniversitelerde türban yasağı olmalıdır	1: Agree; 2: Disagree
Six voluntary association variables	Are you active in one of the following organizations? If so, please indicate whether you are just a member, an active member or in the board	Aşağıdaki organizasyonlardan birinde aktif olarak yer alıyor musunuz? Eğer öyleyse sadece üye misiniz, aktif üye misiniz, yoksa yönetimde mi yer alıyorsunuz? Lütfen belirtiniz.	
Sport	Sport clubs	Spor kulüpleri	0: Nothing; 1: Member; 2: Active member; 3: On the board
Music	Music group	Müzik Grubu	0: Nothing; 1: Member; 2: Active member; 3: On the board
Party	Political party	Politik parti	0: Nothing; 1: Member; 2: Active member; 3: On the board
Interest	Student club or association	Öğrenci kulüp ya da derneği	0: Nothing; 1: Member; 2: Active member; 3: On the board
Non-profit	non-profit institution	Kar amacı gütmeyen kurum	0: Nothing; 1: Member; 2: Active member; 3: On the board
Other	other kind of clubs	diğer kulüpler	0: Nothing; 1: Member; 2: Active member; 3: On the board
No. of memberships	No. of cases where one of the six voluntary association variables is at least 1		
Membership index	Sum of the six voluntary association variables		
Political attitude	Please indicate your political attitude in the following scale	Lütfen aşağıdaki ölçeğe göre politik duruşunuzu belirtin	1: sol; 9: sağ
Experimental variables			
No. known	Number of known subjects in the experimental session		

Variable	Description English	Description Turkish	Answer Range
IAT	Result of the Country Demo Test of the Turkish Implicit Association Test	0: "Bir sonucu varılamayacak kadar çok yanlış cevap verdiniz"; 1: "Türkiye ve Amerika arasında otomatik bir tercih yok ya da tercih çok zayıf"; 2: "Türkiye'ye yönelik zayıf bir otomatik tercih"; 3: "Türkiye'ye yönelik orta kuvvette bir otomatik tercih"; 4: "Türkiye'ye yönelik kuvvette bir otomatik tercih"	
<i>Trust variables</i>			
GSS fair	How often do you think that people would try to take advantage of you if they got a chance, and how often would they try to be fair?	Ne kadar sıklıkla insanlar ellerine bir fırsat geçtiğinde bunu size karşı kullanırlar ve ne kadar sıklıkla dürüst olmaya çalışırlar?	1: Would take advantage of you; 2: Would try to be fair; 1.5: Depends; --: No answer/Don't know
GSS help	Would you say that most of the time people try to be helpful, or that they are mostly just looking out for themselves?;	İnsanların genellikle yardımcı olmaya çalıştığını mı düşünürsünüz yoksa insanların genellikle kendi çıkarlarına ve mutluluklarına göre mi davrandığını düşünürsünüz?	1: Just look out for themselves; 2: Try to be helpful; 1.5: Depends; --: No answer/Don't know
GSS trust	Generally speaking, would you say that people can be trusted or that you can't be too careful in dealing with people?	Genel olarak konuşacak olursak, insanların güvenilir olduğunu mu söylersiniz yoksa güvenilmez olduğunu mu?	1: You can't be too careful; 2: Most people can be trusted; 1.5: Depends; --: No answer/Don't know
GSS index	Normalized sum of de-meaned, normalized and resigned <i>GSS fair</i> , <i>GSS help</i> , and <i>GSS trust</i>		
Door unlocked	How often do you leave your door unlocked?	Ne kadar sıklıkla kapınızı kilitlemiyorsunuz?	1: Never; 2: Rarely; 3: Sometimes; 4: Often; 5: Very often
Lend money	How often do you lend money to friends?	Ne kadar sıklıkla arkadaşlarınıza borç verirsiniz?	1: Once a year or less; 2: Once a month; 3: Once a week; 4: More than once a week
Lend possessions	How often do you lend personal possessions to friends?	Ne kadar sıklıkla değerli eşyalarınıza arkadaşlarına verirsiniz?	1: Once a year or less; 2: Once a month; 3: Once a week; 4: More than once a week
Trusting behavior index	Normalized and resigned sum of normalized <i>Door unlocked</i> , <i>Lend Money</i> , and <i>Lend possessions</i>		
Trustworthiness	Do you agree with the following statement: 'I am trustworthy.'?	Bu ifadeye katılıyor musunuz? Ben güvenilir bir insanım.	1: Disagree strongly; 2: Disagree somewhat; 3: Agree somewhat; 4: Agree strongly
Trust strangers	Do you agree with the following statement: 'You can't count on strangers anymore.'?	Bu ifadeye katılıyor musunuz: Artık yabancılara güvenemezsiniz.	0: More or less agree; 1: More or less disagree