

İSTANBUL BİLGİ UNIVERSITY
INSTITUTE OF GRADUATE PROGRAMS
ECONOMICS PHD

GROUP FAVOURITISM AND SOCIAL EFFICIENCY CONCERNS
EXPERIMENTAL STUDIES

Deren ÇAĞLAYAN

115806003

Advisor: Assoc. Prof. Ayça Ebru GİRİTLİGİL

İSTANBUL

2019

GROUP FAVOURITISM AND SOCIAL EFFICIENCY CONCERNS
EXPERIMENTAL STUDIES

GRUP KAYIRMA DAVRANIŞI VE SOSYAL VERİMLİLİK KAYGILARI
DENEYSEL ÇALIŞMALAR

Deren ÇAĞLAYAN
115806003

Tez Danışmanı : Assoc. Prof. Ayça Ebru GİRİTLİGİL
Jüri Üyesi : Prof. Jean LAINE
Jüri Üyesi : Prof. Türkan Benan ORBAY
Jüri Üyesi : Assoc. Prof. Emin KARAGÖZOĞLU
Jüri Üyesi : Assoc. Prof. Mehmet Yiğit GÜRDAL



İstanbul Bilgi Üniversitesi
Conservatoire National des Arts et Metiers
İstanbul Bilgi Üniversitesi
Bilkent Üniversitesi
Boğaziçi Üniversitesi

Tezin Önyaylandığı Tarih : 02.01.2019
Toplam Sayfa Sayısı : 344

Anahtar Kelimeler (Türkçe)

- 1) Grup Kayırma
- 2) Grup Sapması
- 3) Toplumsal Verimlilik Kaygısı
- 4) Sosyal ve Ekonomik Tercihler
- 5) Tercih İlişkileri
- 6) Nesillerarası Geçirgenlik

Anahtar Kelimeler (İngilizce)

- 1) Group Favouritism
- 2) Group Bias
- 3) Social Efficiency Concerns
- 4) Social and Economic Preferences
- 5) Preference Relations
- 6) Parental Transmission

ACKNOWLEDGEMENTS

Completion of this doctoral dissertation was possible with the support of several contributors. I would like to do hereby acknowledge all of them.

Firstly, I would like to express my sincere gratitude to my advisor Ayça Ebru Gritilgil for the continuous support of my Ph.D. study and related research, for her patience, motivation, and immense knowledge. She has always made herself available to clarify my doubts despite her busy schedules and I consider it as a great opportunity to do my doctoral programme under her guidance. I could not have imagined having a better advisor and mentor for my Ph.D. study.

Besides my advisor, I would like to thank the rest of my thesis committee and jury: Türkan Benan Orbay, Mehmet Yiğit Gürdal, Jean Laine and Emin Karagözoğlu for their insightful comments, support and patience during this period.

This work would not have been possible without the facilities of BELİS and the financial support of Murat Sertel Center for Advanced Economic Studies, İstanbul Bilgi University Scientific Research Grant and Scientific and Technological Research Council of Turkey.

My sincere thanks also go to my colleagues especially to Rabia Zeynep Yurdakul, Deniz Nebioğlu, Fatma Aslan, Gizem Turna, Nedim Okan and Serda Selin Öztürk who have been very kind enough to extend their help at various phases of this research.

I owe a lot to my family, who encouraged and helped me at every stage of my personal and academic life. Special mention goes to my sister, Pınar Çağlayan, who pushed and, then, supported me in every possible way.

Last but not the least, I would like to thank Emre Bilgiç for his almost unbelievable support.

Finally, I want to dedicate this thesis to my grandfather Kamil Çağlayan who has always been a role model for me.

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ABSTRACT

Today it is a well-documented fact that in-group favouritism is ubiquitous in human societies. In the realm of economics, in-group favouritism is perceived to promote economic efficiency through higher levels of trust and cooperation within the group. However, in modern societies within which many groups (defined through race, ethnic background, religion, etc.) co-exist, discrimination and prejudice causes substantial levels of overall social inefficiency. Needless to say, if hostility toward out-groups accompany in-group favouritism, the economic destruction becomes inevitable. Therefore, intergroup relations play an important role in maintaining and sustaining efficiency in a society.

This thesis focuses on the interaction between in-group favouritism and overall social efficiency concern in a resource redistribution context. The thesis is composed of three studies: The first study employs a body of controlled laboratory experiments aiming to investigate the conditions under which in-group favouritism dominates overall social efficiency concerns and suggests a mathematical model of in-group favouring behaviour. The second study in the thesis employs a survey in its aim to detect whether in-group favouritism is related to well-known social and economic preferences, such as altruism, reciprocity, risk and time preferences, etc. The third work is also a survey study that attempts to understand whether in-group favouritism is subject to parental transmission.

The experiments in the first study of this thesis are based on the experimental design in Çağlayan and Giritligil (2016). The relationship between the motivation for in-group favouritism and the concern for social welfare is parametrically analysed through controlled variations of the parameters.

The analysis of results indicate that group favouritism is a strong motivator. Although group effect was weakened in some treatments, none of them succeeded in overcoming group favouritism behaviour. Even under most detrimental conditions, the groups were still favoured against social welfare. In total,

experiment results suggest that participants react to the social outcome, especially to inequality, however, the existence of the group, even in minimal group design, is a strong motivator to overcome social efficiency concerns. Moreover, decision changes analysis indicates that significantly least changed decision is the group favouring option.

The importance of family influence in preference formation and the lack of information on relation of group favouritism behaviour with other social and economic preferences led us to search for methods to gather data from larger sample consists of families. Consequently, besides the experiments explained above, comprehensive surveys consist of social and economic preference questions including an illustration of experiment, are conducted to the families in 2016 and 2017 registration days of Istanbul Bilgi University. With the help of these surveys' analysis, common characteristics of individuals who exhibits socially harmful group favouritism behaviour and in family interaction of the behaviour along with the other preferences are tried to be explored. According to their response to the group favouritism question of the surveys, participants are divided into three groups as Decision 1 takers who are not maximisers, Decision 2 takers who maximise with least social harm and Decision 3 takers who decide to maximize themselves and their groups by causing high social inefficiency. The results of the analysis showed us that non-maximiser participants have significantly higher scores in prosocial behaviours except for inequality aversion and maximisers have significantly higher homo economicus attribute scores. Also, among maximisers, Decision 2 supporters are closer to the rational man assumption of the classical economic theory. Moreover, although no sign of direct group favouritism can be detected in intergenerational links of our data, common characteristics of parents with respect to their children's choices in group favouritism question and, in other way around, common characteristics of children regarding their parents' choices in group favouritism question are reported.

Keywords : Group Favouritism, Group Bias, Social Efficiency Concerns, Social and Economic Preferences, Preference Relations, Parental Transmission

ÖZET

İnsan davranışları sosyal psikoloji, sosyoloji, antropoloji ve biyoloji alanlarında sosyal davranışlar olarak kabul görüyorken, neo-klasik ekonomi teorisinde bağımsız ve dışsal kabul edilir. Fakat deneysel ekonomi literatürü, bu varsayıma dayalı fayda maksimizasyonu modellerinin insanların aldıkları aksiyonların diğerleri üzerindeki olumlu ya da olumsuz etkilerine karşı duydukları hassasiyeti tahminlemekte başarılı olamadığını göstermektedir. Deneysel kanıtlar, günlük hayatta da sıklıkla gözlemlendiği gibi, insanların karar alırken sadece kendi çıkarlarını değil, diğerlerinin de çıkarlarını da değerlendirdiklerini işaret eder.

İnsan, gruplar içinde yaşamını sürdüren türler arasında kabul edilir. Sosyal türlerde karşılıklı fayda sağlayan aktivitelerin yaygın görülmesi ile birlikte, insanlar genetik ilişkiye gerek duymadan geniş ölçekte esnek bir şekilde iş birliği yapabilme yeteneğine sahiptir. Bu yetinin evrimi, davranışsal ve evrimsel bilimler literatüründe kapsamlı olarak ele alınmıştır. İnsan evrimsel dinamikleri açısından bakıldığında, gruplarda çocuk yetiştirme, yiyecek bulma-işleme ve savunma gibi konulardaki iş birliği, grubun doğaya uyum kabiliyeti, diğer gruplarla kaynaklar konusunda rekabet performansı ve sonuç olarak grup bireylerinin hayatta kalması açısından kritik bir rol oynamıştır. (Brewer (1999); Caporael (2007); Darwin (1871))

Günümüzde, grup kayırma davranışının insan topluluklarında yaygın görülmesi iyi belgelenmiş bir gerçektir. Ekonomi alanında, grup kayırma davranışının yüksek güven ve iş birliği doğurması sebebiyle grup içerisinde ekonomik verimliliği arttırıcı etkiye sahip olduğu kanısı yaygındır. Fakat modern toplumlarda çok sayıda grup (farklı etnik köken, farklı ırk, farklı altyapı, farklı din grupları gibi) yan yana yaşamakta, ayrımcılık ve önyargı önemli boyutlarda bir toplumsal verimsizliğe neden olmaktadır. Dış gruplara olan düşmanlığın grup kayırma davranışına eşlik etmesi halinde ekonomik yıkımın da kaçınılmaz hale geldiği aşıkardır. Bu sebeple

gruplar arası ilişkiler toplum içinde verimliliği sağlamak ve sürdürmek açısından ziyadesiyle büyük öneme sahiptir.

Bu tez, grup kayırma davranışının sosyal verimlilik kaygıları ile olan ilişkisini tekrar kaynak dağılımı bağlamında incelemeye odaklanmıştır. Tez, üç çalışmadan oluşmaktadır: İlk çalışma, grup kayırma davranışının sosyal verimlilik kaygısının önüne geçtiği koşulları araştırmak amacıyla yapılan kontrollü laboratuvar çalışmalarını ve grup kayırma davranışının matematiksel modellemesini içerir. Tezdeki ikinci çalışma grup kayırma davranışının fedakârlık, karşılıklılık, risk ve zaman tercihleri vb. gibi iyi bilinen sosyal ve ekonomik tercihler ile ilişkisini yapılan bir anket çalışması aracılığıyla inceler. Üçüncü çalışma da anket çalışmasının çıktılarının grup kayırma davranışının nesiller arası geçirgenliğini sorgulama amaçlı analizini içerir.

Bu tezin ilk çalışmasındaki deneyler Çağlayan & Giritligil (2016) parametrik deney tasarımı temel alınarak oluşturulmuştur. Grup kayırma davranışı ve sosyal varlık kaygısı motivasyonları esnek deney tasarımından faydalanılarak parametrelerin kontrollü varyasyonları ile analiz edilmiştir.

Sonuçlar analiz edildiğinde grup varlığının güçlü bir motivasyon kaynağı olduğu görülmektedir. Grup etkisinin kimi tretmanlarda zayıflamasına rağmen, hiçbir parametre varyasyonu grup kayırma davranışını yok edememiştir. En yıkıcı koşullarda dahi, denekler gruplarını sosyal refaha tercih etmişlerdir. Genel anlamda deney çıktıları, katılımcıların sosyal sonuçlara, özellikle eşitsizliğe, tepki verdiğini işaret etmekte; fakat minimal grup tasarımında dahi grupların varlığının katılımcılara toplumsal verimlilik kaygılarının göz ardı edilmesi için yeterli motivasyonu sağladığı görülmektedir. Ek olarak, karar değişikliği analizinde de en az değiştirilen kararın istatistiksel olarak anlamlı bir farkla grup kayırma kararı olduğu görülmüştür.

Aile etkisinin tercih formasyonundaki önemi ve grup kayırma davranışının diğer sosyal ve ekonomik tercihler ile olan ilişkisi konusunda literatürdeki eksiklik bizi aileleri de içeren daha geniş örneklemden veri toplamak üzere yöntem arayışına

yöneltti. Dolayısıyla, yukarıda anlatılan deneylerin yanı sıra, ailelere İstanbul Bilgi Üniversitesi 2016 ve 2017 yılları kayıt dönemlerinde sosyal ve ekonomik tercihleri konu alan sorular içeren kapsamlı bir anket çalışması uygulanmıştır. Bu anketlerin analizi ile topluma zararlı grup kayırma davranışını gösteren bireylerin ortak özellikleri ve bu davranışın diğer davranışlar ile birlikte aile içi etkileşimi keşfedilmeye çalışılmıştır. Katılımcılar, anketlerdeki grup kayırma davranışı soruları cevaplarına göre Karar 1'i tercih edenler; kendi faydasını maksimize etmeyenler, Karar 2'yi tercih edenler; en az toplumsal zarar ile kendi faydalarını maksimize edenler ve Karar 3'ü seçerek, kendilerinin ve gruplarının faydalarını maksimize edip yüksek oranda toplumsal verimsizlik oluşturanlar olarak üçe ayrılmıştır. Analizlerin sonuçları göstermiştir ki, maksimize etmeyen katılımcılar, eşitsizlikten kaçınma dışındaki prososyal davranışlarda ve maksimize edenler ise homoekonomikus öznitelik skorlarında istatistiksel olarak anlamlı seviyede daha yüksek sonuçlar almışlardır. Ayrıca, maksimize edenler arasında Karar 2'yi tercih edenlerin klasik ekonomi teorisinin rasyonel birey varsayımına daha yakın olduğu görülmüştür. Ek olarak, verimizin nesillerarası bağlantılarında grup kayırma davranışının doğrudan geçirgenliğine işaret eden bir bulgu olmamasına karşın, ebeveynlerin çocuklarının grup kayırma sorularına verdikleri cevaplara göre ortak karakteristik özellikleri ve, çocukların ebeveynlerinin grup kayırma sorularına verdiği cevaplara göre ortak özellikleri raporlanmıştır.

Anahtar Kelimeler: Grup Kayırma, Grup Sapması, Toplumsal Verimlilik Kaygısı, Sosyal ve Ekonomik Tercihler, Tercih İlişkileri, Nesillerarası Geçirgenlik

INTRODUCTION

Human behaviour is perceived as a social behaviour in social psychology, sociology, anthropology and biology whereas, in neo-classical economic theory, it is assumed to be independent and exogeneous. However, experimental economics literature shows that the utility maximization models based on this assumption fail to predict the substantial sensitivity of people's actions to how others benefit or are hurt by the action taken. That is, as often observed in daily life, experimental evidence indicates that people possess other-regarding and not only own-regarding considerations. There has been a surge in economics research aiming to understand the domains and boundaries of other-regarding behaviour as well as the mechanisms through which its extent and direction (altruistic, reciprocal, and cooperative vs. hostile) is determined. Indeed, as early as in 1759, in his celebrated work *The Theory of Moral Sentiments*, Adam Smith states that “human motivation arises as an integral part of our sociality”, and articulates a process, namely “conduct”, whereby individuals become socially effective in their relations with others. (See Smith (2018) for a profound review of human conduct as described by Adam Smith, and its criticism of the “fix” that has been developed so far by behavioural economics to resolve the prediction failures of the traditional theory.)

Humans are among the social species who live in groups. While engaging in mutually beneficial activities is common in social species, humans possess the exceptional ability to cooperate flexibly at a large scale with non-genetically related others. The origins and the evolution of this ability have been thoroughly discussed in behavioral and evolutionary sciences literature. (For example, see Axelrod and Hamilton (1981), Bowles and Gintis (2011), Frank (1998), Hamilton (1964), Henrich and Henrich (2007), Kappeler and van Schaik (2006), Lewis and Bates (2010), Trivers (1972), Wilson (1979)). From the perspective of human evolutionary dynamics, the level of cooperation within a group in child rearing,

finding and processing food, and defence played a critical role for the group's fitness in nature, performance in conflicts with other groups over resources and, as a result, the probability for group members' survival. (Brewer (1999); Caporael (2007); Darwin (1871)). This is acknowledged as a fundamental reason behind the extraordinary group-mindedness of humans, favouring in-group members over out-group members (Yamagishi et al. (1999), Yamagishi and Mifune (2008)). Sustained by and co-evolved with in-group favouritism intergroup relations which shaped the behavioural differences between groups became a dynamic evolutionary force.

Today it is a well-documented fact that in-group favouritism is ubiquitous in human societies. (For overviews, see Bernhard et al. (2006), Dovidio et al. (2008), Fazio et al. (1995), Hewstone et al. (2002), Kinzler et al. (2007), Kunda (1999), Yamagishi et al. (1999) and for a recent meta study, see Fischer and Derham (2016)). As a "mixed blessing" (Balliet et al. (2014)), in-group favouritism, on the one hand, has facilitated human groups to evolve from small kin-based entities to large and strong societies. Together with other distinctive characteristics of human kind, such as institution-building and cultural transmission of learned behaviour, in-group favouritism promoting in-group cooperation has played a key role in human development. (See Bowles and Gintis (2011) for a detailed discussion.) On the other hand, intergroup conflicts that are often fuelled by in-group favouritism have caused persistent inequalities, segregation, discriminations over race, ethnic background, religion, gender, etc., and even genocides and wars, the collective shames of human history. In-group favouritism, a yin and yang concept, appears to be at the heart of the greatest constructive successes and destructive failures of human kind. In the realm of economics, in-group favouritism is perceived to promote economic efficiency through higher levels of trust and cooperation within the group. However, in modern societies within which many groups (defined through race, ethnic background, religion, etc.) co-exist, discrimination and prejudice causes substantial levels of overall social inefficiency. Needless to say, if hostility toward out-groups accompany in-group favouritism, the economic destruction becomes inevitable. Therefore, intergroup relations play an important role in maintaining and sustaining efficiency in a society.

This thesis focuses on the interaction between in-group favouritism and overall social efficiency concern in a resource redistribution context. The thesis is composed of three studies: The first study employs a body of controlled laboratory experiments aiming to investigate the conditions under which in-group favouritism dominates overall social efficiency concerns and suggests a mathematical model of in-group favouring behavior. The second study in the thesis employs a survey in its aim to detect whether in-group favouritism is related to well-known social and economic preferences, such as altruism, reciprocity, risk and time preferences, etc. The third work is also a survey study that attempts to understand whether in-group favouritism is subject to parental transmission.

A vast literature in the second half of the twentieth century has been devoted to understanding the domains in and mechanisms through which in-group favoritism emerges, gets structured, strengthened, sustained, diminished, and interacts with intergroup relations. There are two competing hypotheses on the roots of in-group favouritism, which have given direction to most of this research: Bounded generalized reciprocity approach (Yamagishi et al. (1999), Yamagishi and Mifune (2008)) and social identity approach (Tajfel and Turner (1979), Turner et al., (1987)).

Bounded generalised reciprocity is an evolutionary approach which assumes that human groups possess a generalized network through which indirect reciprocity is facilitated. This approach presumes that individuals expect long-term benefits not directly from the ones that they have helped, but indirectly from other in-group members through earned reputation of being cooperative. Hence, individuals are considered to behave so as to maintain cooperative reputation in order to prevent costs of exclusion from the group. According to this approach, humans are evolved to have generalized trust in in-group members' intentions for cooperation and hence, cues of group membership promote in-group trust, reputational concerns and cooperation, even in the absence of an explicit outgroup and without any prospect for direct reciprocity.

The other approach, social identity theory, holds a social psychological perspective. It posits that individuals endeavour for social identities to maintain self-esteem. According to this theory, social identity has three components: The first component is categorization which is a process of putting people into various categories (based on objective or subjective criteria, e.g. ethnic background, gender, occupation, religion, nationality, etc.) The second component is identification through which people associate themselves with certain groups and regard the characteristics of that groups as representing part of themselves. The third component is comparison, a mechanism through which people compare their groups with other groups leading to a favourable bias toward own group. Given this, unlike bounded generalized reciprocity approach, social identity theory requires intergroup comparisons and the presence of a salient outgroup for in-group favouritism to emerge. (see Balliet et al. (2014)).

The social psychology literature on social identity is massive. Tajfel and Turner (1986), Hogg (2001) and Hornsey (2008) offer compact surveys on its main methodologies and findings. Haslam (2004) overviews the studies which use social identity theory to analyse a broad range of issues in social sciences, such as social competition, prejudice, motivation and commitment, collective action, etc.

Although in-group favouritism is revealed in the earlier classic studies in social psychology (e.g., Allport (1954), Sherif et al. (1961), Sumner (1906)), Tajfel et al. (1971) is considered as a path-breaking work since it demonstrates that in-group favoritism can emerge even in a very minimal setting where group identities are induced based on artwork preferences. Tajfel and Turner ((1979), (1986)) introduce Minimal Group Paradigm as an experimental methodology to test social identity theory. According to this paradigm, groups are minimal if individuals (i) are randomly assigned to groups under strict anonymity, (ii) are not allowed to communicate, and (iii) have no embedded interest in serving their group.

Social identity theory was formally incorporated into economic theory by Akerlof and Kranton (2000). Associating identity with social categories and expected respective behaviours, this seminal work introduces a neoclassical utility function

where (given or chosen) identity is perceived as a norm for behaviour. That is, conforming actions to this norm give rise to utility gain whereas deviations from it yields disutility. Norms and prescriptions of behaviour to conform to these norms lead to different overall outcomes than predicted by pure individualistic models of choice. The canonical utility model introduced by Akerlof and Kranton (2000) allows rational agents to make sub-optimal choices.

As an extension of the Akerlof and Kranton (2000) approach, Benjamin et al. (2010) use a specific functional form for utility as it employs the idea of one specific social categorization to be primed with a given strength. Defining an optimal weighted average of the preferred action with and without identity, this model indicates that an arousal of identity triggers preference assimilation of only those highly identified with that identity.

Battu et al. (2007) and Battu and Zenou (2010) define an individual's utility function as a set of actions based on binary events and the intensity of its identity. Introducing the psychological cost and the probability of an interaction with people of different groups, these models offer an explanation for the persistence of identity based on the interaction of parental and peer influence.

Shayo (2009) and Klor and Shayo (2010) consider identity as a component to be added in the individual utility function through indirect mechanism induced by status seeking. As an important extension of Akerlof and Kranton (2000), Shayo (2009) includes a theory of the endogenous determination of identities in equilibrium.

In the utility model introduced by Bénabou and Tirole (2007), the identity pay offs, the categorical prescriptions in Akerlof and Kranton (2000) and people's cognitive costs of their actions are endogeneously determined. This type of modelling is regarded as an important step towards understanding how individuals make implicit investment decisions based on tradeoffs about the relative values of different dimensions of their self-identity. Fang and Loury (2005) also endogenize identity

through a two-stage approach where individuals' identity choices imply their social networks.

For decades, social psychologists have been running experimental studies on in-group favouritism and intergroup relations. (See, for example, the meta-analyses by Saucier et al. (2005), Bettencourt et al. (2001), Aberson et al. (2000) and Robbins and Krueger (2005) for specific phenomena within the topic) However, there is a recent yet quickly growing literature in experimental economics to study in-group favouritism and intergroup relations. Experimental studies by economists differ in focus and methodology from the ones run by social psychologists. Economists focus on economic behaviour and, unlike psychologists, they incentivize subjects and do not deceive them.

In experimental economics literature, some studies use minimal group paradigm to induce identities to subjects, That is, identities that do not exist prior to the experiment are generated by the researchers (e.g., Chen & Chen (2011), Chen & Li (2009), Eckel & Grossman (2005), Güth et al. (2009), Harris et al (2015), Zizzo (2011), etc.). Some studies, on the other hand, use natural identities. For example, Guillen and Ji (2011)), Kim et al. (2017), Boarini et al. (2009) use national identities whereas Burns (2004), Ferraro & Cummings (2007), Haile et al. (2006) ethnic identities. There are also studies that use religious identity (e.g., Chuah et al. (2007), etc.) and gender (e.g., Croson et al . (2008), Slonim and Guillen (2010), etc.). Lane (2016) presents a meta-analysis which concludes that discrimination is very strong among the socially or geographically distinct groups, and is relatively weak when groups are formed based on ethnicity or nationality. Interestingly, relatively strong discrimination is detected in experiments using artificially-induced group identities. Several explanations for this finding can be discussed: It could be argued that, due mostly to globalisation, ethnic and national identities are not sufficiently strong to feed discrimination. Or, it is very likely the case that today individuals identify themselves with more than one social group in varying weights. On the other hand, it is also a fact that young people identify themselves through subcultures based on fashion and music tastes which, in fact, do not induce preferences so different from

the apparently arbitrary minimal grouping. Another explanation may be that subjects in ethnic and national identity experiments are trying to exhibit 'politically correct' behaviour. However, it should not be overlooked that minimal group setting might promote experimenter demand effect to exhibit discriminating behavior. (See e.g. (Zizzo D. J., 2010)). In order to ensure external validity, there is surely a need for economics experiments designed to directly compare the effects of different types of group identity.

The decision-making tasks employed by experimental economists to examine in-group favouritism and intergroup relations vary across the literature. Among the studies that employ the dictator game, some find in-group favouritism (e.g., Ben-Ner et al. (2009), etc.) while some others do not (e.g., Lei and Vesely (2009), etc.). Another task used by the experimental economists to study intergroup relations is the trust game. There is again a mixed evidence; some studies show that participants give more money to ingroup compared to outgroup trustees (e.g., Bernhard et al. (2006)), Fershtman & Gneezy (1999), Hargreaves Heap et al. (2009), Ioannou et al. (2012), etc.), and some other studies report no evidence (e.g., Güth et al. (2008)). In experimental economics literature, intergroup relations are also examined through social dilemma games like the prisoner's dilemma game (e.g., Charness et al (2007), Goette et al. (2012), Guala et al. (2013)) and public goods games (e.g., De Cremer and Van Vugt (2002), Eckel and Grossman (2005) Winterich et al . (2009), Most of the studies using social dilemmas find that people cooperate more with ingroup than with outgroup members.

Using a large range and number of experimental studies from economics and social psychology literature, Balliot et al (2014) offers an important meta-analysis on the role of in-favoritism for cooperation. It concludes that presence of an out-group is not necessary for ingroup favouritism in cooperation. It also finds that, in social dilemma games where there is substantial outcome interdependence, in-group favouritism gets strengthened. This study also presents a very profound comparative analysis of the experimental results in terms of the support they

provide for the two major hypotheses in the literature on the roots of in-group favouritism, i.e., bounded generalized reciprocity and social identity.

Economic research suggests that discrimination, segregation and intergroup conflicts are sources of economic inefficiency. For example, the economic analysis of growth emphasizes that the degree of fractionalization of a country negatively affects its growth rate. (Easterly and Levine (1997), Alesina et al. (2003)). There are earlier ideas in the literature about the negative influence of inequality and social conflict on growth. (Persson and Tabellini (1994), Benhabib and Rustichini (1996). Since Becker (1958), labor market discrimination is regarded as a potential source of inferior labor market outcomes since it causes misallocation of labor. (See Neumark (2018) for a broad survey of experimental studies on the existence of labor discrimination.) Kinkingninhou-Médagbé et al. (2010) highlights gender discrimination and its impact on income, productivity, and technical efficiency. Mutz and Kim (2017) study the negative impact of in-group favouritism on trade which leads to maximising in-group well-being rather than total gains from trade.

To our knowledge, Çağlayan and Giritligil (2016) is the first study in the literature that aims to experimentally investigate whether in-group favouritism is bounded with concerns of social efficiency. The experiments in the first study of this thesis are based on the experimental design in Çağlayan and Giritligil (2016). The subjects are anonymously and randomly separated into groups while they are equally endowed. A randomly designated decision-maker is asked to decide whether to redistribute predetermined amounts of individual endowments. The decision-maker receives a fixed bonus regardless of the decision she takes. There is a cost associated with redistribution, i.e., a fixed portion of the redistributed endowment vanishes. The decision-maker is given three options: not to make any redistribution (Decision 1), transferring from her in-group members to herself (Decision 2), and transferring from outgroup members to in-group members including herself (Decision 3). The resulting payoff of the decision-maker is always higher than the rest of the subjects because of the bonus she receives. Choosing Decision 1 or Decision 2 gives her equally higher payoff than taking Decision 1. On the other hand, Decision 3 leads

to higher amounts to vanish as redistributed, therefore, higher loss of efficiency. The relationship between the motivation for in-group favouritism and the concern for social welfare is parametrically analysed through controlled variations of the amount of bonus given to the decision-maker, the percentage of the initial endowments to be redistributed and the portion of the transfers to be destroyed. Different experimental treatments are designed to accommodate various values of these parameters. Moreover, each treatment is backed with control runs in which subjects are not separated into groups, and a random draw is used to determine the subjects to and from whom transfers are to be made. The analysis of results indicate that group favouritism is a strong motivator, even in minimal group design, and can be weakened by social outcomes suggesting that people, somewhere in deep down, are sensitive to social efficiency.

There have been plenty of experimental studies focusing on younger people's preferences suggesting that preferences have vital importance in economic and social outcomes. For example, Sutter et al. (2010) presents risk, ambiguity attitudes, and time preferences of young people depending of the experiments and surveys. The study points out inter-preference relations along with other outcomes as that more risk averse participants are more patient, and children that are more patient have higher math scores. Moreover, time preferences of children are correlated with saving preferences, health related behaviours like smoking, drinking alcohol, even with body-mass index. Another study (Golsteyn, Lindahl, & Grönqvist, (2013)) reports that impatient children are less successful in educational life, earn less income in average and have higher risk of unemployment, obesity and teenage motherhood by Swedish longitudinal (over five decades) data set.

Considering the serious lifetime outcomes of preferences, the source of the preferences becomes a major question. Some possible explanations are proposed including culture, social network and family. Consequently, there have been lots of studies to explain formation of preferences. Hugh-Jones and Ooi (2017) show that adolescents learn social norms from each other by combining their observation to form global social norms, Pichler (2010) claims children derive preference from

actions of adults, Bester and Güth (1998) model the evolutionary stability of altruism, Bisin and Verdier (2001) also present a model of preference formation by endogenous cultural transmission, Verdier and Zenou (2015) model the role of cultural leaders. However, most popular explanation is intergenerational parental transmission.

Parental influence is examined in various contexts; university grade attainment (Delaney, Harmon, & Redmond, (2011)), values (Pietras & Fryt, 2015), environmental attitudes (Litina, Moriconi, & Zanaj, (2015)), housing preferences (Lux, et al., (2018)) and even in music, film, art taste (Wel, (January 1994)). Preference transmission is one of favourite topics of parental influence. Although there are some examples of theoretical works as Adriani and Sonderegger (2009) which proposes a theoretical model of prosocial preference transmission, and Zhang and Ikeda (2016) which models the relation of parents' altruism with children's habit formation, most of the studies are empirical analysis of survey data. Albanese et al. (2016) investigates transmission of risk, time and trust preferences in families with the help of data from 2010 wave of the Bank Italy's Survey on Household Income and Wealth and points out the importance of parent socialization in transmission, the same results are found in the German Socio-Economic Panel Study (Zumbuhl, Dohmen, & Pfann, (2013)). Additionally, Alan et al. (2017) report high correlation of risk preferences of daughters and mothers where maternal involvement is an important indicator. Similarly, van der Pol and Brown (2015) state the significant relationship between parents' and children's risk and time preferences along with some gender differences by data from annual household survey of Australia. Furthermore, Dohmen et al. (2012) show the high correlation between risk and trust attitudes of parents and children via the German Socio-Economic Panel Study. In addition, Luc Arrondel (2009), interpreting data of "Lifestyles & Savings" survey, states that although risk and time preferences are correlated, the correlation is insufficient to explain transmission of intergenerational wealth inequalities. Moreover, Maria De Paola's (2012) study reveals the relation of children's risk preference with their father's employment type. Another study (Hadjar, Boehnke, Knafo-Noam, & Möllering, (2012)) focuses

on immigrant families and detects high intergenerational value similarities, which are interpreted as a sign of low social integration. Despite the richness of transmission literature, to our knowledge, there is not such a study that examine parental transmission of group bias.

The importance of family influence in preference formation and the lack of information on relation of group favouritism behaviour with other social and economic preferences led us to search for methods to gather data from larger sample consists of families. Consequently, besides the experiments explained above, comprehensive surveys consist of social and economic preference questions including an illustration of experiment, are conducted to the families in 2016 and 2017 registration days of Istanbul Bilgi University. With the help of these surveys' analysis, common characteristics of individuals who exhibits socially harmful group favouritism behaviour and in family interaction of the behaviour along with the other preferences are tried to be explored. According to their response to the group favouritism question of the surveys, participants are divided into three groups as Decision 1 takers who are not maximisers, Decision 2 takers who maximise with least social harm and Decision 3 takers who decide to maximize themselves and their groups by causing high social inefficiency. The results of the analysis showed us that non-maximiser participants have significantly higher scores in prosocial behaviours except for inequality aversion and maximisers have significantly higher homo economicus attribute scores. Also, among maximisers, Decision 2 supporters are closer to the rational man assumption of the classical economic theory. Moreover, although no sign of direct group favouritism can be detected in intergenerational links of our data, common characteristics of parents with respect to their children's choices in group favouritism question and, in other way around, common characteristics of children regarding their parents' choices in group favouritism question are reported.

The rest of the thesis is organized as follows; detailed designs and implementations are given in first chapter, in second chapter results are presented and third chapter concludes.

1 DESIGN AND IMPLEMENTATION

This study consists of a series of experiments and two very rich surveys which also contain group favouritism questions that are the illustrations of the experiments' baseline and some of the other treatments along with the questions aim to measure social and economic preferences as altruism, trust, positive and negative reciprocity, risk, patience, inequality aversion, environmental attitude, and homo economicus attribute. In this part, the designs and implementations of these experiments and surveys are presented in detail.

1.1 LABORATORY EXPERIMENTS

In this part, the design of the experiments is given in details following by the implementation and basic descriptive statistics.

1.1.1 Design of Experiments

The designs of the experiments are derived from the parametric experimental design of our former study, Çağlayan and Giritligil (2016). In that study, the existence of the socially harmful group favouritism behaviour is shown via an experimental design which let us create various social outcomes with the help of its parametric structure. In this part, the design of the experiment and the parameter settings we used are explained in detail along with the social outcomes in different perspectives.

1.1.1.1 Parametric Design

For the purpose of observing group favouritism behaviour, a society consists of groups is created in the laboratory for each session. Moreover, the groups are formed by arbitrary assignments and have the same number of members to avoid externalities. The participants are given an equal amount of initial endowment and are asked to choose between three redistribution options where two of them provide same ending endowment for the decision maker with different social outcomes and the other provides lower ending endowment without causing any social inefficiency.

More specifically, the decision maker can decide to transfer from her/his own group to herself/himself or transfer from other groups' members to her/his group, or she/he can decide not to transfer from anyone. Only in case of not transfer decision, the decision maker does not get any extra points from other participants. In both other alternatives, the decision maker gets higher payoffs by the addition of the transferred amounts. However, the transfer procedure is a costly process, and a known percentage of the transferred amount vanishes creating social inefficiency. Although the additions to the decision maker's endowment in results of the two options are equal, since the transfer from other groups' member decision causes more transferred amount, the social costs of the options are not equal.

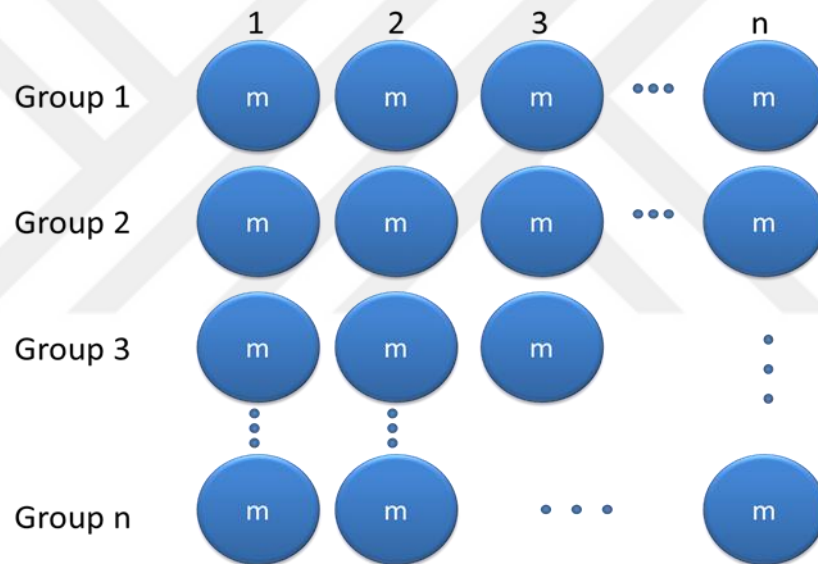
The social costs of the decisions depend on some parameter values; the number of groups, number of the members in each group, transferred amount from each participant, and the percentage of the inefficiency. The ending endowment calculation additionally requires the amount of initial endowment and the amount of the bonus which should be given to the decision maker to ensure that she/he will get the highest payoff at the end of the period, independent from which decision is chosen.

According to the design, the number of participants in a session should be equal to n^2 where n is the number of members in a group and the number of groups in a

session. By this property, there are always $(n-1)$ in-group members for each of the participants and $n*(n-1)$ out-group members for each of the groups which mean $(n-1)$ out-group members per each of the group's members. Thus, transferring from in-group members and transferring from out-group members and distribute evenly among the group members yields the same amount added for the decision maker.

The participants are given an equal amount of initial endowments (m) at the beginning of the session. The starting condition of the formed society in a session is illustrated below in Figure 1.1.

Figure 1.1 Initial endowment distribution of parametric design.



Then a decision maker is chosen among the participants to set which of the redistribution options will be implemented. The redistribution options are stated as three decisions:

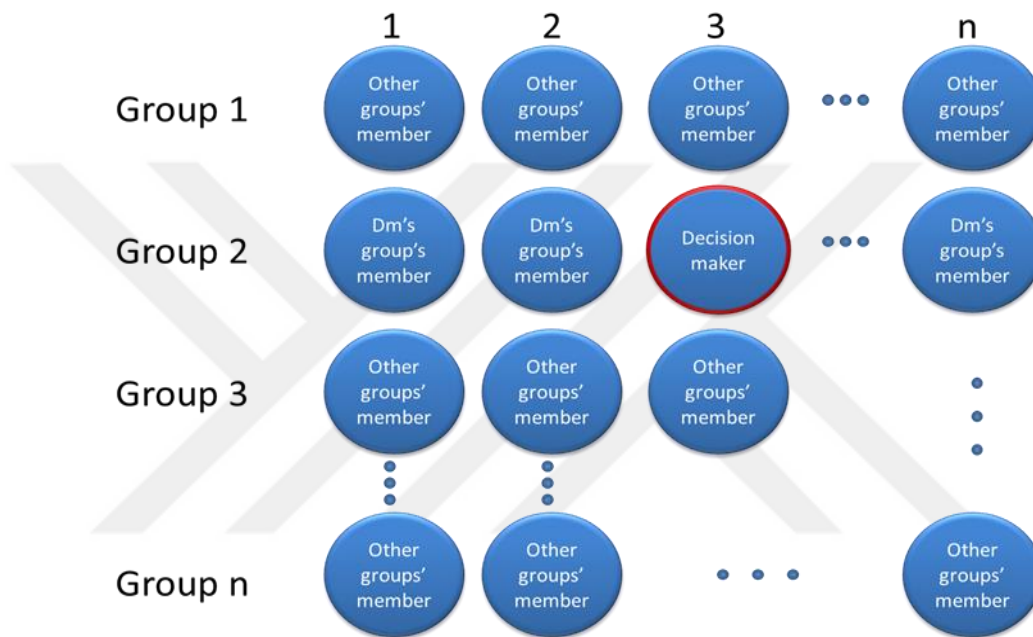
Decision 1 : Do not make any endowment transfer.

Decision 2 : Transfer some of my group's members' endowments to me.

Decision 3 : Transfer some of the other groups' members' endowments to my group and distribute evenly among my group's members including me.

For a random decision maker, the society is classified as a decision maker, decision maker's group members, and other groups' members which can be seen in Figure 1.2.

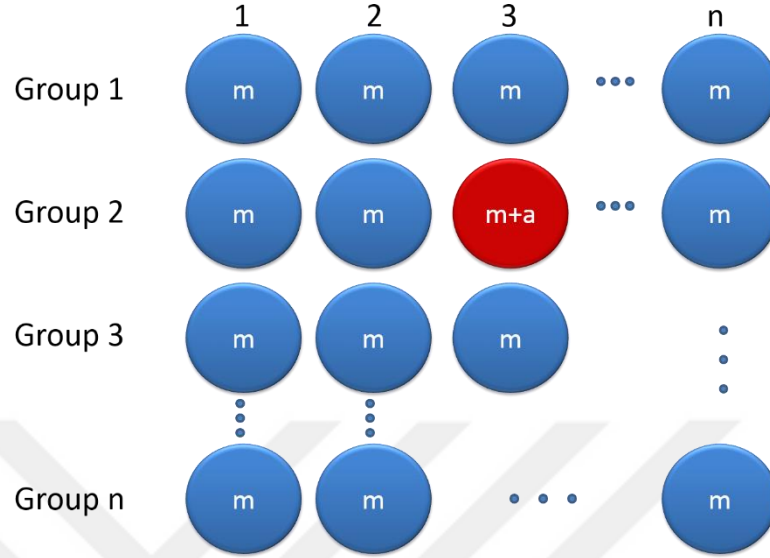
Figure 1.2 Decision maker, decision maker's group members and other groups' members.



After decision maker selection, a pre-determined amount of points is given to the decision maker as a bonus, and her/his decision on redistribution is implemented.

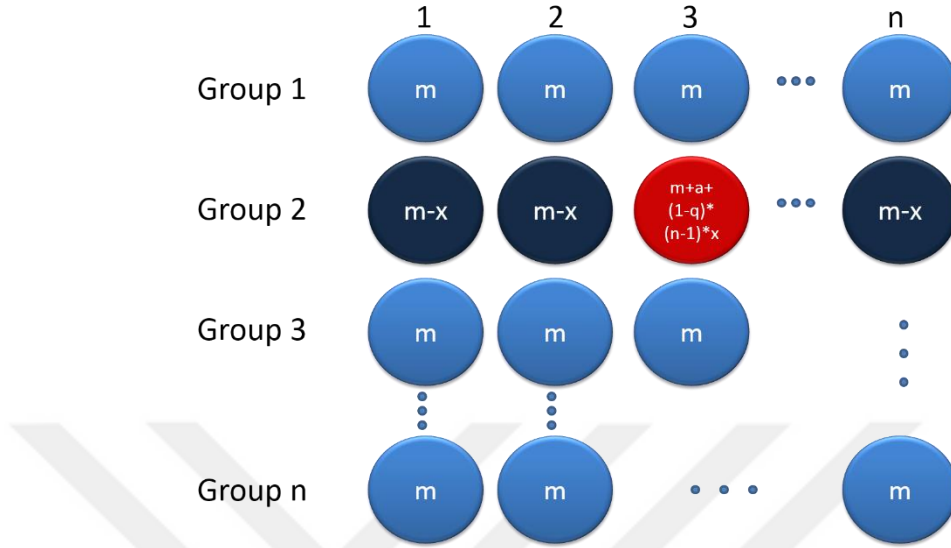
If the decision maker chooses “Decision 1: Do not make any endowment transfer”, there will not be any endowment transfer. Therefore, the only change in the endowments will be the bonus which is added to the decision maker's endowment. The decision maker's group members and other groups' member will preserve their initial endowment (m) where the decision maker will get her/his initial endowment and the bonus ($m+a$). The ending endowment distribution of Decision 1 is given in Figure 1.3.

Figure 1.3 Ending endowment distribution of decision 1 of parametric design.



If the decision maker's choice is "Decision 2: Transfer some of my group's members' endowments to me", a predetermined amount of points (x) will be transferred from each of the decision maker's group members. Since the number of the members in a group is (n), there are ($n-1$) decision maker's group members, so the total transferred amount will be $[(n-1)*x]$. As mentioned before, a certain percentage (q) of the transferred amount will vanish creating inefficiency, and the rest will be added to the decision maker's endowment. Therefore, the social cost of this decision will be $[q*(n-1)*x]$, and the addition to the decision maker's endowment will be $[(1-q)*(n-1)*x]$. Consequently, the ending endowment of the decision maker will be the sum of her/his initial endowment, bonus and the addition $[m+a+(1-q)*(n-1)*x]$, her/his group members' endowments will be reduced by cut-off amount (x) and become ($m-x$) and the other groups' members' endowments will remain as their initial endowments (m). The ending endowment distribution of Decision 2 is given in Figure 1.4.

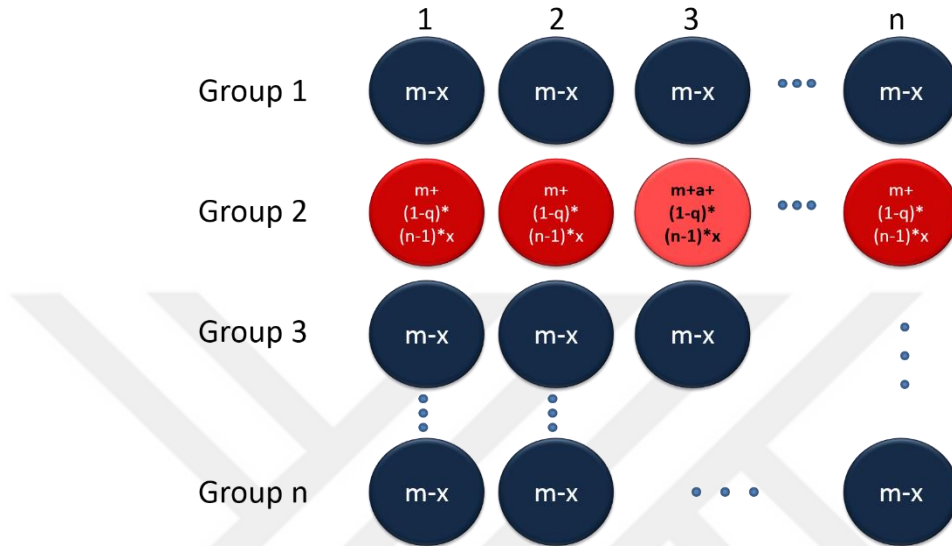
Figure 1.4 Ending endowment distribution of Decision 2 of parametric design.



Lastly, if the decision maker chooses “Decision 3 : Transfer some of the other groups’ members’ endowments to my group and distribute evenly among my group’s members including me”, then the predetermined value (x) will be transfer from each of the other groups’ members. Since there are $(n-1)$ groups aside from the decision maker’s group with (n) members in each, $[(n-1)*n*x]$ amount of endowment will be transferred from other groups’ members to the decision maker’s group in total. Inefficiency coefficient (q) proportion of the total transferred amount $[q*(n-1)*n*x]$ will vanish again as social inefficiency and the rest $[(1-q)*(n-1)*n*x]$ will be divided into the number of the decision maker’s group members (n) to distribute evenly among the decision maker’s group members including the decision maker herself/himself. As a result of this, $[(1-q)*(n-1)*x]$ amount of endowment will be added to each of the decision maker’s group members’ endowments. The ending endowment distribution of the decision will be the sum of her/his initial endowment, bonus and the addition $[m+a+(1-q)*(n-1)*x]$ for the decision maker, the sum of the initial endowment and the addition $[m+(1-q)*(n-1)*x]$ for the decision maker’s group members, and the difference of the initial

endowment and the cut-off amount ($m-x$) for the other groups' members. The distribution's illustration can be seen in Figure 1.5.

Figure 1.5 Ending endowment distribution of Decision 3 of parametric design.



The summary of the parameters used in the design is given in Table 1.1 with some explanations.

Table 1.1 Parameter descriptions.

Parameter	Property	Explanation
n	$n \geq 3$	Number of groups and number of subjects in a group
m	-	Initial endowment
x	$0 < x \leq m$	Cut-off amount
q	$0 < q \leq 1$	Inefficiency coefficient
a	$a > 0$	Bonus amount

- In real life examples, most of the social identities have more than two categories and, an unjustifiable hostility behaviour can be observed frequently in two categories cases. In order to simulate society better and avoid from possible polarisation or rivalry, the number of groups (n) should be at least 3. Additionally, groups of two have the risk of being perceived as a partnership rather than a group formation (Harris, Herrmann, & Kontoleon, 2009), that is why the number of members in a group (n) also must be at least 3.

- Initial endowments (m) are given by the experimenter to bypass any externality that can be sourced from an endowment building stage.
- Cut-off amount (x) can take any positive value up to the initial endowment enabling the experimenter to set the effect of the maximising decisions in a range from insignificant to destructive.
- Inefficiency coefficient (q) indicates the proportion of vanishment in transferred endowments so that it can take values up to 1.
- Bonus (a) is used to ensure that the decision maker will have the highest payoff of the session independent of the decision she/he takes. Without bonus Decision 1 yields equal payoff for all participants, Decision 3 yields higher but equal payoffs for decision maker's group members including decision maker herself/himself, and only in Decision 2 the decision maker can have the highest amount alone. In order to avoid this difference between decisions, bonus amount should be higher than 0.

Table 1.2 Calculations of decision outcomes.

	Decision 1	Decision 2	Decision 3
Total cutoff	0	$(n-1)*x$	$n*(n-1)*x$
Total inefficiency	0	$(n-1)*x*q$	$n*(n-1)*x*q$
Addition to decision maker	a	$(1-q)*(n-1)*x+a$	$(1-q)*(n-1)*x+a$
Decision maker's final endowment	$m+a$	$m+(1-q)*(n-1)*x+a$	$m+(1-q)*(n-1)*x+a$
Decision maker's group's members' final endowment	m	$m-x$	$m+(1-q)*(n-1)*x$
Other groups' members' final endowment	m	m	$m-x$

In total, the decision maker should choose between one not self-maximising and two self-maximising decision options with different social consequences. In Table 1.2, the calculations for the results of the decision options are given.

1.1.1.2 Control Treatments

Moreover, in order to be able to distinguish group favouritism behaviour from random maximisation behaviour or choices for some unforeseen reasons, we also designed control treatments using the same parametric design except for the group formation. In other words, a society consists of n^2 individuals is created in the laboratory. The participants are given an equal amount of initial endowment, m , and are asked to choose between three redistribution options where two of them provide same ending endowment for the decision maker with different social outcomes and the other provides lower ending endowment without causing any social inefficiency, just like the main treatments. However, the decisions become;

Decision 1 : Do not make any endowment transfer.

Decision 2 : Transfer some endowments of $(n-1)$ individuals to me.

Decision 3 : Transfer endowments of $(n-1)*n$ individuals to me and the other $(n-1)$ individuals left, and distribute evenly among us.

Since the formation of groups is random in main treatments, these decision options yield the same ending endowment distributions; the only difference is that they are not labelled in groups. Consequently, any significant difference between choice distributions of main and control treatments can be claimed as a group effect that sourced from the minimal group formation or directly labelling. Moreover, this difference can be interpreted as a sign of much stronger group favouritism behaviour in natural groups. That is why each treatment is backed by its control treatments and analysed accordingly.

1.1.1.3 Treatments

In order to analyse the relation between group favouritism and social efficiency concerns, different parameter settings that will cause different social outcomes are

used. The baseline treatment has the same parameter setting as in Çağlayan and Giritligil (2016); number of groups and number of subjects in a group (n) is 3, initial endowment (m) is 100 points, cut-off amount (x) is 10 points, inefficiency coefficient (q) is 50%, and bonus (a) is 10 points. Since the experiments in the original study took place in 2014, the exchange rate is updated from 0.2 TL/points to 0.3 TL/points.

The study consists of seven treatments including the baseline treatment. The first two treatments differ from baseline by inefficiency coefficient, q. In Treatment 1 and 2, the social inefficiency coefficient is decreased to 0.25 and increased to 0.75 respectively. Treatment 3 and 4 varies by cut-off amount, x. In Treatment 3 cut-off amount becomes 40 points, while it is 5 points in Treatment 4. Lastly, in Treatment 5 and Treatment 6 only bonus amount has changed and take values of 40 points and 5 points respectively. The parameter values of treatments are given in Table 1.3.

Table 1.3 Treatments with their parameter values.

	Baseline	T1	T2	T3	T4	T5	T6
n	3	3	3	3	3	3	3
m	100	100	100	100	100	100	100
x	10	10	10	40	5	10	10
q	0.5	0.25	0.75	0.5	0.5	0.5	0.5
a	10	10	10	10	10	40	5
Fx	0.3	0.3	0.3	0.3	0.3	0.3	0.3

1.1.1.4 Social Outcomes of Alternative Parameter Settings

In order to measure the social consequences of alternative distributions, we can use different social welfare concepts; utilitarian, egalitarian, Rawlsian and Bernoulli-Nash.

1.1.1.4.1 Utilitarian

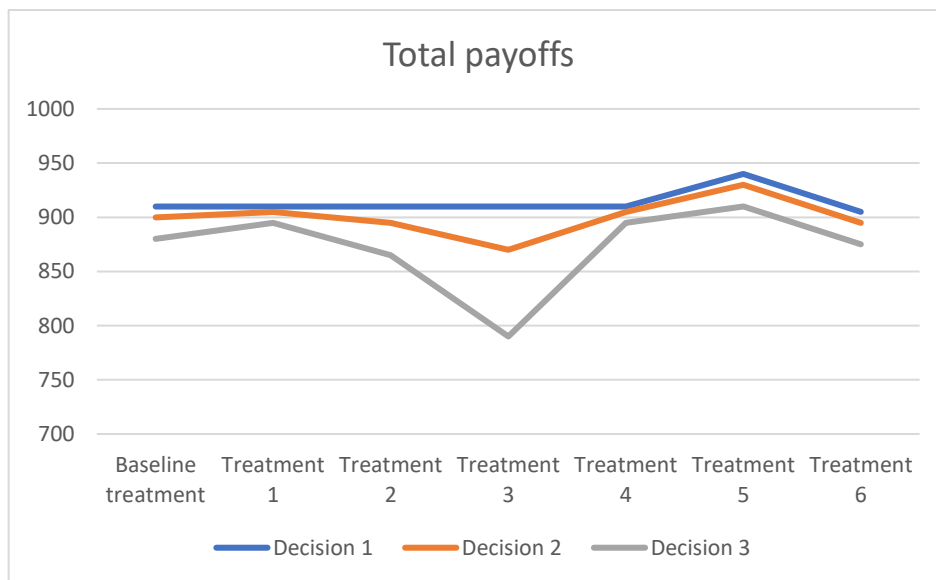
Utilitarian perspective is based on the total utility of the society; regardless of how the distribution is, more is better. In our case, utilitarian social welfare can be presented by the sum of the participants' payoffs.

Table 1.4 Total treatment payoffs with respect to implemented decisions.

	Decision 1	Decision 2	Decision 3
Baseline treatment	910 points	900 points	880 points
Treatment 1	910 points	905 points	895 points
Treatment 2	910 points	895 points	865 points
Treatment 3	910 points	870 points	790 points
Treatment 4	910 points	905 points	895 points
Treatment 5	940 points	930 points	910 points
Treatment 6	905 points	895 points	875 points

The sum of the payoffs according to the decision implemented is given in Table 1.4 and presented in Figure 1.6.

Figure 1.6 Total payoffs graph by treatment with respect to decisions



Since the scale is not equal among treatments, using total payoff as the utilitarian social outcome can mislead the analysis. So, in order to compare decisions in a utilitarian point of view, the social outcomes of alternative distribution decisions are calculated as the proportional loss from the maximum total payoff for each treatment and given in Table 1.5.

Table 1.5 The proportional loss from the maximum total payoff for each treatment (Utilitarian perspective).

	Decision 1	Decision 2	Decision 3
Base treatment	0%	1.10%	3.30%
Treatment 1	0%	0.55%	1.65%
Treatment 2	0%	1.65%	4.95%
Treatment 3	0%	4.40%	13.19%
Treatment 4	0%	0.55%	1.65%
Treatment 5	0%	1.06%	3.19%
Treatment 6	0%	1.10%	3.31%

1.1.1.4.2 Egalitarian

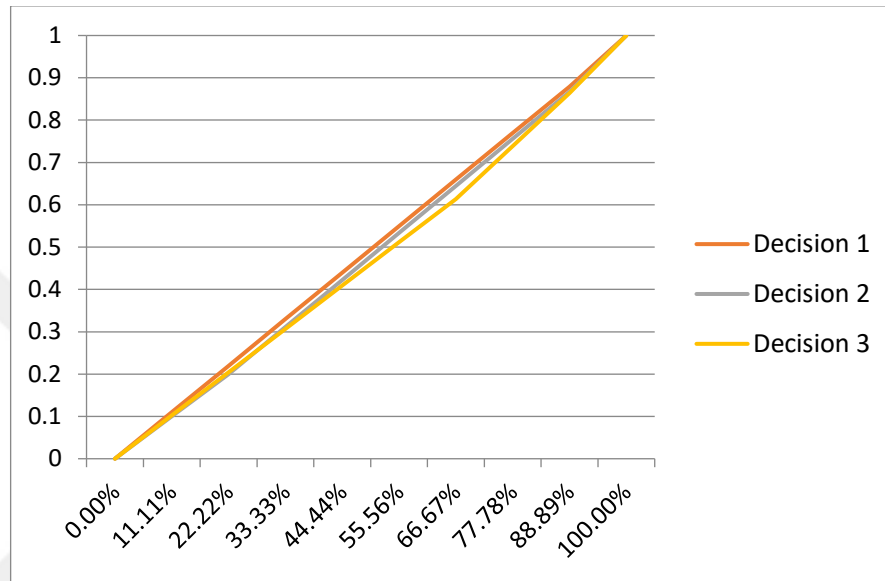
Egalitarian perspective focuses on equality; maximising welfare is only possible by reducing distances between the wealth of individuals. In this part we will use two ways of measuring egalitarian welfare; Gini coefficient and a Rawlsian measure of society's welfare.

1.1.1.4.2.1 Gini Coefficient

Gini coefficient is a commonly used indicator in evaluating countries' development on equality. It is derived from Lorenz curve which illustrates wealth distribution of the society by a curve that shows what percentage of wealth is owned by a certain percentage of the society from the poorest to the richest. If all members of the society share the wealth evenly, then the Lorenz curve will be the diagonal of the

diagram. Lorenz curves of endowment distributions with respect to the baseline treatments' possible decision outcomes are given in Figure 1.7 as an example.

Figure 1.7 Graph for Lorenz curves of endowment distributions with respect to the baseline treatments' possible decision outcomes.



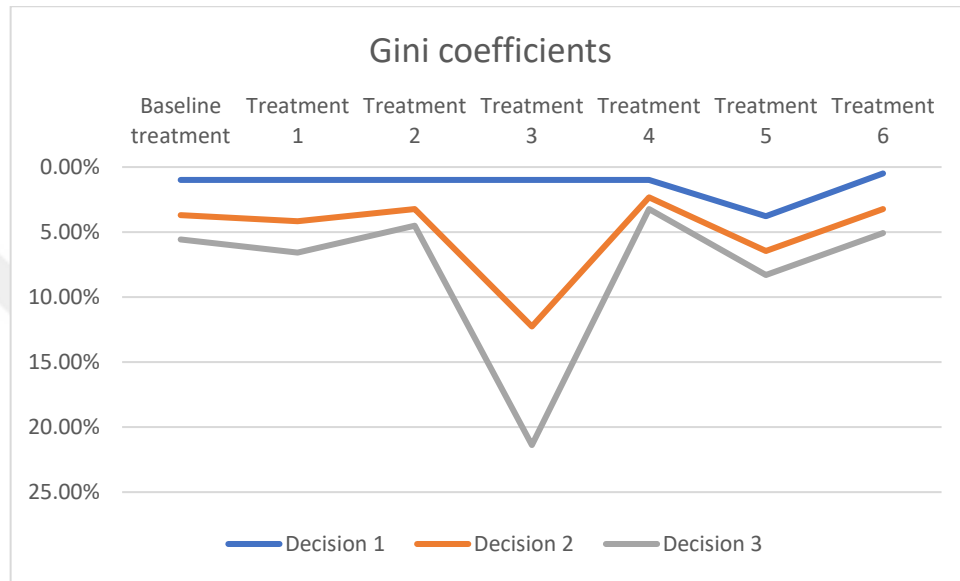
As the inequality increases, the Lorenz curve will get further away from the diagonal. The area between the diagonal and the Lorenz curve is called inequality gap, and Gini coefficient is calculated as the proportion of inequality gap in the area below the diagonal. Gini coefficient of each possible decision in each treatment is calculated and, given in Table 1.6.

Table 1.6 Gini coefficient of each possible decision in each treatment (Egalitarian perspective).

	Decision 1	Decision 2	Decision 3
Baseline treatment	0.98%	3.70%	5.56%
Treatment 1	0.98%	4.17%	6.58%
Treatment 2	0.98%	3.23%	4.50%
Treatment 3	0.98%	12.26%	21.38%
Treatment 4	0.98%	2.33%	3.23%
Treatment 5	3.78%	6.45%	8.30%
Treatment 6	0.49%	3.23%	5.08%

As seen in Figure 1.8, the increment in cut-off amount (x) or bonus (a), or decrement in inefficiency coefficient (q) increases Gini, therefore, inequality.

Figure 1.8 Graph for the Gini coefficient of each possible decision in each treatment.



1.1.1.4.2.2 Rawlsian Measure of Society Welfare

Rawlsian Measure represents a radical equality principle by defining the welfare of the society as the wealth of the individual who has the least. Our experimental design results initial endowment (m) to be the least payoff in case of Decision 1 implementation and initial endowment minus cut-off amount (m-x) in case of Decision 2 or Decision 3 implementation. So Rawlsian Measure cannot be used to distinguish between Decision 2 and Decision 3. Moreover, except Treatment 3 and Treatment 4 that differ from other treatments by cut-off amount, all treatments have the same initial endowment and cut-off amount value, eventually same Rawlsian measure. Because of these, Rawlsian Measure can only be used to explain the changes in Decision 1 proportion. Rawlsian Measure for the possible outcome distributions of our treatments are given in Table 1.7.

Table 1.7 Rawlsian Measure for the possible outcome distributions of the treatments.

	Decision 1	Decision 2	Decision 3
Baseline treatment	100	90	90
Treatment 1	100	90	90
Treatment 2	100	90	90
Treatment 3	100	60	60
Treatment 4	100	95	95
Treatment 5	100	90	90
Treatment 6	100	90	90

1.1.1.4.3 Bernoulli-Nash Social Welfare Function

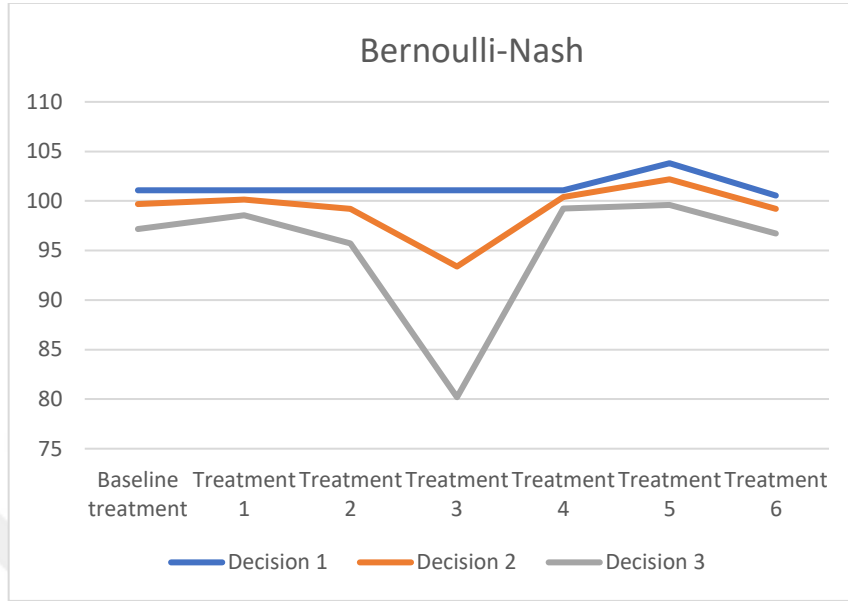
Bernoulli-Nash social welfare function can be interpreted as the combination of utilitarian and egalitarian perspectives. In this function, the average welfare of the society is equal to the geometric mean of individuals' wealth. Increasing inequality or decreasing total payoff will reduce the welfare of the society. In Table 1.8, the geometric means of final payoff distributions for each treatment are given according to the decision implemented.

Table 1.8 Geometric means of final payoff distributions for each treatment.

	Decision 1	Decision 2	Decision 3
Baseline treatment	101.065	99.685	97.161
Treatment 1	101.065	100.138	98.571
Treatment 2	101.065	99.215	95.708
Treatment 3	101.065	93.383	80.194
Treatment 4	101.065	100.414	99.221
Treatment 5	103.809	102.187	99.600
Treatment 6	100.544	99.2115	96.702

In Figure 1.9, how Bernoulli-Nash welfare function reacts to parameter changes can be observed.

Figure 1.9 Bernoulli-Nash welfare function changes per treatment.



1.1.2 Experiment Implementation

In order to check for robustness of the group favouritism behaviour against the different social outcomes, seven treatments including the baseline treatments are designed and conducted. Moreover, each treatment is backed with group-free control treatments.

With the support of Murat Sertel Economic Research fund, İstanbul Bilgi University Scientific Research grant and 1001- Scientific and Technological Research Projects Funding Program of The Scientific and Technological Research Council of Turkey, the experiment is conducted in BELIS (Economics Lab of Bilgi University Istanbul) between 10 March 2017 and 25 May 2017 (45 group treatment sessions and 29 control treatment sessions) with 666 subjects and between 2 - 11 May 2018 (14 group treatment sessions and 15 control treatment sessions) with 261 subjects in total 103 sessions with 927 subjects who are undergraduate students of Istanbul Bilgi University.

The standard experimental procedure is followed. More specifically, the experiments are conducted in BELİS laboratory where the computer terminals are separated to provide privacy of the subjects; subjects are assigned to the computer terminals randomly, corresponding instructions in the form of hard copy are given to subjects and are read loudly by experimenters at the beginning of each session. The treatments are programmed using Z-tree (Fischbacher, z-Tree: Zurich toolbox for ready-made economic experiments, 2007) and subjects are recruited through ORSEE (Greiner, 2004). The language of the experiment is Turkish. The average duration is approximately 25 minutes, and the average payoff is 30 TL (around 6 euros).

Group formation method in the experiment is the only assignment of participants to groups without any further group building attempt. Participants are only informed about their group names with the number of their group members, and they are not allowed to communicate in any part of the experiment.

Moreover, strategy method is used, every participant is asked for their choice of which decision to be implemented, then the decision maker is chosen randomly among the participants of the session, and her/his decision is implemented.

Furthermore, each session consists of two identical periods. In the second period, the groups are constant, and the same decision options with the same parameter values are presented to the participants to observe decision changes according to the first period's implemented decision. At the end of each period, participants are informed about the decision maker's group name, the choice among alternative ending endowment distributions and their individual payoff of that period accordingly. Lastly, at the end of the second period, one of the periods is chosen randomly for payment.

Since all treatments are one parameter changed version of the baseline treatment, the sample size for baseline treatment is planned higher than other treatments. The distribution of sessions among treatments can be seen in Table 1.9.

Table 1.9 Numbers of sessions with respect to treatments.

	Group sessions	Control sessions
Baseline treatment	11	8
Treatment 1	8	6
Treatment 2	8	6
Treatment 3	8	6
Treatment 4	8	6
Treatment 5	8	6
Treatment 6	8	6

At the end of each session a questionnaire about the participants' gender, departments, scholarship status, education level of their parents and reasons for their decisions in the periods is conducted. Also, in the last round of the experiments, homo economicus module of 2017 survey is added to the questionnaire.

Data for the seven treatments including the baseline treatment with their controls are collected via 103 sessions. The raw data of the decision distributions regarding the treatments can be found in Table 1.10. The detailed analysis of the decision distributions is presented in Results part of this study.

Table 1.10 The raw data of the decision distributions regarding the treatments.

	Baseline treatment	Treatment 1	Treatment 2	Treatment 3	Treatment 4	Treatment 5	Treatment 6
n	3	3	3	3	3	3	3
m	100	100	100	100	100	100	100
x	10	10	10	40	5	10	10
q	0.5	0.25	0.75	0.5	0.5	0.5	0.5
a	10	10	10	10	10	40	5
Fx	0.3	0.3	0.3	0.3	0.3	0.3	0.3
# group obs.	99	72	72	72	72	72	72
# control obs.	72	54	54	54	54	54	54
Decision 1 (g)	33	24	17	26	25	32	30
Decision 2 (g)	12	7	9	12	4	3	6
Decision 3 (g)	54	41	46	34	43	37	36
Decision 1 (c)	27	23	29	21	22	23	25
Decision 2 (c)	26	19	12	17	16	10	16
Decision 3 (c)	19	12	13	16	16	21	13

The questionnaire which is conducted with the participants at the end of each session yields that 57,4% of the participants are female, 64,1% of the participants do not know anybody in the session, and 74,3% of the participants have not participated in any similar experiments before. Also, 30,2% of the participants have a full scholarship, where 3,3% of the participants have 75% scholarship, 47,6% have 50% scholarship, and 6,4% have 25% scholarship. Father and mother education distributions of the participants are given in Table 1.11. The education level 1 stands for up to the eighth class of education, education level 2 stands for graduation from secondary school or two-years college graduation and education level 3 stands for university or higher degree.

Table 1.11 Education levels of parents.

	Mother Education	Father Education
Education Level 1	311	241
Education Level 2	310	319
Education Level 3	306	367

Moreover, in the second round of experiments surveys' preference and homo economicus modules are included in the questionnaire. Consequently, 261 subjects' altruism, trust, positive reciprocity, negative reciprocity, inequality aversion, profit orientation, labourer orientation and homo economicus scores are collected.

The participants' preference scores are calculated according to the detailed explanation given in the survey design. The scores distributions are given in Figure 1.10, Figure 1.11, Figure 1.12, Figure 1.13, and Figure 1.14.

Figure 1.1 Altruism scores of participants. **Figure 1.2** Trust scores of participants.

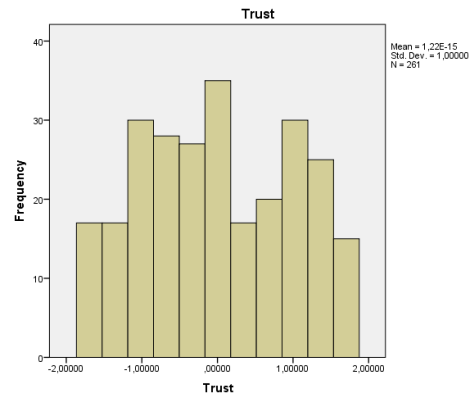
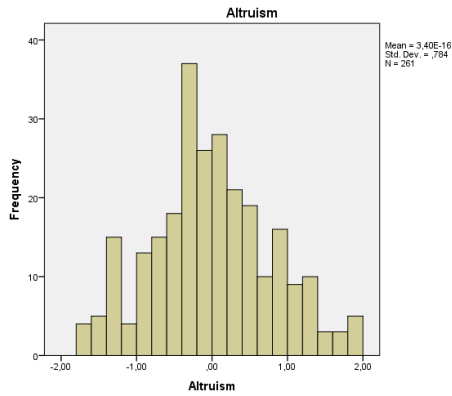


Figure 1.3 Positive reciprocity scores of participants. **Figure 1.4** Negative reciprocity scores of participants.

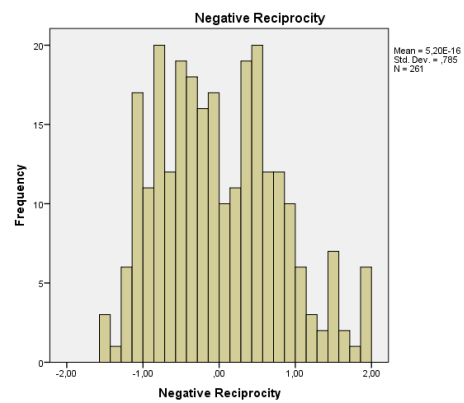
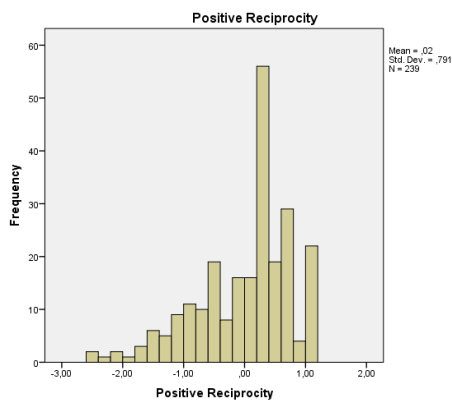


Figure 1.14 Inequality scores of the participants.



Homo economicus module analysis provides a similar component matrix to survey's data but differs by labourer orientation component which has opposite direction (Table 1.12).

Table 1.12 Component matrix of homo economicus module in questionnaire.

	Rotated Component Matrix	
	Labour Orientation	Profit Orientation
HEQ5	.852	
HEQ4	-.799	
HEQ2		.732
HEQ1		-.652
HEQ3		.361

Hence, the component is named as labour orientation, and homo economicus attribute score of the participants are calculated as the sum of these two components. The dimension score distributions of participants are given in Figure 1.15 and .

Figure 1.15 Profit dimension scores of participants.

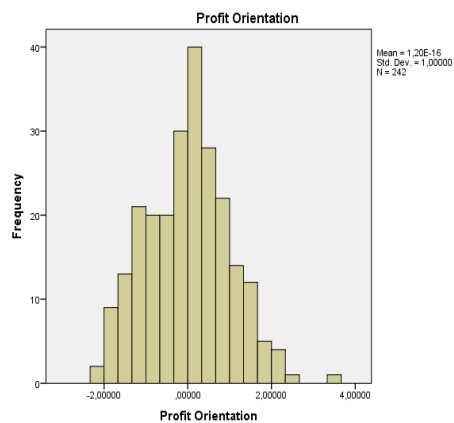
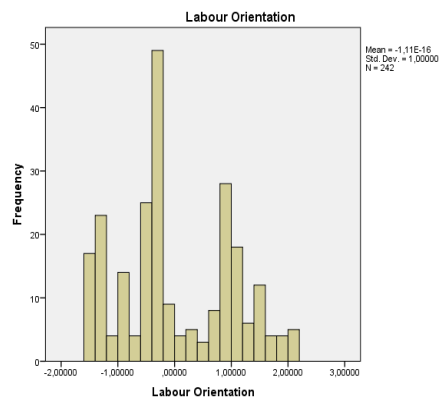
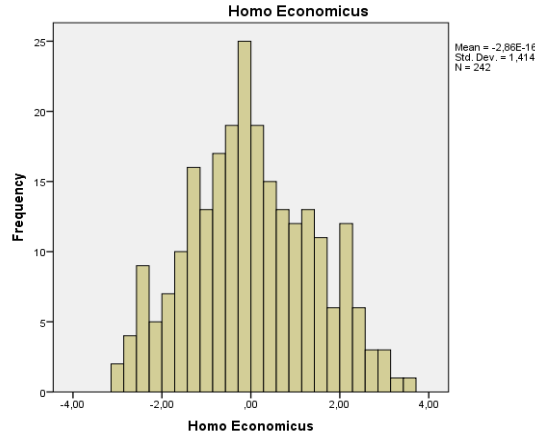


Figure 1.16 Labour dimension scores of participants.



Lastly, homo economicus score distribution of participants calculated by combining dimensions is given in Figure 1.17.

Figure 1.17 Homo economicus attribute scores of experiment participants.



1.2 SURVEYS

In order to analyse the relationship of group favouritism behaviour with other preferences and interaction of the behaviour among family, we conducted comprehensive surveys to individuals and families. First, a survey is designed to bring out social (altruism, inequality aversion, positive and negative reciprocity, trust) and economic preferences (time and risk preferences) along with the group favouritism behaviour. After successful completion of first year implementation, the survey is enriched by participation of new researchers and new modules.

In both surveys, participation in the survey was completely voluntary and anonymous. Before participants took place in the survey they were announced that this is a scientific study conducted by BELIS and survey will be completely anonymous, and their personal identity will remain completely confidential. At the end of the survey each family unit consisting of father, mother and children have been given a participation certificate as a present on behalf of Bilgi University.

In this part, both surveys' designs are given in details following by the implementation and basic descriptive statistics.

1.2.1 Design of Surveys

To observe the common characteristics of people who exhibit group favouritism behaviour, we conducted comprehensive surveys to families on the registration days of our university for the last two years. For the first year, 2016 registration days, PhD candidate Zeynep Yurdakul and I designed a survey to elicit social and economic preferences including altruism, inequality aversion, positive and negative reciprocity, trust, time and risk preferences along with the group favouritism behaviour. The next year, by adding questions on rational man assumption of classical economic theory, we expanded the survey and applied it in a digital platform.

In this part, both years' survey contents are given in details.

1.2.1.1 2016 Survey

The first survey, 2016, rooted in Falk et. Al's (Falk, Becker, Dohmen, Huffman, & Sunde, 2016) survey design study which provides us with an invaluable tool for eliciting preferences via survey method. The novelty of their design is that the questions are chosen through an ex-ante experimental validation procedure such that the questions in these surveys are the best predictors of elicited preferences in experiments. Their questionnaire contains questions on trust, altruism, positive and negative reciprocity, time and risk preferences. We added the inequality aversion measure question introduced and used by Amiel et al. (Amiel, Creedy, & Hurn, 1999) and group favouritism questions which are illustrations of the different parameter settings' treatment outcome of our experiment explained detailed in

previous chapters. Moreover, in the last part of the questionnaire, there were demographics.

List of the variables that we measured are;

Demographic Variables

- Age
- Gender

Social Preference Variables

- Altruism
- Trust
- Positive Reciprocity
- Negative Reciprocity
- Group Favouritism
- Inequality Aversion

Economic Preference Variables

- Risk Preferences
- Time Preferences

1.2.1.2 2017 Survey

In 2016 application, we observed that the staircase method was very challenging for our subjects to follow instructions in the booklet. Additionally, 32-page A4 size booklet discouraged people at first sight. That is why, for the 2017 survey, we decided to carry on the study in a digital platform. Moreover, we extended the questionnaire with homo economicus questions from studies of Rubenstein (2006)

and Kahneman et al. (Kahneman, Knetsch, & Thaler, 1986). Also, we made some changes in demographics as corrections in intervals and adding self-assessment religion question. In order to reduce the length of the questionnaire, we excluded risk preferences part, and we asked only one group favouritism question, baseline treatment's final distribution.

List of the variables that are included in this survey;

Demographic Variables

- Age
- Gender

Social Preference Variables

- Altruism
- Trust
- Positive Reciprocity
- Negative Reciprocity
- Group Favouritism
- Inequality Aversion

Economic Preference Variables

- Time Preferences

In the following part of the chapter, the details of the questions used are given classified according to the preferences that they tried to measure.

1.2.1.3 Group Favouritism

Group favouritism behaviour of individuals is tried to be captured by an illustration of the experiment explained detailed in “design of experiments” part of this study. In 2016 survey, seven different parameter settings’ outcomes are asked with a long (one page long) explanation for the questions which seems to cause high missing value rate in data (8-9%). The baseline treatment’s outcome question can be seen in Figure 1.18.

Figure 1.18 The baseline treatment’s outcome question

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8. 9 kişilik bir toplumu olduğumu varsayalım. Bu 9 kişilik toplum X, Y ve Z olmak üzere 3 gruba ayrılmıştır ve her grupta 3'er kişi bulunmaktadır. Varsayalım ki Y grubunun yeşil ile işaretli olan üyesi sizsiniz ve Y grubunda sizin dışınızda iki kişi daha var. Bulduğunuz Y grubu dışında X ve Z olmak üzere iki grup daha bulunmakta ve bu gruplar da üçer kişiden oluşmaktadır.

Grup X 

Grup Y 

Grup Z 

Başlangıçta her bireyin 100 birim varlığı vardır.

Grup X 

Grup Y 

Grup Z 

Varsayalım ki bu toplumdaki bireylerin varlık dağılımı değiştirme hakkı size verilmiştir. Lütfen, deneyin sayfalarındaki her bir soru için verilen üç varlık dağılımı seçeneğinden hangisini tercih edeceğinizi belirtiniz.

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1) Siz Y grubunun YEŞİL ile işaretlenmiş üyesisiniz, aşağıdaki üç dağılımdan hangisini tercih edersiniz?

☐ Dağılım 1

Grup X 

Grup Y 

Grup Z 

☐ Dağılım 2

Grup X 

Grup Y 

Grup Z 

☐ Dağılım 3

Grup X 

Grup Y 

Grup Z 

The parameter settings of the questions are taken from the experiments which are used in parametric analysis and summarised in Table 1.13. In all treatments, the initial endowment is 100 points where the number of groups and number of members in a group is set as 3. The first question of the set is the illustration of the baseline treatment of the experiment; 10 points of cut-off (x), 50% of inefficiency (q) and 10 points of bonus (a). The following two questions are illustrations of Treatment 1 and Treatment 2 which aim to check the effect of efficiency coefficient

(q) on behaviour by taking values of 25% and 75% respectively. In the fourth and sixth questions, the cut-off amount (x) is changed to 40 and 5 respectively as in Treatment 3 and Treatment 4. The other two questions are the illustrations of bonus treatments, namely Treatment 5 and Treatment 6, where bonus takes values of 40 and five respectively.

Table 1.13 Summary of the parameter settings of the questions.

	n	m	x	q	a
Baseline Treatment / Q1	3	100	10	0.5	10
Treatment 1 / Q2	3	100	10	0.25	10
Treatment 2 / Q3	3	100	10	0.75	10
Treatment 3 / Q4	3	100	40	0.5	10
Treatment 4 / Q6	3	100	5	0.5	10
Treatment 5 / Q5	3	100	10	0.5	40
Treatment 6 / Q7	3	100	10	0.5	5

For the next year, 2017, we decided to simplify this question by asking only the outcome of baseline treatment, shortening the explanation and giving the distribution options more separately as shown in Figure 1.19. This intervention actually increased the response rate, and missing value reduced to 2% in 2017.

Figure 1.19 Group favouritism question in 2017 implementation.

ⓘ Başlangıç verisi dağılımı aşağıda gösterildiği gibi olan gruplara ayrılmış bir toplulukta, siz kişiye kıyasla (kaybetmiş bir kişi) olan, sonuç dağılımı olarak aşağıda verilen alternatif dağılımlardan hangisini tercih edersiniz?

☒ **SİZ**

☐ **ALTERNATİF DAĞILIM 1**

☐ **ALTERNATİF DAĞILIM 2**

☐ **ALTERNATİF DAĞILIM 3**

1.2.1.4 Altruism

Altruism score of individuals is calculated as the weighted average of two questions' standardised scores. The questions are taken from Falk et al. 's (2016) survey design study. However, we needed to change the wording in one of the questions in order to avoid possible disturbance of religiously sensitive participants. In Falk et al. 's (2016) study, question (a) is about winning lottery which can be perceived as a gamble and make people behave differently. Therefore, we converted the lottery winning to getting unexpected money. Also, we changed currency to Turkish Lira. However, the second question, question (b), is translated directly. The questions can be seen below:

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“(a) Imagine the following situation: you got unexpected 1,000 Turkish Lira from somewhere. Considering your current situation, how much would you donate to charity? (Values between 0 and 1000 are allowed)

(b) How do you assess your willingness to share with others without expecting anything in return when it comes to charity? Please use a scale from 0 to 10, where 0 means you are \completely unwilling to share\ and 10 means you are \very willing to share\.”

The questions are used to assign altruism scores regarding the coefficients of Falk et al. 's (2016) study as shown below.

Altruism score = $0.4649952 \times \text{Standardised score of question (a)} + 0.5350048 \times \text{Standardised score of question (b)}$

1.2.1.5 Trust

In Falk et al. 's (2016) survey design, trust scores of individuals are calculated via only one question "I assume that people have only the best intentions. Please indicate your answer on a scale from 0 to 10. A 0 means \does not describe me at all\ and 10 means \describes me perfectly\." Therefore, we used the translated version of the question in both years' surveys with the same scale and calculated trust score as the standardised value of participants' choices. In Falk et al. 's (2016) survey design, trust scores of individuals are calculated via only one question "I assume that people have only the best intentions. Please indicate your answer on a scale from 0 to 10. A 0 means \does not describe me at all\ and 10 means \describes me perfectly\." Therefore, we used the translated version of the question in both years' surveys with the same scale and calculated trust score as the standardised value of participants' choices.

1.2.1.6 Positive Reciprocity

Positive reciprocity scores of participants are measured via two questions from Falk et al.'s (2016) survey design. The first one, question (a), is a self-assessment question which asks participants to indicate how much they agree with the sentence "When someone does me a favour, I am willing to return it." by a 0-10 scale. The second question, question (b) is about giving a bottle of wine as a gift which can have different values between 5-30 Euro to return favour worth 20 Euro. In order to avoid offending religious people, we took out the "wine" word and used only the "gift". The last form of the questions can be seen below;

“(a) How well does the statement describe you as a person?”

“When someone does me a favour, I am willing to return it.” Please indicate your answer on a scale from 0 to 10. 0 means "does not describe me at all" and 10 means "describes me perfectly".

(b) You are in an area you are not familiar with, and you realise that you lost your way. You ask a stranger for directions. The stranger offers to take you to your destination. You know that helping you cost the stranger about 20 Turkish Lira in total. However, the stranger says he or she does not want any money from you. You have six presents with you. The cheapest present costs 5 Turkish Lira, the most expensive one costs 30 Turkish Lira. Do you give one of the presents to the stranger as a "thank-you"-gift? If so, which present do you give to the stranger?

- ☐ no present
- ☐ the present worth 5 Turkish Lira
- ☐ the present worth 10 Turkish Lira
- ☐ the present worth 15 Turkish Lira
- ☐ the present worth 20 Turkish Lira
- ☐ the present worth 25 Turkish Lira
- ☐ the present worth 30 Turkish Lira”

The positive reciprocity scores of the participants are calculated as the weighted average of the standardised values of their answers. The weights of the questions are taken from the survey study of Falk et al. (2016) as well.

Positive reciprocity score = $0.4847038 \times \text{Standardised score of question (a)} + 0.5152962 \times \text{Standardised score of question (b)}$

1.2.1.7 Negative Reciprocity

In the first form of Falk et al.'s (2016) survey study, the best predictor of individual's negative reciprocity behaviour is decided to be the weighted average of two questions' answers' standardised scores; "How willing are you to punish someone who treats unfairly, even if there may be costs for you?" and "If I am treated very unjustly, I will take revenge on the first occasion, even if there is a cost to do so." However, in the post-survey questionnaire, they noticed that the first question was not clear for the participants since people react differently among the unfair treatment is towards themselves and others. Therefore, they decided to ask in both ways and split the weight of the original question among these two evenly. We followed their lead and used the two questions instead of the first one and used second directly. In short, we had three questions in the surveys to measure negative reciprocity scores of participants.

(a) How willing are you to punish someone who treats you unfairly, even if there may be costs for you? Please use a scale from 0 to 10, where 0 means you are \completely unwilling to punish\ and 10 means you are \very willing to punish\.

(b) How willing are you to punish someone who treats others unfairly, even if there may be costs for you? Please use a scale from 0 to 10, where 0 means you are \completely unwilling to punish\ and 10 means you are \very willing to punish\.

(c) How well does the statement describe you as a person?

"If I am treated very unjustly, I will take revenge on the first occasion, even if there is a cost to do so." Please indicate your answer on a scale from 0 to 10. 0 means "does not describe me at all" and 10 means "describes me perfectly".

The negative reciprocity scores of participants are calculated according to the equation below.

Negative reciprocity score = $0.3130969 \times \text{Standardised score of question (a)} + 0.3130969 \times \text{Standardised score of question (b)} + 0.3738062 \times \text{Standardised score of question (c)}$

1.2.1.8 Inequality Aversion

Since the Gini coefficient is one of the social efficiency parameters that we use to compare the social outcomes of alternative treatments, inequality aversion is an important preference for us. However, it was not embodied in Falk's (2016) survey design, so we searched for another survey question which would be in line with experimental results for inequality aversion. Jukka Pirttila and Roope Uusitalo suggest two alternative questions for this purpose in their study "Leaky bucket in the real world: Estimating inequality aversion using survey data" (2007).

First of the questions is about a proposal for a tax reform that will transfer money from the richest decile to the poorest decile in the society with some administrative cost. The idea is to find out how much cost people are willing to bear in order to reduce the income gap within their society. They designed four alternative questions by using different leakage ratios that correspond to the inequality aversion values 0.5, 1, 2, and 3 respectively.

In the second question, participants are asked to choose between two alternative wage distributions represented by their mean, maximum and minimum values. Same as in the leaky bucket question, there are four alternative questions that are designed for four values of inequality aversion; 0.5, 1, 2, and 3, as well. One of the options is the same for all questions, the other option's mean is higher and equal to each other where the range (distance between minimum and maximum wages) varies.

Since the latter one is about centralised wage bargaining which is not very familiar to our participants, we picked the leaky bucket question as our inequality aversion measure. In Pirttila and Uusitalo's study (2007), each participant answered only one

of the four questions revealing that her/his inequality aversion value is higher or lower than the inequality aversion degree used for that question. In our questionnaire, we used all of the four the questions to find out the precise intervals for participants' inequality aversion measure.

The original form of the question is:

“What is your opinion of the following reform proposal?

The taxation of all high-income earners, whose disposable income exceeds 3300 EUR per month, is increased. The money is spent for the benefit of those low-income earners whose disposable income is less than 800 EUR per month.

The high-income earners can, however, react to the tax increase by reducing their work effort, and part of the money goes to administrative expenses. Therefore, for each 100 EUR paid by the high-income earners, only X EUR can be spent for the benefit of low-income earners.

Are you still in favour of this proposal?

1. Yes
2. No
3. I do not know.”

The amount that can be spent for the benefit of the low-income earners (X) has different values for different inequality aversion values (e). The alternative inequality values are displayed with calculated loss ratios accordingly in Table 1.14.

Table 1.14 Alternative inequality values with calculated loss ratios.

Inequality aversion	0.5	1	2	3
Loss (%)	50%	75%	94%	98.5%
TL for low income earners	50 TL	25 TL	6 TL	1.5 TL

In our survey, we changed high-income earner lower boundary as 20000 Turkish Lira per month and low-income earner upper boundary as 1300 Turkish Lira per

month. Four questions with four alternative inequality aversion values are listed following the detailed explanation as shown in Figure 1.20.

Figure 1.20 Inequality aversion question of the survey.

20. Yeni bir vergi reformu önerisi getirildiğini varsayın. Bu öneriye göre geliri aylık 20.000 TL'yi aşan kesimden alınacak yeni bir vergiden elde edilen miktar, geliri aylık 1300 TL'den düşük kesimin faydası için kullanılacak. Fakat bu vergilendirme işlemi sonucu bazı idari masraflar oluşacaktır. Bu nedenle vergi kapsamında alınan miktarın bir kısmı idari masraflara gidecek, idari masraflar düşüldükten sonra kalan kısım düşük gelirli bireylerin faydası için kullanılabilir. Aşağıda size farklı durum önerileri sunulmaktadır. Bu durumların her birinde alınacak vergi miktarı aynı kalacak, idari masrafların miktarı ve düşük gelirli kesimin faydası için kullanılabilir miktar değişecektir. Aşağıdaki durum önerilerinin her biri için tutumunuzu belirtiniz.

	Evet, bu öneriyi destekliyorum.	Hayır, bu öneriyi desteklemiyorum.	Bu öneriyi destekleyip desteklemeyeceğimi bilmiyorum.
Vergi kapsamında alınan her 100 TL'nin 50 TL'si idari masraf olarak düşüldükten sonra kalan 50 TL'si düşük gelirli bireylerin faydası için kullanılabilir.	☐	☐	☐
Vergi kapsamında alınan her 100 TL'nin 75 TL'si idari masraf olarak düşüldükten sonra kalan 25 TL'si düşük gelirli bireylerin faydası için kullanılabilir.	☐	☐	☐
Vergi kapsamında alınan her 100 TL'nin 94 TL'si idari masraf olarak düşüldükten sonra kalan 6 TL'si düşük gelirli bireylerin faydası için kullanılabilir.	☐	☐	☐
Vergi kapsamında alınan her 100 TL'nin 98,5 TL'si idari masraf olarak düşüldükten sonra kalan 1,5 TL'si düşük gelirli bireylerin faydası için kullanılabilir.	☐	☐	☐

The evaluation of the inequality aversion scores of participants is a complex process. First, a “Yes, I am in favour of the proposal” answer is interpreted as the participant’s inequality aversion score is higher than the inequality aversion value that the proposal is prepared for. Once we get the highest approval, we check for the following question’s answer. If the answer is a “I don’t know if I am in favour or not”, this is interpreted as the participant is indifferent and the inequality aversion score of her/him is equal to the inequality aversion value that the question is prepared for. On the other hand, if the answer is “No, I am not in favour of the

proposal”, this is interpreted as the participant’s inequality aversion score is lower than the inequality aversion value that the question is prepared for, and the inequality aversion score of the participant is assigned as the average of the two questions’ inequality aversion values. For instance, if a participant give approval for the second question, but for third and fourth, her/his answer is not “Yes”, we know that her/his inequality aversion score is higher than one. If third question’s answer is “I don’t know”, then the inequality score is two, if the answer is “No”, then it is the average of 1 and 2, 1.5. Additionally, “0” is assigned as the inequality scores of the participants’ who answered “No” for all of the four questions, whereas “3.5” is assigned for four “Yes” answers. Finally, the possible scores that can be derived from these questions are 0, 0.5, 0.75, 1, 1.5, 2, 2.5, 3, and 3.5.

1.2.1.9 Time Preference

Time preference is one of the major measurements of Falk et al. ’s (2016) survey. They use one 0-10 scale self-assessment question, and one question set that assigns participants a patience value between 1-32 via the staircase method explained in their study in details. Overall patience score is calculated as the weighted average of the standardised first question’s answer and the standardised patience value.

In both years’ surveys, the same questions are used. The self-assessment question is “How willing are you to give up something that is beneficial for you today in order to benefit more from that in the future? Please again indicate your answer on a scale from 0 to 10, where 0 means you are /completely unwilling to do so/ and 10 means you are /very willing to do so/.”

In the staircase method, the explanation is given as “Suppose you were given a choice between receiving a payment today or payment in 12 months. We will now present to you five situations. The payment today is the same in each of these situations. The payment in 12 months is different in every situation. For each of these situations, we would like to know which you would choose. Please assume

there is no inflation, i.e. future prices are the same as today's prices.”, and participants are asked to choose between a present amount and a future amount. At each step, the future amount differs according to the participant's choice in the previous question. If the participant chooses the future amount, in the next question a lower future amount is offered, and if the participant accepts the present amount, then, in the next question, a higher future amount is offered against the same present amount. Every step lets us eliminate half of the patience values left, finally, at the end of the fifth question, we are able to assign a patience value between 1-32.

The patience scores of the participants are calculated as the weighted standardised scores of the questions where the weight values of Falk et al. 's (2016) study are used as shown below.

Patience score = $0.7115185 \times \text{Standardised score of staircase method's patience value} + 0.2884815 \times \text{Standardised score of self-assessment question}$

1.2.1.10 Risk Preference

Risk preference is the other major measurement of Falk et al. 's (2016) survey and calculated by a question set for the staircase method, similarly, assigning a risk value between 1-32 and a self-assessment question, as well.

The self-assessment question is “Please tell me, in general, how willing or unwilling you are to take risks. Please use a scale from 0 to 10, where 0 means you are /completely unwilling to take risks/ and 10 means you are /very willing to take risks/”.

In the staircase method, participants are asked to choose between a lottery and a sure amount in each of the questions. The lottery is constant at each step, however, the sure amount changes according to the participant's answer to the previous question. If the participant accepts sure amount, in the next step she/he faces a choice between the same lottery and a lower sure amount. If the participant chooses

the lottery, a higher sure amount is offered against the same lottery as the next question. By this process, eliminating half of the available risk values at each step, a value between 1-32 can be assigned at five steps. Their explanation for the question set is “Please imagine the following situation: You can choose between a sure payment of a particular amount of money, or a draw, where you would have an equal chance of getting 300 Euro or getting nothing. We will present to you five different situations.” We used the same explanation by translating and changing the currency, placing the equivalent amount in Turkish Lira.

The risk preference module is used only in 2016 survey. The extensions of the 2017 survey required some elimination in previous modules, and the difficulties in following staircase method led us to pick only one preference that uses it. Consequently, considering the mass of theoretical claims on time preference relations, the risk preference module is eliminated in 2017 survey.

The calculation of risk-taking scores is similarly based on the weighted average of the standardised scores that are extracted from the two parts.

Risk taking score = $0.4729985 \times \text{Standardised score of staircase method's risk value}$
+ $0.5270015 \times \text{Standardised score of self-assessment question}$

1.2.1.11 Homo Economicus

Homo economicus module aims to define participants' closeness to the rational man of classical economic theory. As known, the classical economic theory assumes a self-interested, utility or profit maximising, rational man with unlimited cognitive capacity, which is called “homo economicus”. However, this term describes an ideal economic agent that is not possible in the real world. Although Yamagishi et al. (Yamagishi, Li, Takagishi, Matsumoto, & Toko, 2014) claimed that a minority (7%) of people with high IQ acted as rational economic agents in their experimental study, besides the significantly higher psychopathic traits of the minority, unlimited cognitive capacity is still far from reality.

Following the rise of behavioural economics, many showed the deviations from rationality. Nobody is really homo economicus, but, still, some are more homo economicus than others. However, as far as we know, none offered a measure of being homo economicus. For this purpose, we prepared a module consists of dilemmas based on Kahneman et al. (1986) and Rubinstein's (2006) studies that utilise survey questions on classical economic theory's maximisation and rationality assumptions.

The first question of the module is about an administration decision on dismissal of workers in a company, a dilemma regarding profit maximisation and worker layoffs due to Rubinstein (2006).

Question 1: "Assume that you are vice president of ILJK company. This company was founded five years ago and employs 196 workers in addition to the administrative staff. The work requires only a low level of skills so that each worker requires only one week of training. All of the company's employees have been with the company for three to five years. The company pays its workers more than minimum wage. The company provides its employees with all the benefits required by law. Until recently, the company was very profitable. As a result of the continuing recession, however, there has been a significant drop in profits through the company is still in the black. You will soon be attending a meeting of the management at which a decision will be made as to how many workers to lay off.

ILJK's Finance Department has prepared the following forecast of annual profits:

Table 1.15 Forecast of annual profits.

Number of workers who will continue to be employed	Expected annual profit
0 (all the workers will be laid off)	Loss of 8 Million TL
50 (146 workers will be laid off)	Profit of 1 Million TL
65 (131 workers will be laid off)	Profit of 1.5 Million TL
100 (96 workers will be laid off)	Profit of 2 Million TL
144 (52 workers will be laid off)	Profit of 1.6 Million TL
170 (26 workers will be laid off)	Profit of 1 Million TL
196 (no layoffs)	Profit of 0.4 Million TL

If you assume that you are vice president of the ILJK company, how many workers would you recommend to continue to employ?”

Since firing 96 workers provides the highest profit for the company, response of a profit maximiser economic agent, a homo economicus, should be to continue to employ 100 workers.

Second and third questions of the module mainly focus on fairness perception of participants in different price settings. The second question, taken from Kahneman et al. (1986), investigates how participants react when there is a trade-off between efficiency and fairness in choosing a market clearing mechanism for the allocation of goods and services. Participants are asked to rank the fairness of possible ticket distribution mechanisms for a unique event. In third question (Kahneman, Knetsch, & Thaler, Fairness and the Assumptions of Economics, 1986), participants asked to evaluate the fairness of price setting in a competitive manner.

Question 2: “A famous singer gives a special concert once a year. This concert is an exclusive event, that is why tickets are in great demand. The organisers can distribute the tickets in one of three ways.

- (A) By auction: the tickets are sold to the highest bidders.
- (B) By lottery: the tickets are sold to the people whose name are drawn.
- (C) By queue: the tickets are sold on a first-come-first-served basis.

Rank these three in terms of which you feel is the fairest and which is the least fair.”

By means of economic efficiency, the auction is the best option where the queue is the worst. Assuming that a homo economicus will evaluate economic efficiency as a fairness measure, the order will be auction, lottery and queue. Moreover, auction’s rank’s importance is superior to others’. Therefore, we assign scores for the orderings according to the valuation in Table 1.16.

Table 1.16 Valuation of the orderings.

Possible orderings	Scores
Auction > Lottery > Queue	5
Auction > Queue > Lottery	4
Lottery > Auction > Queue	3
Queue > Auction > Lottery	2
Lottery > Queue > Auction	1
Queue > Lottery > Auction	0

Question 3: "A hardware store has been selling snow chains for 15 TL. The morning after a large snowstorm, the store raises the price to 30 TL. Please rate fairness of this action on a scale from 0 to 10. A 0 means /very unfair/ and a 10 means /completely fair/."

In homo economicus point of view, a retailer's taking advantage of the short increment in demand should be completely fair.

Last part of the module consists of two connected questions, fourth and fifth questions, aim to confront the subjects with a dilemma between profit maximisation and fairness in a wage setting framework both from employer and employee perspectives. The scenario and questions are given below (Kahneman, Knetsch, & Thaler, 1986).

Question 4: "Assume that you are the owner of a small company. A graphics artist who has been working for you in the last five years for a salary of 50.000TL per year has resigned recently. You have received a job application from another graphics artist with similar qualifications and talent. Let's assume that after an interview with this candidate, you liked his/her works and you decided that he/she is as talented as the resigned employee.

It can be seen that the applicant earns a salary of 40.000 TL per year in his/her current job. Let's assume that you offered him the same salary of 40.000 TL per year. Applicant rejects this offers and demands the salary of the resigned graphics artist (50.000TL).

Let's assume that after long negotiations, you decided to make him/her a final offer. Candidate can accept or reject this offer. How much would be your offer?"

Question 5: "Assume that you are the graphics artist mentioned in the previous question and the final offer of the owner of the company is 42.000 TL. Would you accept this offer? Please answer yes or no."

In this scenario, according to classical economic theory, the reference point should be the graphic artist's current salary, 40000TL; any offer higher than 40000TL should be accepted. Therefore, knowing this, the owner of the company should offer the lowest amount possible. We assume that closer to homo economicus participants' offers will converge to 40000TL, and additionally, they will accept 42000TL, since it is higher than the graphic artist's current salary.

1.2.2 Survey Implementation

In both years' surveys, participation in the survey was completely voluntary and anonymous. Before participants took place in the survey, they were announced that this is a scientific study conducted by BELIS and survey will be completely anonymous, and their personal identity will remain completely confidential. At the end of the survey each family unit consisting of father, mother and children have been given a participation certificate as a present on behalf of Bilgi University.

In this part, both implementations' details are given with basic descriptive statistics.

1.2.2.1 2016 Survey

The survey was conducted during the registration days of İstanbul Bilgi University, 15-20 August 2016, to the families via 32-page booklets. The booklets are coded

manually. Excel, SPSS, R, and Eviews are used for data analysis. We applied the same procedure as in Falk et al. (2016) for missing value imputation.

1.2.2.2 2017 Survey

The survey was conducted by a trained team from BELIS on 2017 registration days (14-19 August 2017) with families; fathers, mothers, and children. The survey was designed using a private website (monkeysurvey.com), and participants answered the questions online in our lounge using the i-pads we provided.

1.2.2.3 Data

In 2016, 767 individuals, and in 2017, 619 individuals participated in these surveys. Since the two years' questionnaires have some common parts, for some analysis, the results can be merged. In this part, both years' data sets are presented including merged forms where they can be merged.

1.2.2.3.1 Age

Since the data sets are collected in the registration days of İstanbul Bilgi University, most of the participants are the members family units that are generally formed of one student, one or two parents of the student and some other relatives as a sibling, cousin, aunt etc. In other words, we have collected data of two distinct generations that caused bimodal age distributions for both of the years as seen in Figure 1.21 and Figure 1.22.

Figure 1.21 Age distribution of the survey attendants in 2016.

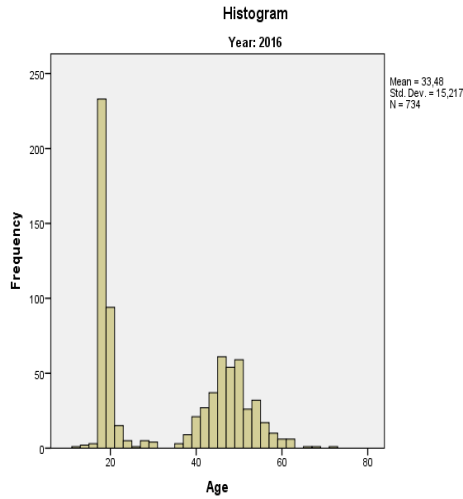
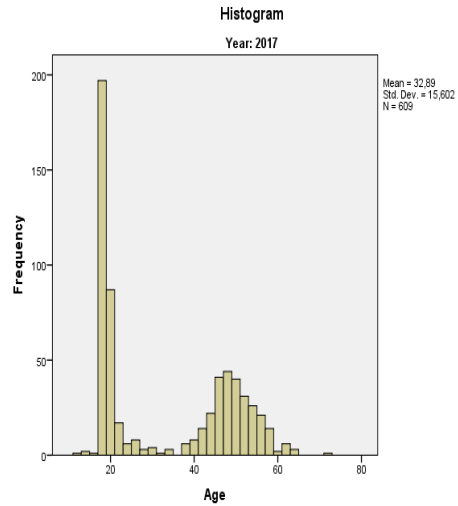


Figure 1.22 Age distribution of the survey attendants in 2017.



1.2.2.3.2 Gender

In both years, the number of female participants are higher than males with similar ratios. Gender distribution of participants is given in **Table 1.17**.

Table 1.17 Crosstab of male and female participants with respect to years.

	2016	2017	Total
Female	435	322	757
Male	317	297	614
Total	752	619	1371

1.2.2.3.3 Altruism

The questions are used to calculate altruism scores of individuals are asked in the both years' surveys. The total answer distributions of the questions are given below in Figure 1.23 and Figure 1.24.

Figure 1.23 The total answer distribution of altruism question (a).

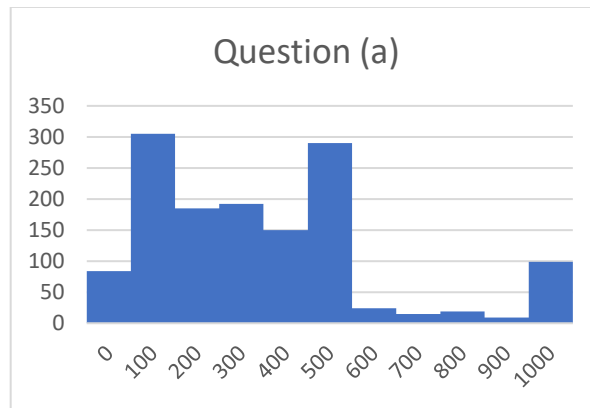
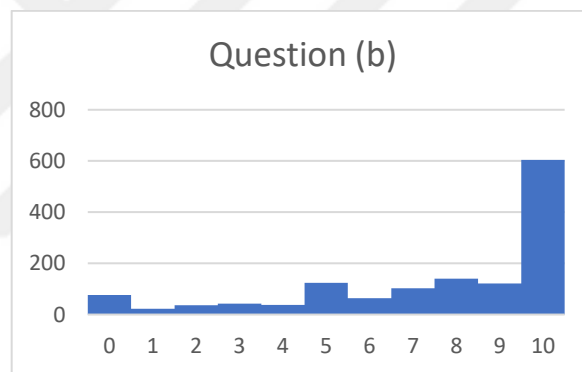


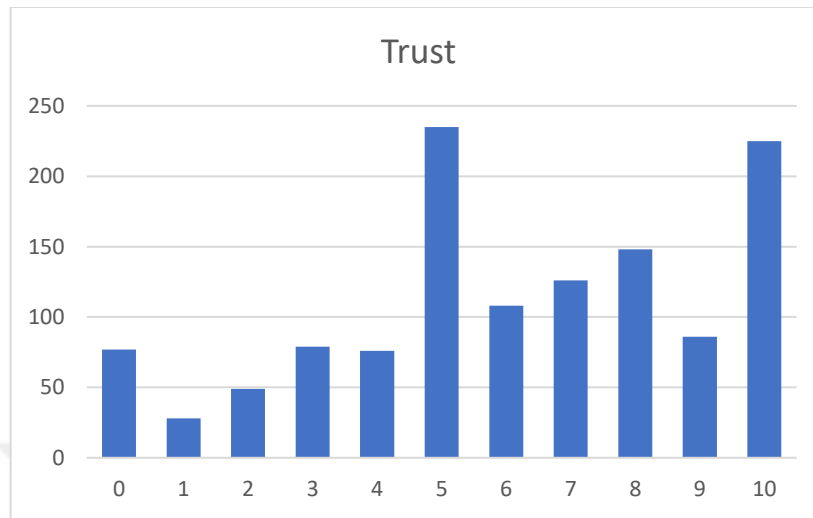
Figure 1.24 The total answer distribution of altruism question (b).



1.2.2.3.4 Trust

Trust scores of the individuals are calculated by only one question. The answer distribution of the question is given in Figure 1.25.

Figure 1.25 The total answer distribution of the trust question.



1.2.2.3.5 Positive Reciprocity

Positive reciprocity scores of individuals are calculated as the weighted sum of the standardised values of two questions answers. The questions are used in both years' surveys, and the answers are merged. The distribution of merged answers can be seen below, in Figure 1.26 and Figure 1.27.

Figure 1.26 The total answer distribution of positive reciprocity question (a).

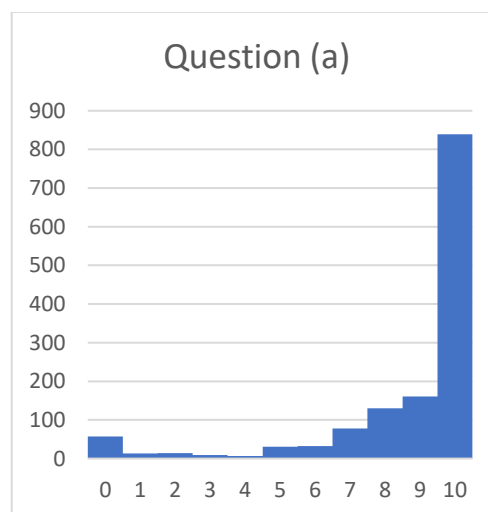
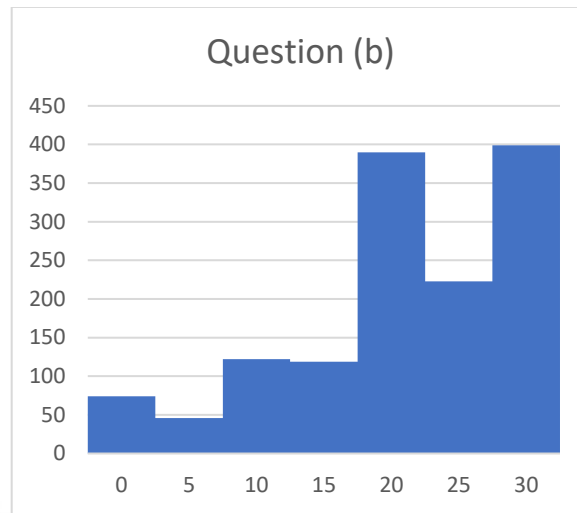


Figure 1.27 The total answer distribution of positive reciprocity question (b).



1.2.2.3.6 Negative Reciprocity

The answer distributions for three questions that are used to calculate negative reciprocity scores of individuals are given below, in Figure 1.28, Figure 1.29 and Figure 1.30.

Figure 1.28 The total answer distribution of negative reciprocity question (a).

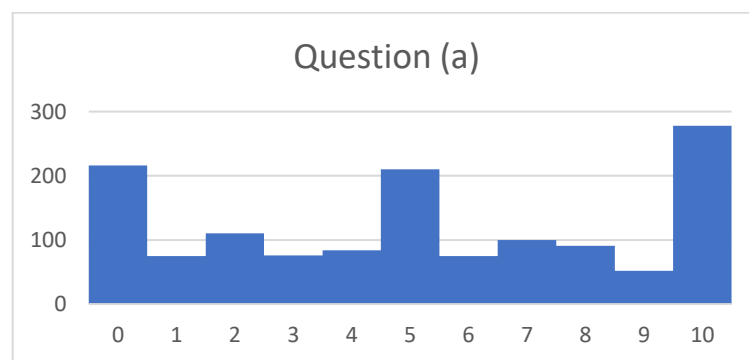


Figure 1.29 The total answer distribution of negative reciprocity question (b).

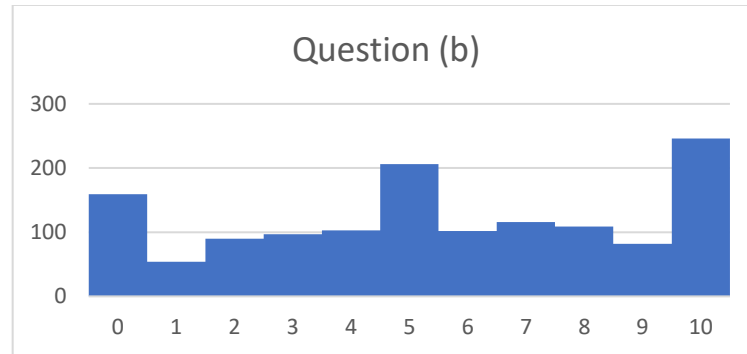
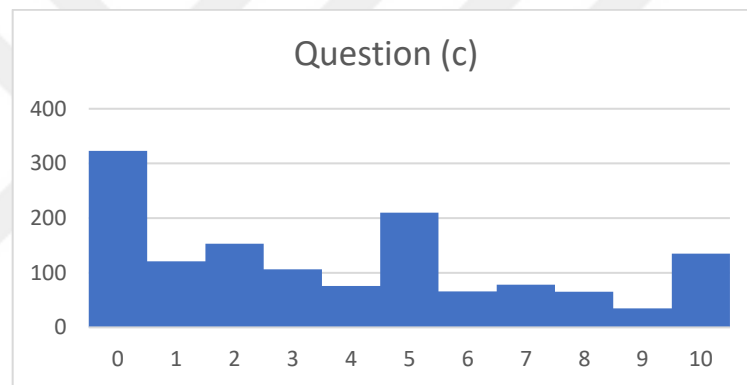


Figure 1.30 The total answer distribution of negative reciprocity question (c).

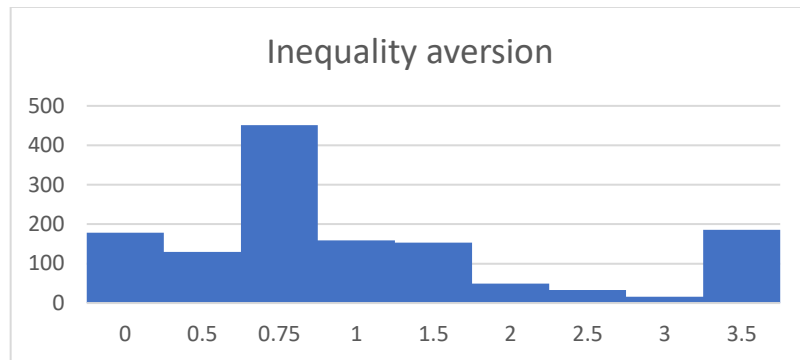


As seen in the histograms, there are observable rises on 0, 5 and 10 in each of the questions which can be interpreted as sharpness in the attitude. Moreover, one may claim that the word “punishment” is perceived as more acceptable than the word “revenge” by the participants.

1.2.2.3.7 Inequality Aversion

The distribution of participants’ inequality aversion scores explained in the survey design part is given in Figure 1.31.

Figure 1.31 Inequality aversion scores distribution of the participants.



1.2.2.3.8 Time Preference

In 2016 survey, as mentioned above, the questionnaire booklet was given to the participants. Therefore, in order to implement the staircase method, we presented the set of all possible questions in the evaluation process and asked participants to follow the instructions given under each question and lead them to the next question according to their answer. Unfortunately, participants had some difficulty in this following path process and missing, or invalid response rate increased to 17% even though the part took place in the beginning in nearly half of the booklets. That is why we decided to automatize the survey in the next year's implementation. By automatization, participants did not need to follow any instruction, and the system, by automatically bringing the next question in the required order, made them complete their path in 5 questions revealing their patience value.

Although the change in the questionnaire method increased the response rate, the diversification in the two years' implementation needed verification before merging. For this purpose, we tested the distributions of two years patience scores. The distributions that can be seen in Figure 1.32 and Figure 1.33 are very similar and the test for the equality of their means and variances indicates 97.7 % similarity as given in Table 1.18.

Figure 1.32 The distribution of 2016 patience scores.

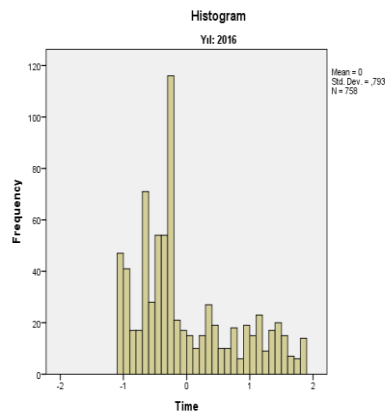


Figure 1.33 The distribution of 2017 patience scores.

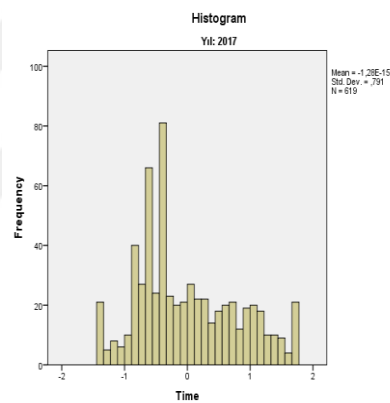
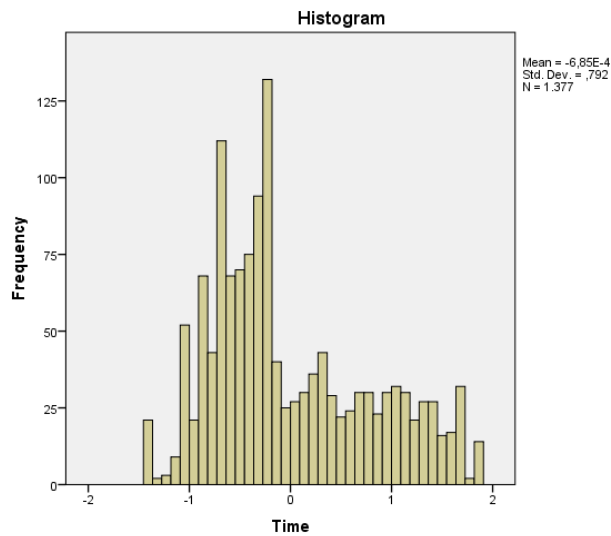


Table 1.18 Comparison of two years' patience scores.

Independent Samples Test	Group Treatment		
	t	df	Sig. (2-tailed)
Time	-0.029	1375	0.977

Merging the two years' participants' patience scores results in the patience score distribution as shown in Figure 1.34.

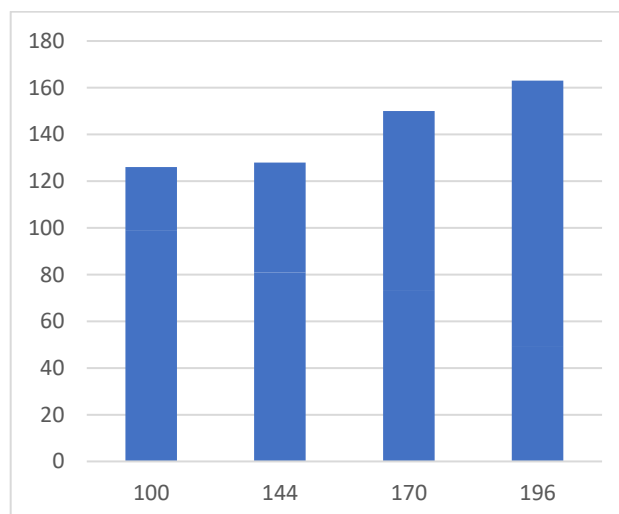
Figure 1.34 The patience score distribution after two years data are merged.



1.2.2.3.9 Homo Economicus

Q1 - Since firing 96 workers provides the highest profit for the company, the response of a profit maximiser economic agent, a homo economicus, should be to continue to employ 100 workers.

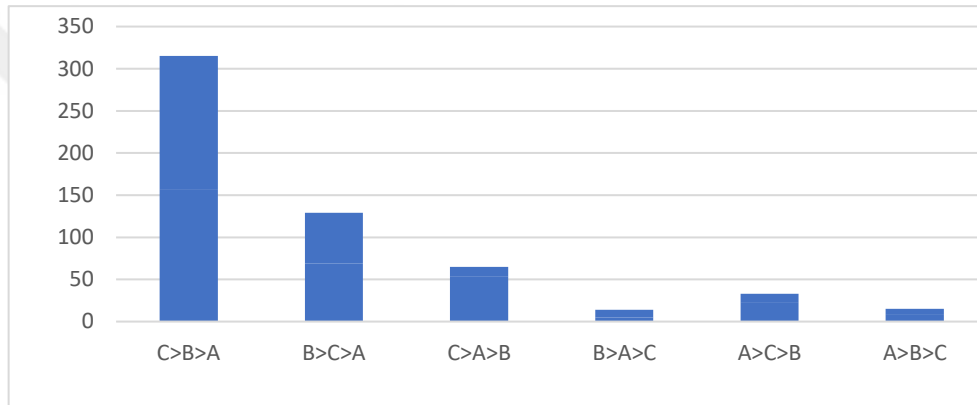
Figure 1.35 Response distribution for homo economicus question 1.



However, our results indicate that employing 100 workers is the least favoured option where firing 0 worker is the most (Figure 1.35). Additionally, when we compare the mean firings according to age categories, we observe that younger participants choose to fire statistically significantly more workers.

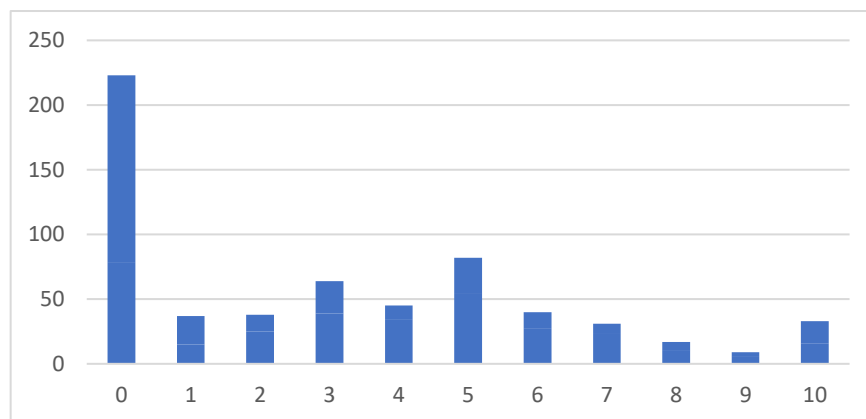
Q2 - The ordering distribution of the question with respect to the age categories is given below in Figure 1.36. The distributions differ significantly (chi-square goodness of fit test, p-value = 0.00005666) among age categories.

Figure 1.36 Response distribution for homo economicus question 2.



Q -3 In this question, participants are asked to evaluate fairness the hardware store owner's action to take advantage of short-term increment in demand. The responses of participants are given in Figure 1.37.

Figure 1.37 Response distribution for homo economicus question 3.



Q 4-5 In our sample, we observed that participants had two reference points, the graphic artist's current salary and former graphic artist's salary. That is why 45000TL, the average of the two reference points, occurred to be a focal point as can be seen Figure 1.38. Moreover, the majority of the participants rejected the offer, 42000TL (Figure 1.39).

Figure 1.38 Response distribution for homo economicus question 4.

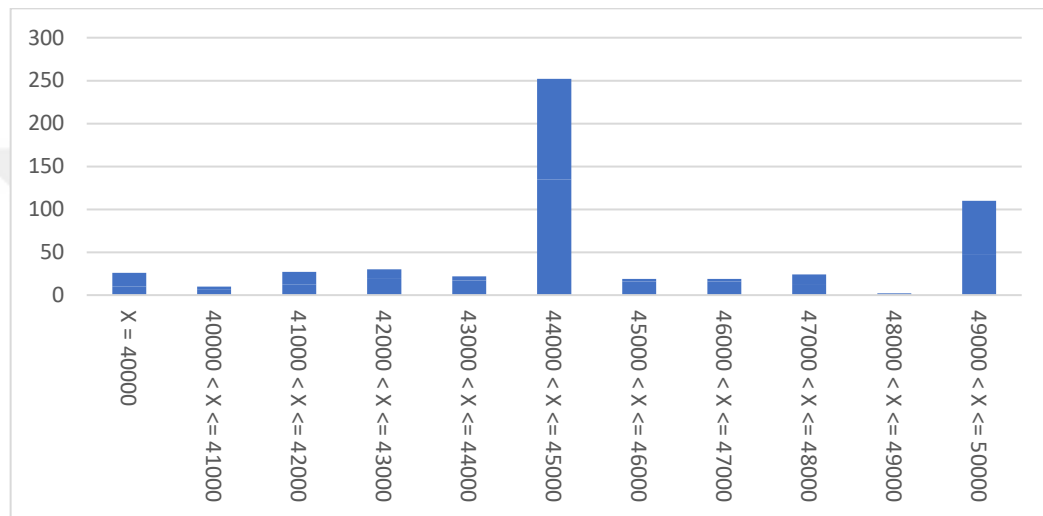
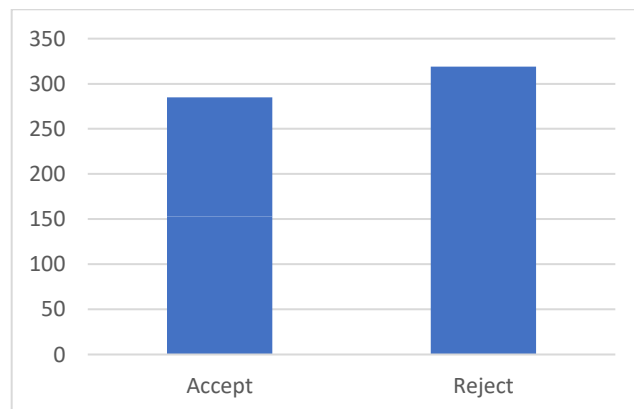


Figure 1.39 Response distribution for homo economicus question 5.



The intuitive relation of homo economicus concept with these questions is obvious. However, how to merge the responses to get a homo economicus measure needs

further calculations. For this purpose, we conducted component analysis and extracted two factors (Table 1.19).

Table 1.19 Component matrix for the homo economicus questions.

	Component	
	1	2
HE-Q1	-.692	
HE-Q3	.657	
HE-Q2	.628	
HE-Q5		-.783
HE-Q4		.742

The results indicate that we have two dimensions of homo economicus attribute extracted from the questions. First factor scores increase by higher scores from the second question's ordering and higher approval for third question's hardware store owner and decrease by employing more worker in the first question. All these questions are about profit maximising. Therefore, the first factor can be called profit orientation. Second-factor scores are positively correlated with the fourth question's salary offers and decrease by accepting the fifth question's offer. This relation points out wage maximisation. Thus the factor can be named as labour orientation. The factor scores distributions are given below in Figure 1.40 and Figure 1.41.

Figure 1.40 Profit orientation dimension score distribution of participants.

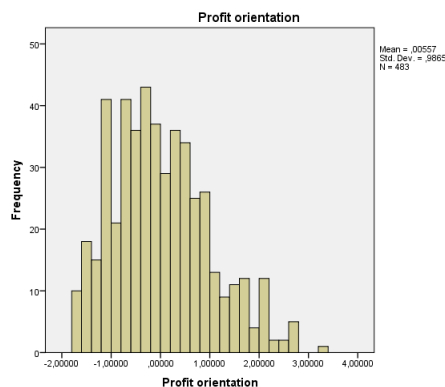
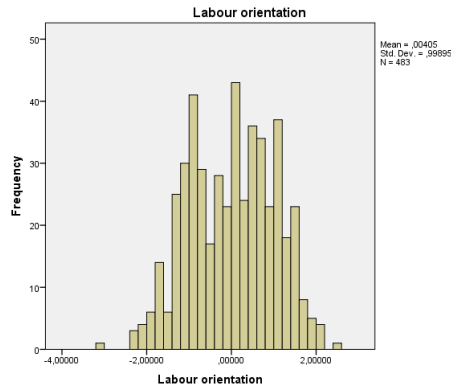


Figure 1.41 Labour orientation dimension score distribution of participants.

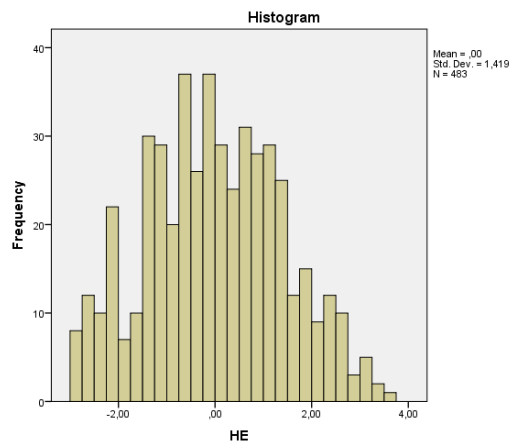


Profit orientation and labour orientation have opposite effects on homo economicus attribute. Thus, homo economicus attribute increases by profit orientation increment and decreases by labour orientation increment. That is why we defined “Homo economicus attribute” as the difference of the two factors.

Homo economicus attribute = Profit orientation score – Labour orientation score

The distribution of the homo economicus attribute of the participants is given in Figure 1.42.

Figure 1.42 Homo economicus attribute score distribution of the participants.



2 RESULTS AND ANALYSIS

In this section of the study, results and detailed analysis of the experiments and the surveys' outcomes are presented.

Both the experiments and surveys aim to categorise participants by their choice in the same question of group favouritism. However, the surveys have some compelling results on group favouritism questions compared to experiment outcomes. In the experiment (Çağlayan & Giritligil, 2016), we observed approximately 60% group favouritism behaviour, namely Decision 3, 25-30% non-maximization, Decision 1, and 10-15% maximiser without group favouritism, Decision 2. However, in the non-incentivized environment, we got around 65% non-maximiser response which led us to think that some people need to get an incentive to admit they are maximisers.

Table 2.1 Experiment Baseline and Survey Question Decision Distributions.

	Experiment	Survey (age ≤ 30)	Survey (age > 30)	Survey
Decision 1	33 (33%)	419 (62%)	414 (66%)	833 (63.6%)
Decision 2	12 (12%)	44 (6%)	59 (9%)	103 (7.9%)
Decision 3	54 (55%)	217 (32%)	157 (25%)	374 (28.5%)
p-value	-	6.5e-7	0	1e-8

Above, in Table 2.1., the decision distributions of the experiment's baseline treatment and surveys' group favouritism question which is an illustration of the baseline treatment are given including the distributions with respect to the age categories. Also, the goodness of fit test results, for the experiment and survey outcomes comparison, are given in the last row of the table. The difference between distributions can be easily observed via graphs given (Figures 2.1.-2.4.).

Figures 2.1-2.4 Experiment Baseline and Survey Question Decision Distribution

Figure 2.1

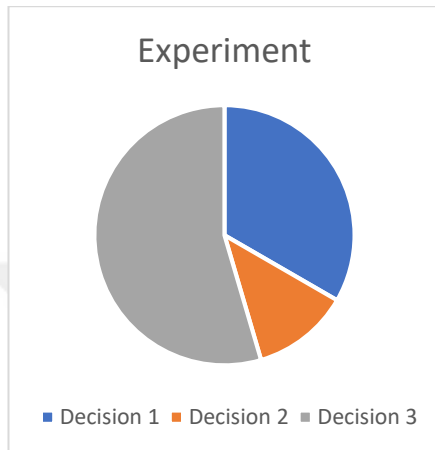


Figure 2.3

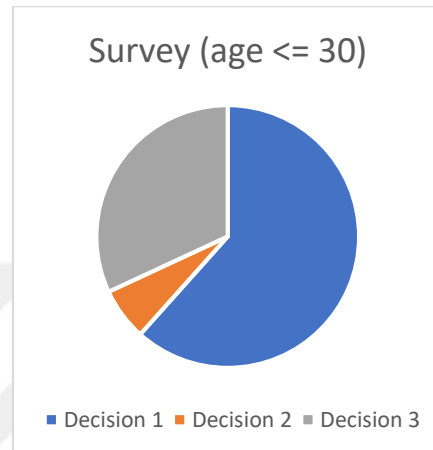


Figure 2.2

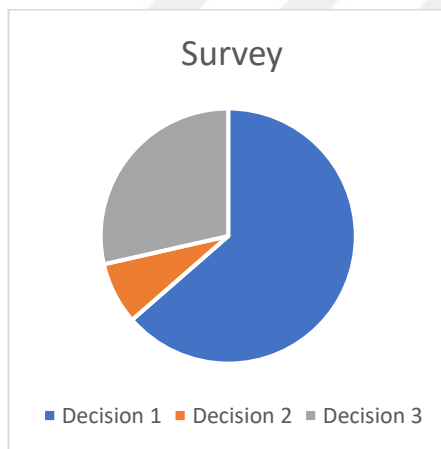
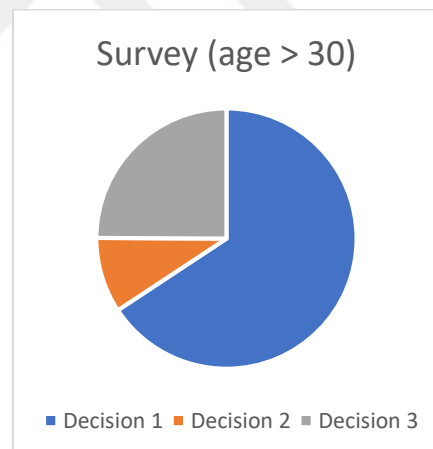


Figure 2.4



On the other hand, the distributions of Decision 2 and Decision 3 among maximisers are very similar especially for younger participants as can be seen in Figures 2.5.-2.8.

Figures 2.5-2.8 Experiment Baseline and Survey Question Maximiser Decision Distribution

Figure 2.5

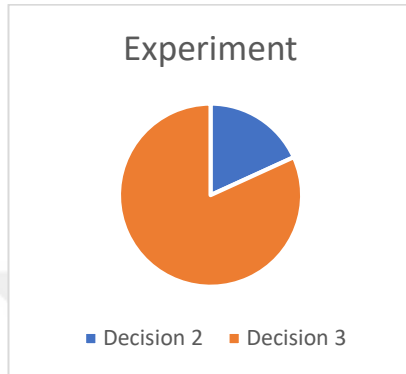


Figure 2.7

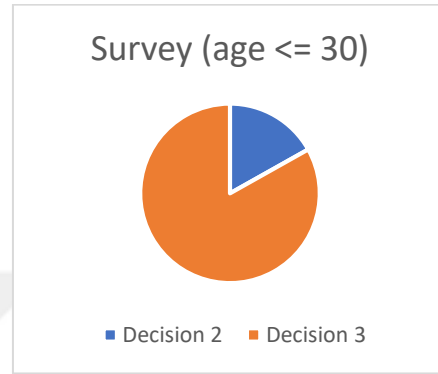


Figure 2.6

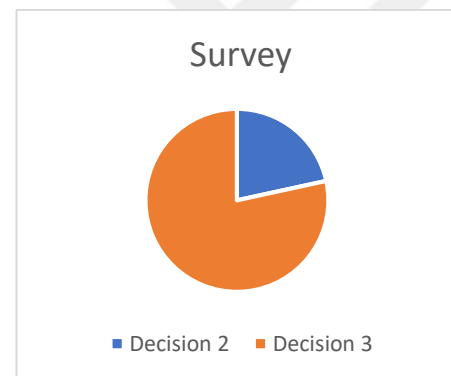
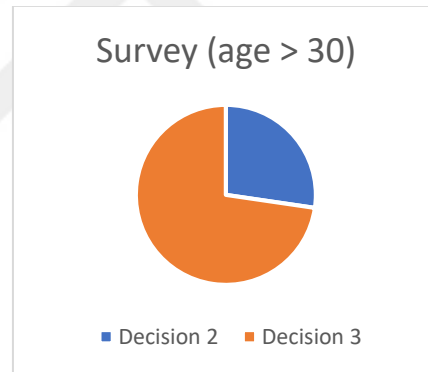


Figure 2.8



Since the participants of the experiments are undergraduate students of İstanbul Bilgi University, the similarity of the experimental data with the decision distribution of younger participants, who maximise in the group favouritism question, led us to conclude that we are able to capture a behaviour pattern via survey, even the distributions differ significantly.

Table 2.2 Experiment Baseline and Survey Question Maximiser Decision Distributions

	Experiment	Survey (age <= 30)	Survey (age > 30)	Survey
Decision 2	12 (18%)	44 (17%)	59 (27%)	103 (21.6%)
Decision 3	54 (82%)	217 (83%)	157 (73%)	374 (78.4%)
p-value	-	0.79876096	0.13465505	0.52503069

The proportions of Decision 2 and Decision 3 among maximisers are given in Table 2.2. with respect to the age categories with relevant statistical tests.

Thus, we decided to analyse participants' decisions in two parts. First, we checked whether they are maximisers, and tried to explore the common preference features of maximisers. Then we conducted a comparison among maximisers. In other words, we compared the participants who have chosen Decision 3 to the ones who have chosen Decision 2.

In the rest of this section of the study, results and detailed analysis of the experiments and the surveys' outcomes are presented. First, analysis of experiments takes place in three parts; treatment wise, parameter wise, and overall analysis. Second, the surveys are analysed for group favouritism and other preference relations in the individual base. Lastly, group favouritism behaviour in the family is analysed in three parts; direct intergenerational transmission of group favouritism, the relation of parents' preferences to children's group favouritism behaviour and the relation of parents' group favouritism behaviour to children's preferences.

2.1 LABORATORY EXPERIMENTS

Analysis of the treatments are planned in three categories; individual treatment analysis, parameter-wise analysis and overall analysis. Additionally, the questionnaire responds, second-period decision distributions and decision changes among periods are analysed and included in the overall analysis.

In the individual treatment analysis, each treatment's group and control treatments are compared, and probability values of the hypothesis tests are given in corresponding tables.

The parameter-wise analysis consists of the comparison of the treatments that differ only by the same parameter; inefficiency coefficient, cut-off amount and bonus.

Social inefficiency coefficient analysis is focused on Treatment 1, Baseline Treatment and Treatment 2 since they have the same parameter values except for inefficiency coefficient, q , which is 25%, 50% and 75% in Treatment 1, Baseline Treatment and Treatment 2, respectively. Similarly, cut-off amount analysis is focused on Treatment 4, Baseline Treatment and Treatment 3 which have same parameter values except cut-off amount. Cut-off amount becomes 5 points, 10 points and 40 points in Treatment 4, Baseline Treatment and Treatment 3, respectively. Lastly, the bonus amount analysis compares Treatment 6, baseline Treatment and Treatment 6 where the bonus amount takes values of 5 points, 10 points and 40 points respectively.

Overall analysis checks for robustness of the decision distributions against social outcomes of the alternative decisions. Moreover, in the last part of this section, variables from the questionnaire are also included in the overall analysis.

2.1.1 Treatment-wise Results and Analysis

In this part, the results of each treatment are given with group and control treatment decision distributions. Hypothesis test results for comparison of group and control treatments in both all distributions and decisions' proportion levels are listed. For distribution tests, the Chi-Square test of independence is applied, and the probability value of independence is stated. The difference of decisions' proportions are tested with hypothesis testing for two populations' proportion tests, and the probabilities of equal proportions are given. The significance levels of tests are marked according to Table 2.3.

Table 2.3 Markers for Significance Levels.

Significance status	Probability	Marker
Weak significance	$10 \% > p > 5 \%$	" ' "
Significance	$5 \% > p > 1 \%$	" * "
High significance	$1 \% > p > 0.1 \%$	" ** "
Very high significance	$0.1 \% > p > 0$	" *** "

2.1.1.1 Baseline Treatment

Baseline treatment has the original study's (Çağlayan & Giritligil, 2016) parameter values. 11 group and 8 control sessions are conducted which summed up to 171 subjects. The parameter values, the actual and relative decision distributions of group and control treatments and the probability values of hypothesis tests are given below.

Number of groups = Number of subjects in a group = 3

Initial endowment = 100

Cut-off amount = 10

Inefficiency coefficient = 0.5

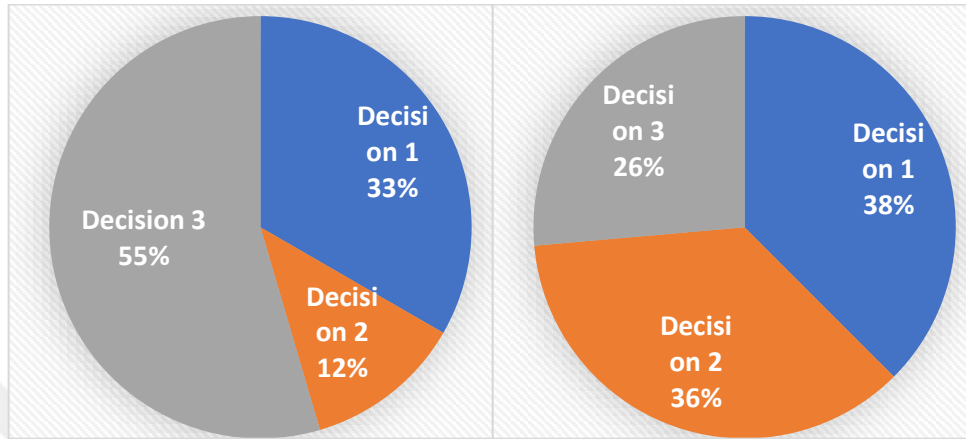
Bonus = 10

Table 2.4 Decision Distributions of Baseline and Its Control Treatments.

	Baseline	Control
Decision 1	33 (33%)	27 (38%)
Decision 2	12 (12%)	26 (36%)
Decision 3	54 (55%)	19 (26%)

The decision distributions show that in group sessions Decision 3 is chosen by the majority of the subjects. In control treatment, the proportion of Decision 3 is decreased to 26%, and the proportions of other options are increased (Table 2.4 and Figure 2.9).

Figure 2.9 Decision Distributions of Baseline and Its Control Treatments.



Hypothesis tests indicate that the distributions are not equal and, the individual proportions of maximising decisions are also different among baseline and its control treatments (Table 2.5).

Table 2.5 Hypothesis Tests for Baseline Treatment.

Hypothesis	p-value
Distributions are equal	0.00008512***
Decision 1's proportions are equal	0.572971119
Decision 2's proportions are equal	0.000194875***
Decision 3's proportions are equal	0.000237615***

In decision steps, the maximising decision proportion does not differ significantly (chi-square goodness of fit test, $p = 0.57281206$), but the decision distribution among maximiser decision differs with high significance (chi-square goodness of fit test, $p = 0.00001585$).

2.1.1.2 Treatment 1 ($q = 0.25$)

Treatment 1's parameter values differ from baseline treatment's parameter values by only social inefficiency coefficient (q) which is 25% instead of 50%. With this treatment, the effect of social inefficiency on group favouritism behaviour is tried

to be observed by reducing the inefficiency coefficient. 8 group and 6 control sessions are conducted which summed up to 126 subjects. The parameter values, the actual and relative decision distributions of group and control treatments and the probability values of hypothesis tests are given below.

Number of groups = Number of subjects in a group = 3

Initial endowment = 100

Cut-off amount = 10

Inefficiency coefficient = 0.25

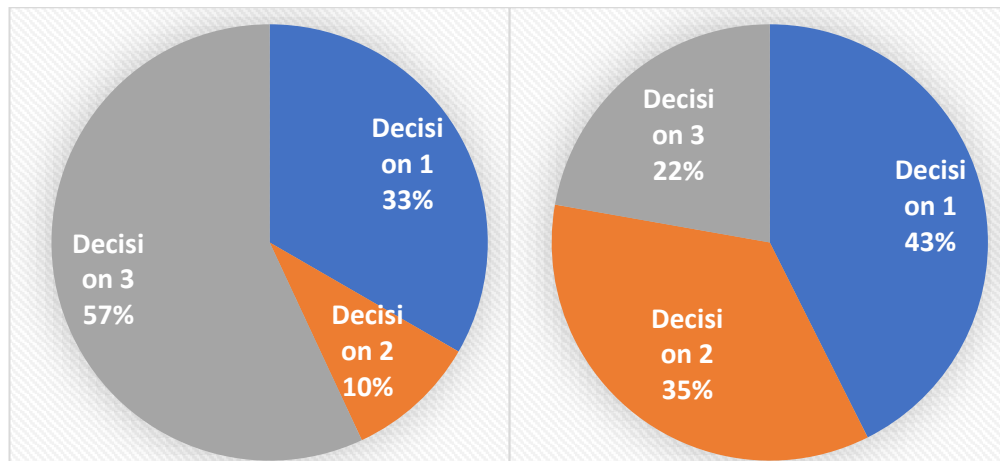
Bonus = 10

Table 2.6 Decision Distributions of Treatment 1 and Its Controls.

	Treatment 1	Control
Decision 1	24 (33.3%)	23 (42.6%)
Decision 2	7 (9.7%)	19 (35.2%)
Decision 3	41 (56.9%)	12 (22.2%)

As in baseline treatment, the decision distributions show that in group sessions Decision 3 is chosen by the majority of the subjects. In control treatment, the proportion of Decision 3 is decreased from 57% to 22%, and the proportions of other options are increased (Table 2.6 and Figure 2.10).

Figure 2.10 Decision Distributions of Treatment 1 and Its Controls.



Hypothesis tests indicate that the distributions are not equal and, the individual proportions of maximising decisions are also different among Treatment 1 and its control treatments (Table 2.7).

Table 2.7 Hypothesis Tests for Treatment 1.

Hypothesis	p-value
Distributions are equal	0.00006609***
Decision 1's proportions are equal	0.287527876
Decision 2's proportions are equal	0.000473726***
Decision 3's proportions are equal	9.34035E-05***

In first decision step, the maximising decision proportion does not differ significantly (chi-square goodness of fit test, $p = 0.28756214$), yet in the second step, the choice among maximiser decisions differs with high significance (chi-square goodness of fit test, $p = 0.00001604$).

2.1.1.3 Treatment 2 ($q = 0.75$)

Treatment 2's parameter values differ from baseline treatment's parameter values by only social inefficiency coefficient (q) which is 75% instead of 50%. With this treatment, the effect of social inefficiency on group favouritism behaviour is tried to be observed by increasing the inefficiency coefficient. 8 group and 6 control sessions are conducted which summed up to 126 subjects. The parameter values, the actual and relative decision distributions of group and control treatments and the probability values of hypothesis tests are given below.

Number of groups = Number of subjects in a group = 3

Initial endowment = 100

Cut-off amount = 10

Inefficiency coefficient = 0.75

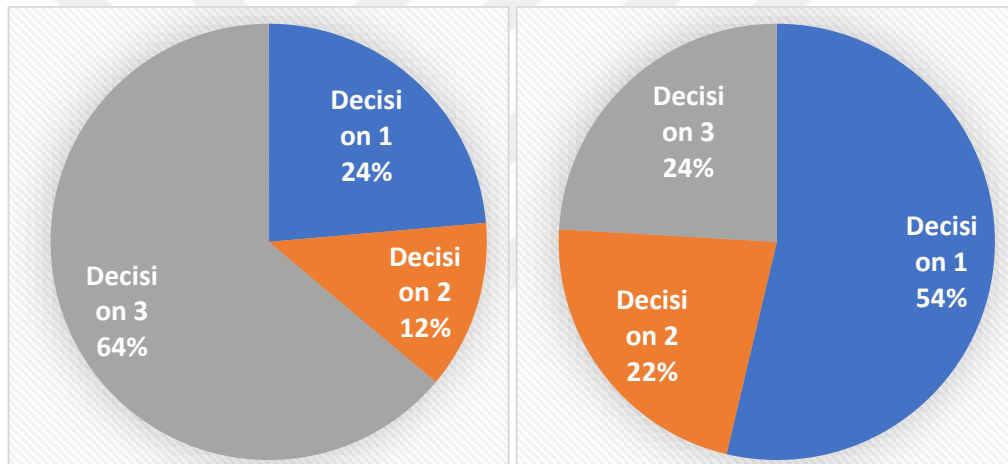
Bonus = 10

Table 2.8 Decision Distributions of Treatment 2 and Its Controls.

	Treatment 2	Control
Decision 1	17 (23.6%)	29 (53.7%)
Decision 2	9 (12.5%)	12 (22.2%)
Decision 3	46 (63.9%)	13 (24.1%)

Even under high inefficiency conditions, Decision 3 is chosen by most of the subjects in group treatment. However, in control treatments, Decision 1 is the favourite choice and chosen by the majority of the subjects (Table 2.8 and Figure 2.11).

Figure 2.11 Decision Distributions of Treatment 2 and Its Controls.



As in previous treatments, the difference between group and control treatments of Treatment 2 is statistically significant. However, in this treatment, the difference between Decision 1's proportions among group and control treatments also has high significance unlike the other treatments (Table 2.9).

Table 2.9 Hypothesis Tests for Treatment 2.

Hypothesis	p-value
Distributions are equal	0.00004894***
Decision 1's proportions are equal	0.000516529***
Decision 2's proportions are equal	0.147299139
Decision 3's proportions are equal	9.32308E-06***

Distinctively, maximiser proportion differs significantly among group and control treatments of Treatment 2 (chi-square goodness of fit test, $p = 0.00051654$). Similar to other treatments, the choice among maximiser decisions differs with high significance (chi-square goodness of fit test, $p = 0.00287366$).

2.1.1.4 Treatment 3 ($x = 40$)

Treatment 3's parameter values differ from baseline treatment's parameter values by only the cut-off amount (x) value which is 40 points instead of 10 points. With this treatment, the effect of the cut-off amount on group favouritism behaviour is tried to be observed by increasing the amount that will be transferred in case of implementation of Decision 2 or Decision 3. 8 group and 6 control sessions are conducted which summed up to 126 subjects. The parameter values, the actual and relative decision distributions of group and control treatments and the probability values of hypothesis tests are given below.

Number of groups = Number of subjects in a group = 3

Initial endowment = 100

Cut-off amount = 40

Inefficiency coefficient = 0.5

Bonus = 10

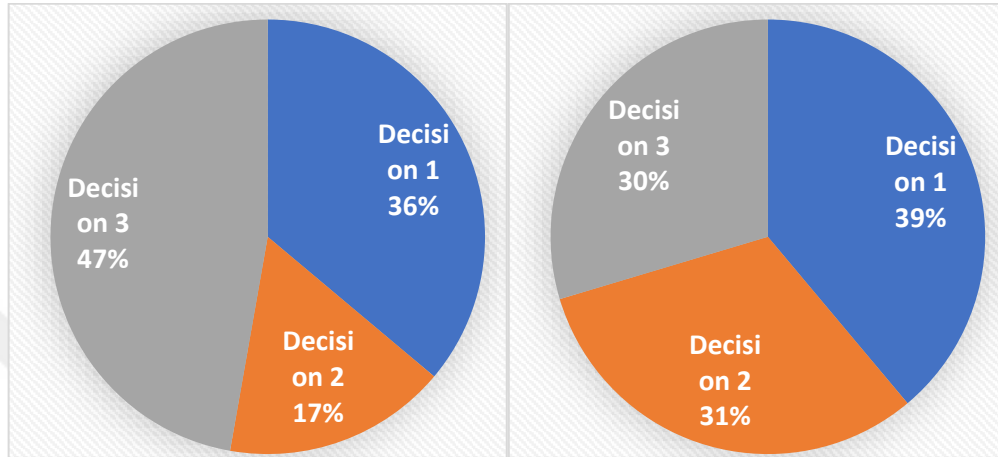
Table 2.10 Decision Distributions of Treatment 3 and Its Controls.

	Treatment 3	Control
Decision 1	26 (36.1%)	21 (38.9%)
Decision 2	12 (16.7%)	17 (31.5%)
Decision 3	34 (47.2%)	16 (29.6%)

Treatment 3 differs from other treatments by high payoff temptation along with the high social and individual damage responsibility. Hence, the only treatment that

Decision 3 proportion is lower than 50% in group treatments is Treatment 3 (Table 2.10 and Figure 2.12).

Figure 2.12 Decision Distributions of Treatment 3 and Its Controls.



Therefore, hypothesis tests reveal very weak significance levels in equality of distributions and equality of decisions' proportions among group and control treatments (Table 2.11).

Table 2.11 Hypothesis Tests for Treatment 3.

Hypothesis	p-value
Distributions are equal	0.06677009'
Decision 1's proportions are equal	0.749674851
Decision 2's proportions are equal	0.050576163'
Decision 3's proportions are equal	0.045771064*

Comparing the maximising decisions among group and control treatments show that the maximising decision proportion does not differ significantly (chi-square goodness of fit test, $p = 0.74944263$). Although in the second step the choice among maximiser decisions diverges significantly (chi-square goodness of fit test, $p = 0.02074605$), the significance level is lower than the other treatments'.

2.1.1.5 Treatment 4 ($x = 5$)

Treatment 4's parameter values differ from baseline treatment's parameter values by only the cut-off amount (x) which is 5 points instead of 10 points. With this treatment, the effect of the cut-off amount on group favouritism behaviour is tried to be observed by decreasing the amount that will be transferred in case of implementation of Decision 2 or Decision 3. 8 group and 6 control sessions are conducted which summed up to 126 subjects as well. The parameter values, the actual and relative decision distributions of group and control treatments and the probability values of hypothesis tests are given below.

Number of groups = Number of subjects in a group = 3

Initial endowment = 100

Cut-off amount = 5

Inefficiency coefficient = 0.5

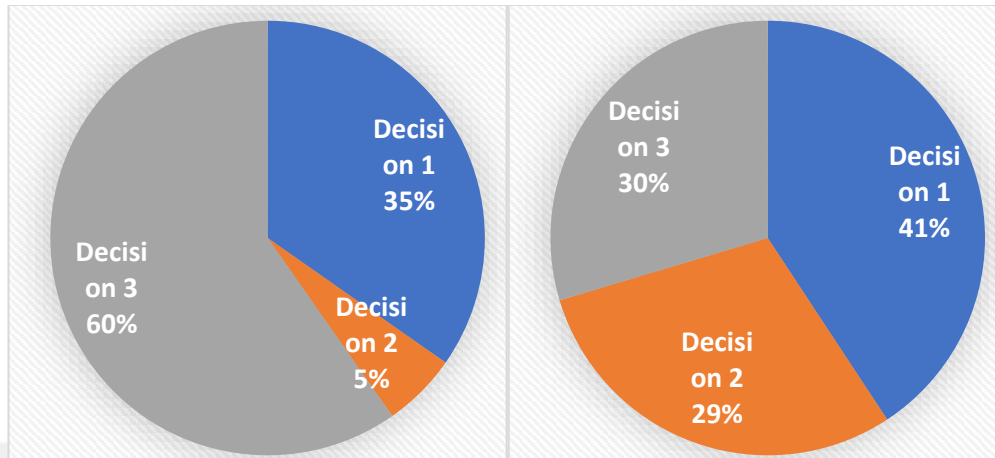
Bonus = 10

Table 2.12 Decision Distributions of Treatment 4 and Its Controls.

	Treatment 4	Control
Decision 1	25 (34.7%)	22 (40.7%)
Decision 2	4 (5.6%)	16 (29.6%)
Decision 3	43 (59.7%)	16 (29.6%)

Same as baseline treatment, the decision distributions show that in group sessions Decision 3 is chosen by the majority of the subjects. In control treatment, the proportion of Decision 3 is decreased from 60% to 30% and the proportions of other options increased (Table 2.12 and Figure 2.13).

Figure 2.13 Decision Distributions of Treatment 4 and Its Controls.



Hypothesis tests indicate that the distributions are not equal and, the individual proportions of maximising decisions are also different among Treatment 4 and its control treatments (Table 2.13).

Table 2.13 Hypothesis Tests for Treatment 4.

Hypothesis	p-value
Distributions are equal	0.00015579***
Decision 1's proportions are equal	0.48936806
Decision 2's proportions are equal	0.000252639***
Decision 3's proportions are equal	0.00080812***

In first decision step, the maximising decision proportion does not differ significantly (chi-square goodness of fit test, $p = 0.48932963$), yet in the second step, the choice among maximiser decisions differs with high significance (chi-square goodness of fit test, $p = 0.00003137$).

2.1.1.6 Treatment 5 ($a = 40$)

Treatment 5's parameter values differ from baseline treatment's parameter values by only the bonus amount (a) which is 40 points instead of 10 points. With this treatment, the effect of bonus on group favouritism behaviour is tried to be observed by increasing the bonus. 8 group and 6 control sessions are conducted which

summed up to 126 subjects. The parameter values, the actual and relative decision distributions of group and control treatments and the probability values of hypothesis tests are given below.

Number of groups = Number of subjects in a group = 3

Initial endowment = 100

Cut-off amount = 10

Inefficiency coefficient = 0.5

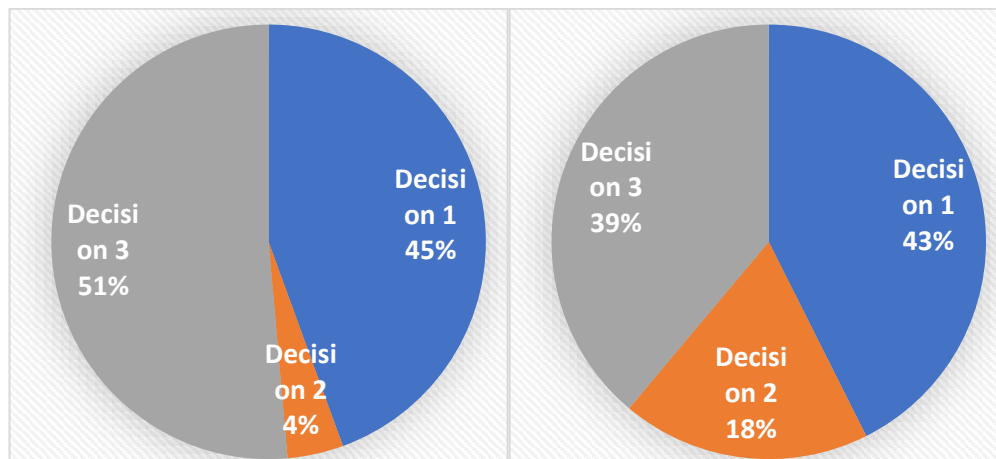
Bonus = 40

Table 2.14 Decision Distributions of Treatment 5 and Its Controls.

	Treatment 5	Control
Decision 1	32 (44.4%)	23 (42.6%)
Decision 2	3 (4.2%)	10 (18.5%)
Decision 3	37 (51.4%)	21 (38.9%)

In Treatment 5's decision distributions, although Decision 3 is chosen by the majority of the subjects as in other treatments, additionally, higher Decision 1 proportions are observable comparing to other treatments. In control treatment, proportions of Decision 1 and Decision 3 are lower where the proportion of Decision 2 higher comparing to group treatment (Table 2.14 and Figure 2.14).

Figure 2.14 Decision Distributions of Treatment 5 and Its Controls.



Hypothesis test results also diverge from other treatments by lower significance in overall distribution comparison and insignificance in Decision 3 proportion's equality test. Only Decision 2's proportions differ significantly among group and control treatments (Table 2.15).

Table 2.15 Hypothesis tests for Treatment 5.

Hypothesis	p-value
Distributions are equal	0.02689002*
Decision 1's proportions are equal	0.835684292
Decision 2's proportions are equal	0.008770575**
Decision 3's proportions are equal	0.163582116

In sub-steps of the decision-making process, we observe that the maximising decision proportion does not differ significantly (chi-square goodness of fit test, $p = 0.83572527$), yet in the second step the choice among maximiser decisions differs with high significance (chi-square goodness of fit test, $p = 0.0074672$).

2.1.1.7 Treatment 6 (a = 5)

Treatment 6's parameter values differ from baseline treatment's parameter values by only the bonus (a) which is 5 points instead of 10 points. With this treatment, the effect of bonus on group favouritism behaviour is tried to be observed by decreasing the bonus. 8 group and 6 control sessions are conducted which summed up to 126 subjects. The parameter values, the actual and relative decision distributions of group and control treatments and the probability values of hypothesis tests are given below.

Number of groups = Number of subjects in a group = 3

Initial endowment = 100

Cut-off amount = 10

Inefficiency coefficient = 0.5

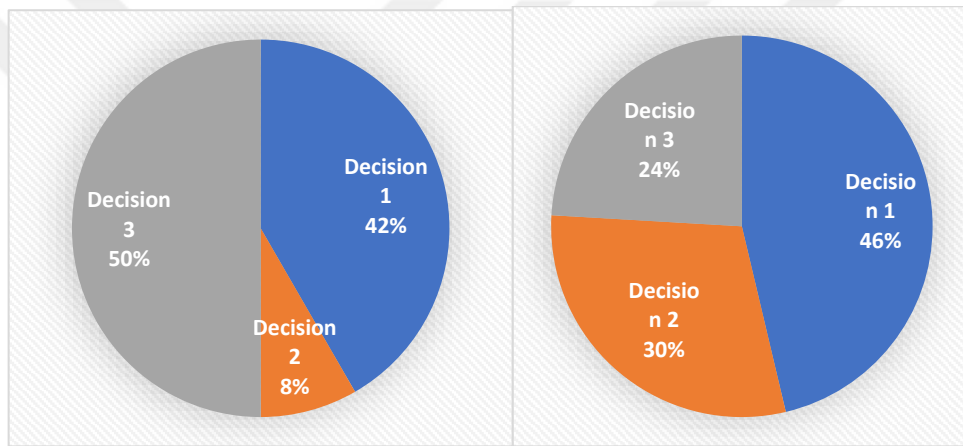
Bonus = 5

Table 2.16 Decision Distributions of Treatment 6 and Its Controls.

	Treatment 6	Control
Decision 1	30 (42%)	25 (46%)
Decision 2	6 (8%)	16 (30%)
Decision 3	36 (50%)	13 (24%)

Similarly, the decision distributions show that in group sessions Decision 3 is chosen by half of the subjects. In control treatment, the proportion of Decision 3 is decreased from 50% to 24%, and the proportions of other options are increased (Table 2.16 and Figure 2.15).

Figure 2.15 Decision Distributions of Treatment 6 and Its Controls.



Hypothesis tests indicate that the distributions are not equal, and except for Decision 1, individual proportions of decisions are also different among group and control treatments (Table 2.17).

Table 2.17 Hypothesis Tests for Treatment 6.

Hypothesis	p-value
Distributions are equal	0.00117088**
Decision 1's proportions are equal	0.60408000
Decision 2's proportions are equal	0.00183201**
Decision 3's proportions are equal	0.00313485**

In first decision step, the maximising decision proportion does not differ significantly (chi-square goodness of fit test, $p = 0.60400337$), yet in the second step, the choice among maximiser decisions differs with high significance (chi-square goodness of fit test, $p = 0.00025015$).

2.1.2 Parameterwise Analysis

The experiment set is designed to test the robustness of socially harmful group favouritism behaviour against the parameter values of the experiment. Hence the social inefficiency coefficient (q), the cut-off amount (x) and the bonus amount (a) are increased and decreased systematically. Consequently, for each parameter, three treatments that only differ from each other by the parameter value are obtained via seven treatments.

In this part of the analysis Treatment 1, Baseline Treatment and Treatment 2 are grouped for social inefficiency coefficient analysis, Treatment 4, Baseline Treatment and Treatment 3 are grouped for cut-off amount analysis and Treatment 6, Baseline Treatment and Treatment 5 are grouped for bonus amount analysis. For each of the analysis, sub-steps of decisions are also tested.

2.1.2.1 Social Inefficiency Coefficient Analysis

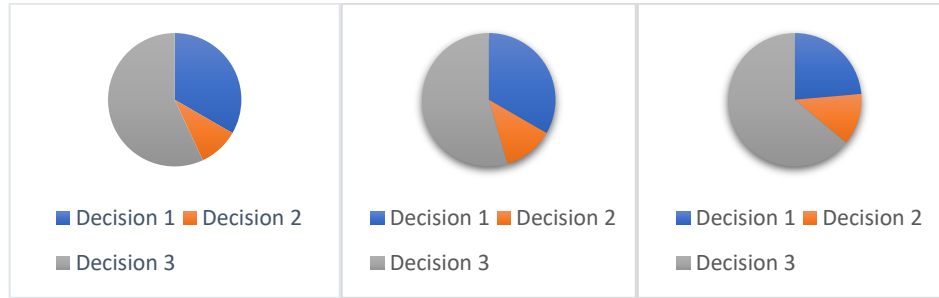
Treatment 1, Baseline Treatment and Treatment 2 share same parameter values except for social inefficiency coefficient (q) which takes values of 0.25, 0.5 and 0.75 respectively. Therefore, these treatments are compared to observe social inefficiency coefficient's (q) influence over group favouritism behaviour.

Table 2.18 Social Inefficiency Coefficient Treatments.

	Treatment 1	Baseline Treatment	Treatment 2
Decision 1	24 (33.3%)	33 (33.3%)	17 (23.6%)
Decision 2	7 (9.7%)	12 (12.1%)	9 (12.5%)
Decision 3	41 (56.9%)	54 (54.5%)	46 (63.9%)
Total	72	99	72

Decision distributions (Figure 2.16) only reveal insignificant increment in Decision 2 proportion as social inefficiency coefficient increases (Table 2.18).

Figure 2.16 Social Inefficiency Coefficient Treatments

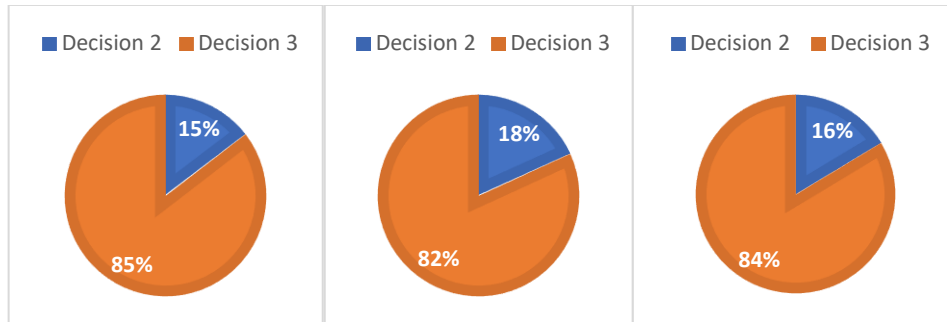


Hypothesis tests for equality of distributions or equality of individual decision proportions among social inefficiency coefficient treatments fail to detect any significant difference (Table 2.19).

Table 2.19 Hypothesis Tests for Social Inefficiency Coefficient Treatments.

Hypothesis	p-value
All distributions are equal	0.642
Distributions of Baseline Treatment and Treatment 1 are equal	0.878
Distributions of Baseline Treatment and Treatment 2 are equal	0.373
Distributions of Treatment 1 and Treatment 2 are equal	0.421
Proportions of Decisions 1 are equal in Baseline Treatment and Treatment 1	1
Proportions of Decisions 1 are equal in Baseline Treatment and Treatment 2	0.168
Proportions of Decisions 1 are equal in Treatment 1 and Treatment 2	0.196
Proportions of Decisions 2 are equal in Baseline Treatment and Treatment 1	0.622
Proportions of Decisions 2 are equal in Baseline Treatment and Treatment 2	0.940
Proportions of Decisions 2 are equal in Treatment 1 and Treatment 2	0.596
Proportions of Decisions 3 are equal in Baseline Treatment and Treatment 1	0.755
Proportions of Decisions 3 are equal in Baseline Treatment and Treatment 2	0.221
Proportions of Decisions 3 are equal in Treatment 1 and Treatment 2	0.394

Figure 2.17 Decision 2 and 3 Distributions for Social Inefficiency Coefficient Treatments



Also, in the sub-steps analysis of decision-making process, there is not any significant pattern neither in maximising decision nor in choosing between Decision 2 and Decision 3 (Figure 2.17).

2.1.2.2 Social Inefficiency Coefficient Tests for Control Groups

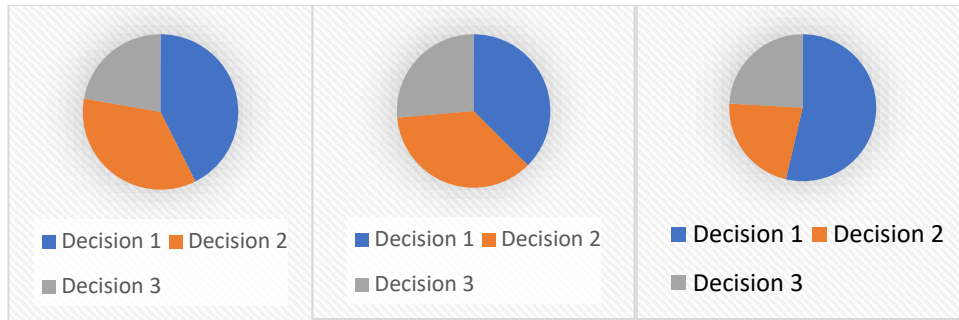
In control treatments of social inefficiency coefficient treatments, the effect of the inefficiency coefficient in a non-grouped environment is tried to be caught.

Table 2.20 Social Inefficiency Coefficient Control Treatments

	Control of T1	Control of Baseline T	Control of T2
Decision 1	23 (42.6%)	27 (37.5%)	29 (53.7%)
Decision 2	19 (35.2%)	26 (36.1%)	12 (22.2%)
Decision 3	12 (22.2%)	19 (26.4%)	13 (24.1%)
Total	54	72	54

However, there is not any observable pattern in decision distributions (Figure 2.18) of social inefficiency coefficient control treatments (Table 2.20).

Figure 2.18 Social Inefficiency Coefficient Control Treatments



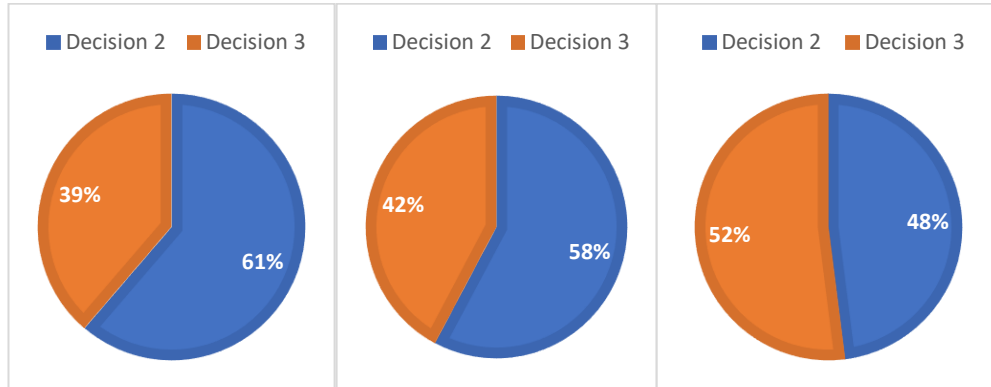
Moreover, hypothesis tests also fail to detect any significant results except the weak difference between baseline control and Treatment 2 control treatments' Decision 1 and Decision 2 proportions (Table 2.21).

Table 2.21 Hypothesis Tests for Social Inefficiency Coefficient Control Treatments.

Hypothesis	p-value
All distributions are equal	0.369
Distributions of Baseline Treatment and Treatment 1 are equal	0.808
Distributions of Baseline Treatment and Treatment 2 are equal	0.145
Distributions of Treatment 1 and Treatment 2 are equal	0.315
Proportions of Decisions 1 are equal in Baseline Treatment and Treatment 1	0.563
Proportions of Decisions 1 are equal in Baseline Treatment and Treatment 2	0.070'
Proportions of Decisions 1 are equal in Treatment 1 and Treatment 2	0.248
Proportions of Decisions 2 are equal in Baseline Treatment and Treatment 1	0.915
Proportions of Decisions 2 are equal in Baseline Treatment and Treatment 2	0.093'
Proportions of Decisions 2 are equal in Treatment 1 and Treatment 2	0.136
Proportions of Decisions 3 are equal in Baseline Treatment and Treatment 1	0.591
Proportions of Decisions 3 are equal in Baseline Treatment and Treatment 2	0.768
Proportions of Decisions 3 are equal in Treatment 1 and Treatment 2	0.82

Maximiser proportions in Treatment 1, Baseline Treatment and Treatment 2 controls are 57.4%, 62.5% and 46.3% respectively. Hence, no linear relation of maximising decision with social inefficiency coefficient can be claimed.

Figure 2.19 Decision 2 and 3 Distributions for Social Inefficiency Coefficient Control Treatments



However, in choosing between Decision 2 and Decision 3, as the social inefficiency coefficient increases, an increment in Decision 3 proportion can be observed (Figure 2.19). That relation contradicts with the assumption that higher inefficiency leads people to choose less inefficient options when other parameters are constant.

2.1.2.3 Cut-off Amount Tests

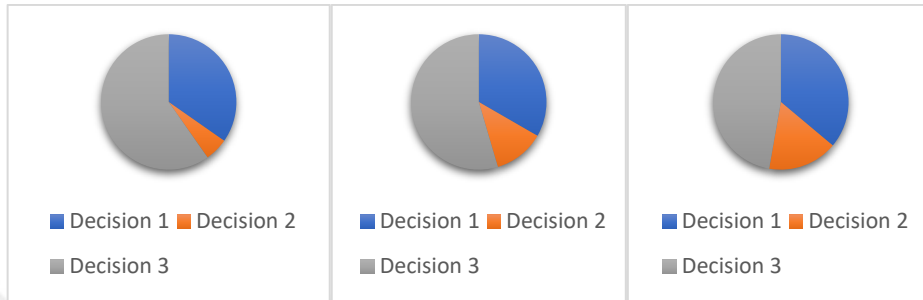
Cut-off amount treatments are Treatment 4, Baseline Treatment and Treatment 3 and have the same parameter setting except the cut-off amount (x) which takes values of 5 points, 10 points, and 40 points respectively. In order to check the robustness of the behaviour to the changes in cut-off amount, these treatments are compared.

Table 2.22 Cut-off Amount Treatments.

	Treatment 4	Baseline Treatment	Treatment 3
Decision 1	25 (34.7%)	33 (33.3%)	26 (36.1%)
Decision 2	4 (5.6%)	12 (12.1%)	12 (16.7%)
Decision 3	43 (59.7%)	54 (54.5%)	34 (47.2%)
Total	72	99	72

In the decision distributions (Figure 2.20), the increment in Decision 2 proportions and reduction in Decision 3 proportions can be observed as cut-off amount increases (Table 2.22).

Figure 2.20 Cut-off Amount Treatments.



Moreover, hypothesis tests for equality of distributions and proportions of decisions point to the significant difference between Treatment 3 and Treatment 4 especially in the proportion of Decision 2 (Table 2.23).

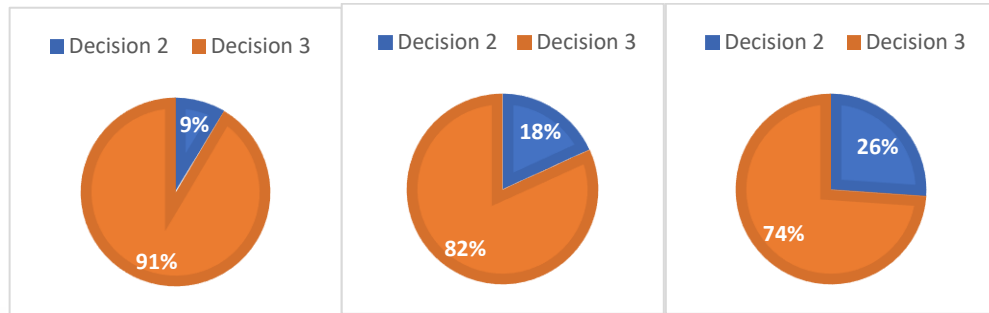
Table 2.23 Hypothesis Tests for Cut-off Amount Treatments.

Hypothesis	p-value
All distributions are equal	0.281
Distributions of Baseline Treatment and Treatment 3 are equal	0.565
Distributions of Baseline Treatment and Treatment 4 are equal	0.343
Distributions of Treatment 3 and Treatment 4 are equal	0.079'
Proportions of Decisions 1 are equal in Baseline Treatment and Treatment 4	0.850
Proportions of Decisions 1 are equal in Baseline Treatment and Treatment 3	0.706
Proportions of Decisions 1 are equal in Treatment 3 and Treatment 4	0.862
Proportions of Decisions 2 are equal in Baseline Treatment and Treatment 4	0.146
Proportions of Decisions 2 are equal in Baseline Treatment and Treatment 3	0.398
Proportions of Decisions 2 are equal in Treatment 3 and Treatment 4	0.034*
Proportions of Decisions 3 are equal in Baseline Treatment and Treatment 4	0.500
Proportions of Decisions 3 are equal in Baseline Treatment and Treatment 3	0.344
Proportions of Decisions 3 are equal in Treatment 3 and Treatment 4	0.133

In maximising or not decision stage of decision making no statistical evidence of relation can be detected. Yet, excluding non-maximisers (Figure 2.21) reveals the

clear increment in Decision 2 proportion (chi-square goodness of fit test, for overall $p = 0.0831175$ and for Treatment 3 and Treatment 4 $p = 0.02473991$).

Figure 2.21 Decision 2 and 3 Distributions for Cut-off Amount Treatments.



2.1.2.4 Cut-off Amount Tests for Control Groups

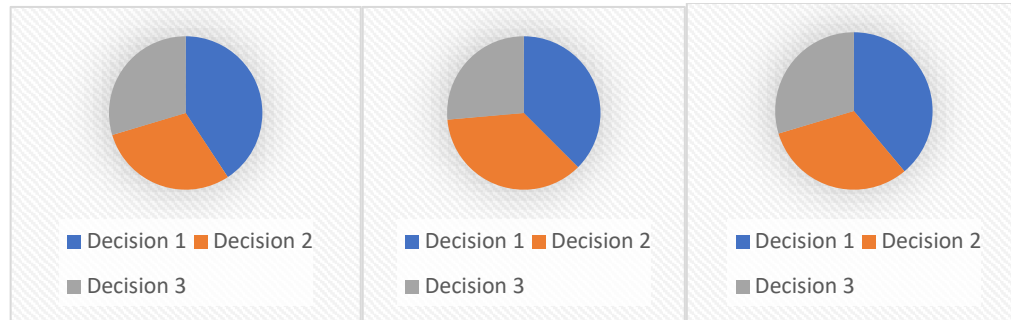
Control groups of the cut-off treatments have very similar decision distributions revealing that in the non-grouped environment, the cut-off amount is not effective on decision distributions.

Table 2.24 Cut-off Amount Control Treatments.

	Control of T4	Control of Baseline T	Control of T3
Decision 1	22 (40.7%)	27 (37.5%)	21 (38.9%)
Decision 2	16 (29.6%)	26 (36.1%)	17 (31.5%)
Decision 3	16 (29.6%)	19 (26.4%)	16 (29.6%)
Total	54	72	54

According to decision distributions (Figure 2.22), increasing or decreasing cut-off amount in without group treatments increases Decision 1 and Decision 3 proportions (Table 2.24).

Figure 2.22 Cut-off Amount Control Treatments.



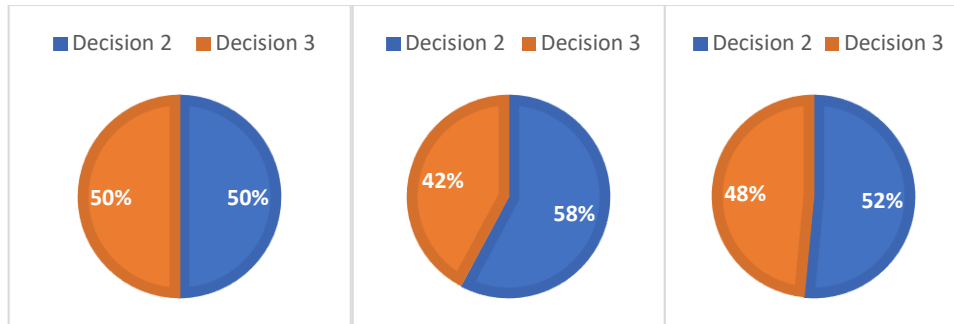
Since the decision distributions are very close, the hypothesis tests for equality of distributions or equality of individual decision proportions reveal very high probability values as expected (Table 2.25).

Table 2.25 Hypothesis Tests for Cut-off Amount Control Treatments.

Hypothesis	p-value
All distributions are equal	0.954
Distributions of Baseline Treatment and Treatment 3 are equal	0.850
Distributions of Baseline Treatment and Treatment 4 are equal	0.745
Distributions of Treatment 3 and Treatment 4 are equal	0.974
Proportions of Decisions 1 are equal in Baseline Treatment and Treatment 4	0.712
Proportions of Decisions 1 are equal in Baseline Treatment and Treatment 3	0.874
Proportions of Decisions 1 are equal in Treatment 3 and Treatment 4	0.844
Proportions of Decisions 2 are equal in Baseline Treatment and Treatment 4	0.445
Proportions of Decisions 2 are equal in Baseline Treatment and Treatment 3	0.588
Proportions of Decisions 2 are equal in Treatment 3 and Treatment 4	0.835
Proportions of Decisions 3 are equal in Baseline Treatment and Treatment 4	0.688
Proportions of Decisions 3 are equal in Baseline Treatment and Treatment 3	0.688
Proportions of Decisions 3 are equal in Treatment 3 and Treatment 4	1.000

Also, in sub-steps of decisions, the proportions of maximisers or the proportions of decisions among maximisers are too close to claim for any relation between the cut-off amount and decision distributions in control treatments (Figure 2.23).

Figure 2.23 Decision 2 and 3 Distributions for Cut-off Amount Control Treatments.



2.1.2.5 Bonus Amount Tests

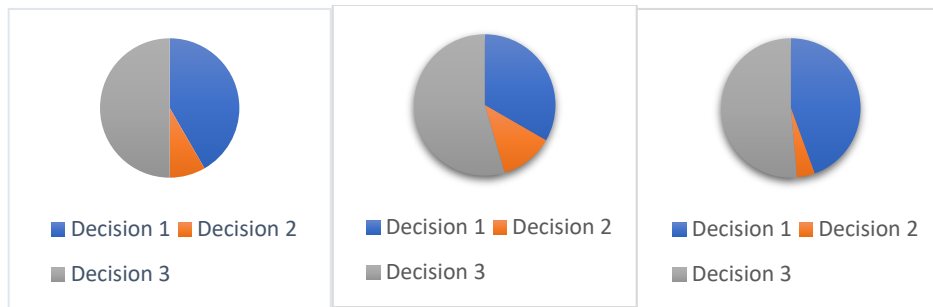
Treatment 6, Baseline Treatment and Treatment 5 have the same parameter setting except for the bonus amount (a) which takes values of 5 points, 10 points, and 40 points respectively. The relation of the behaviour with the bonus amount is tried to be examined by comparing these treatments.

Table 2.26 Bonus Amount Treatments.

	Treatment 6	Baseline Treatment	Treatment 5
Decision 1	30 (41.7%)	33 (33.3%)	32 (44.4%)
Decision 2	6 (8.3%)	12 (12.1%)	3 (4.2%)
Decision 3	36 (50.0%)	54 (54.5%)	37 (51.4%)
Total	72	99	72

In both ways of change in bonus amount (Figure 2.24) increases Decision 1 proportion and decreases the proportions of Decision 2 and Decision 3 (Table 2.26).

Figure 2.24 Bonus Amount Treatments.



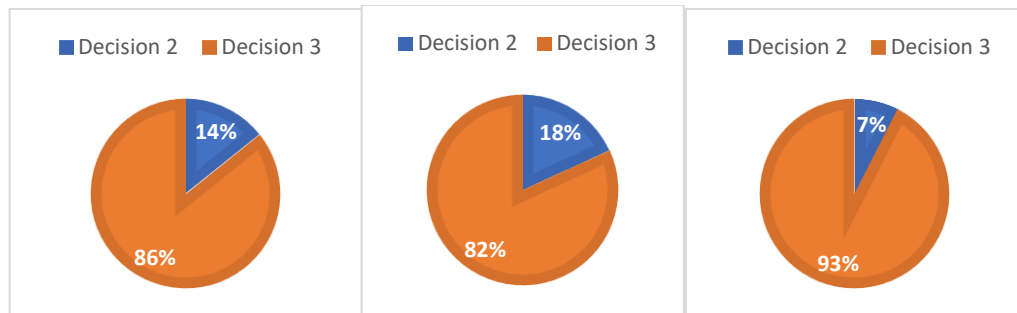
Hypothesis tests for any difference among bonus amount treatments yield no significant difference except the difference of Decision 2 proportions of Baseline Treatment and Treatment 5 which has weak significance (Table 2.27).

Table 2.27 Hypothesis Tests for Bonus Amount Treatments.

Hypothesis	p-value
All distributions are equal	0.316
Distributions of Baseline Treatment and Treatment 5 are equal	0.109
Distributions of Baseline Treatment and Treatment 6 are equal	0.468
Distributions of Treatment 5 and Treatment 6 are equal	0.583
Proportions of Decisions 1 are equal in Baseline Treatment and Treatment 6	0.265
Proportions of Decisions 1 are equal in Baseline Treatment and Treatment 5	0.139
Proportions of Decisions 1 are equal in Treatment 5 and Treatment 6	0.736
Proportions of Decisions 2 are equal in Baseline Treatment and Treatment 6	0.426
Proportions of Decisions 2 are equal in Baseline Treatment and Treatment 5	0.069'
Proportions of Decisions 2 are equal in Treatment 5 and Treatment 6	0.302
Proportions of Decisions 3 are equal in Baseline Treatment and Treatment 6	0.557
Proportions of Decisions 3 are equal in Baseline Treatment and Treatment 5	0.683
Proportions of Decisions 3 are equal in Treatment 5 and Treatment 6	0.868

In the sub-step analysis of decision making, no pattern in maximising or not decision or in the choice between Decision 2 and Decision 3 can be observed (Figure 2.25).

Figure 2.25 Decision 2 and 3 Distributions for Bonus Amount Treatments.



2.1.2.6 Bonus Amount Tests for Control Groups

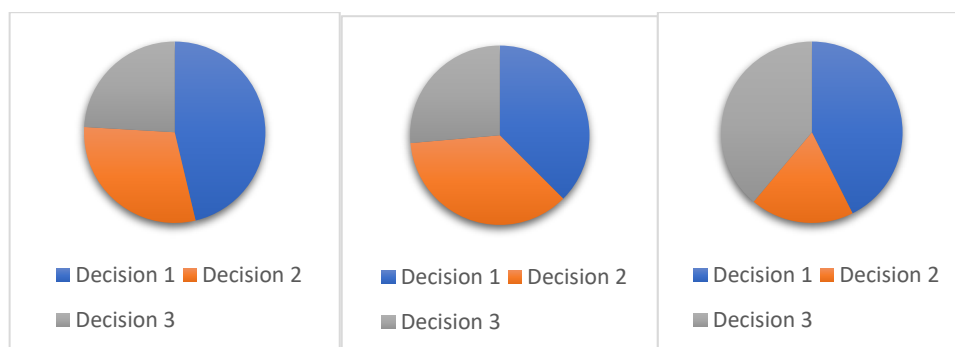
Control groups of the bonus amount treatments have more disperse decision distributions when compared to group treatments (Table 2.28).

Table 2.28 Bonus Amount Control Treatments.

	Control of T6	Control of Baseline T	Control of T5
Decision 1	25 (46.3%)	27 (37.5%)	23 (42.6%)
Decision 2	16 (29.6%)	26 (36.1%)	10 (18.5%)
Decision 3	13 (24.1%)	19 (26.4%)	21 (38.9%)
Total	54	72	54

Similar to group treatments, high bonus amount decreases Decision 2 proportion (Figure 2.26).

Figure 2.26 Bonus Amount Control Treatments.



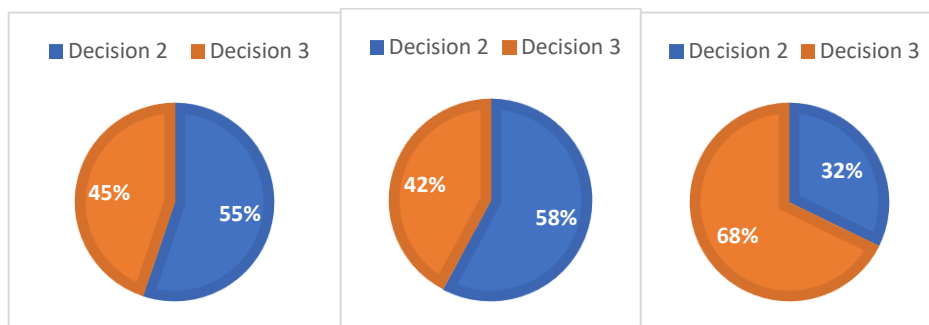
Moreover, hypothesis tests indicate that the difference between Baseline Treatment and Treatment 5 is weakly significant where Decision 2 proportions' differences are statistically significant between these treatments (Table 2.29).

Table 2.29 Hypothesis Tests for Bonus Amount Control Treatments.

Hypothesis	p-value
All distributions are equal	0.178
Distributions of Baseline Treatment and Treatment 5 are equal	0.080'
Distributions of Baseline Treatment and Treatment 6 are equal	0.597
Distributions of Treatment 5 and Treatment 6 are equal	0.187
Proportions of Decisions 1 are equal in Baseline Treatment and Treatment 6	0.321
Proportions of Decisions 1 are equal in Baseline Treatment and Treatment 5	0.563
Proportions of Decisions 1 are equal in Treatment 5 and Treatment 6	0.699
Proportions of Decisions 2 are equal in Baseline Treatment and Treatment 6	0.445
Proportions of Decisions 2 are equal in Baseline Treatment and Treatment 5	0.031*
Proportions of Decisions 2 are equal in Treatment 5 and Treatment 6	0.177
Proportions of Decisions 3 are equal in Baseline Treatment and Treatment 6	0.768
Proportions of Decisions 3 are equal in Baseline Treatment and Treatment 5	0.136
Proportions of Decisions 3 are equal in Treatment 5 and Treatment 6	0.097

Checking for the maximising decision step does not reveal any significant pattern, however, testing the choices between Decision 2 and Decision 3 (Figure 2.27) show that Decision 2 proportion among maximisers significantly decreases by high bonus amount in control treatments (chi-square goodness of fit test, p-value = 0.02199728).

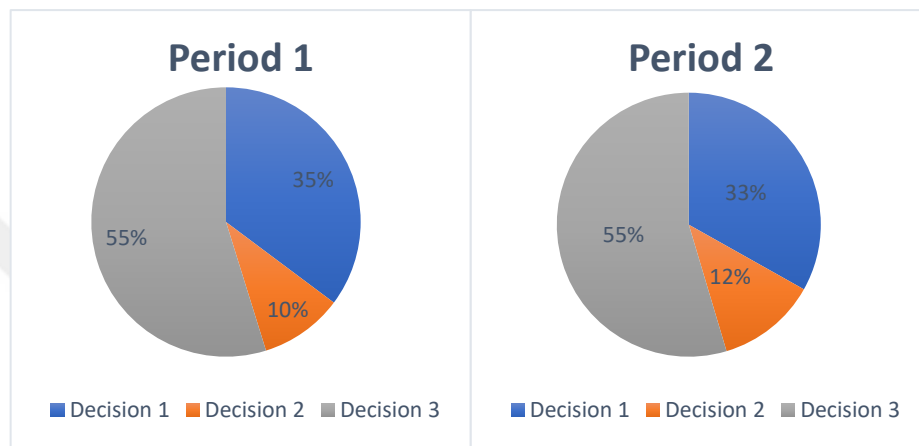
Figure 2.27 Decision 2 and 3 Distributions for Bonus Amount Control Treatments.



2.1.3 Decision Changes

As explained in the design of the experiment, there are two decision periods in order to check for decision changes among periods.

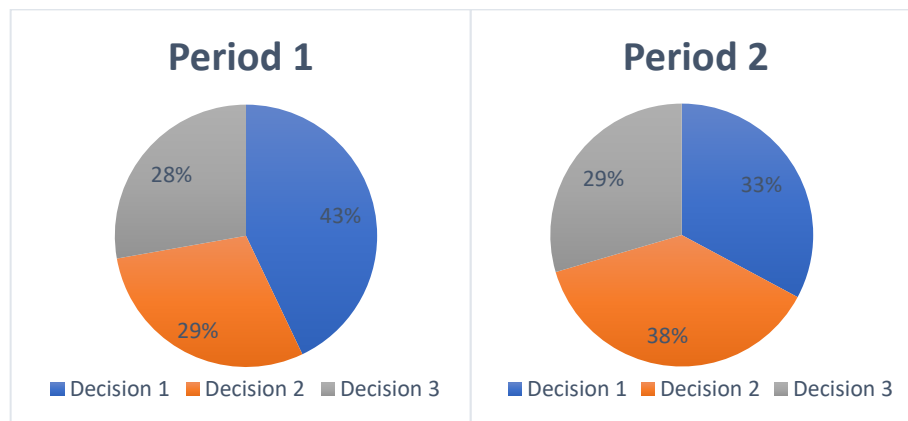
Figure 2.28 Decision distributions of Period 1 and Period 2 in group treatments.



Although there is a slight drop in Decision 1 proportion and increment in Decision 2 proportion among periods (Figure 2.28), the difference is statistically insignificant (chi-square goodness of fit test, $p\text{-value} = 0.45955346$).

On the other hand, the similarity of two periods' decisions distributions in group treatments eliminates the concerns on strategic decision considering the participants know that the second period is the last stage of the experiment.

Figure 2.29 Decision distributions of Period 1 and Period 2 in control treatments.



The decrement of Decision 1 proportion seems higher in control treatments (Figure 2.29) and causes significant distribution difference between periods (chi-square goodness of fit test, $p\text{-value} = 0.00799052$).

In general, we observed that 37% of participants change their decisions across periods. However, this proportion significantly differs between group and control treatments (Table 2.30). In the group setting, participants change their decisions among periods significantly less often comparing to the control treatments.

Table 2.30 Decision changes in group and control treatments.

	Group	Control
Change	177 (33%)	168 (42%)
Keep	354 (67%)	228 (58%)
Chi-square	8.023	
p-value	0.0046187	

Moreover, classifying participants by their first period decisions (Table 2.31) show that decision change proportion is independent of first period's decision for only control treatments (chi-square goodness of fit test, $p\text{-value} = 0.23990794$). In group treatments, Decision 3 takers' decision change ratio is significantly lower than other participants (chi-square goodness of fit test, $p\text{-value} = 0.00000012$).

Table 2.31 Decision changes according to first period decisions.

		Decision 1	Decision 2	Decision 3
Group	Change	68 (36%)	29 (55%)	80 (27%)
	Keep	119 (64%)	24 (45%)	211 (73%)
Control	Change	72 (42%)	43 (37%)	53 (48%)
	Keep	98 (58%)	73 (63%)	57 (52%)

In order to understand the reasons for these decision changes, the implemented decisions of the first periods are also examined. The implemented decisions in the first period of the sessions are given Table 2.32.

Table 2.32 Implemented decisions in the first periods.

	Decision 1	Decision 2	Decision 3
Group	25	4	30
Control	16	10	18

Participants' reactions to the implemented decisions are given in Table 2.33 with respect to group and control treatments. If the first period's implemented decision is a maximising decision, especially Decision 3, participants tend to change their decision choice more often in both group (chi-square goodness of fit test, p-value = 0.00133543) and control treatments (chi-square goodness of fit test, p-value = 0.01629332).

Table 2.33 Decision changes according to implemented decisions.

		Decision 1	Decision 2	Decision 3
Group	Change	56 (25%)	12 (33%)	109 (40%)
	Keep	169 (75%)	24 (67%)	161 (60%)
Control	Change	48 (33%)	40 (44%)	80 (49%)
	Keep	96 (67%)	50 (56%)	82 (51%)

2.1.4 Overall Analysis Without Questionnaire

In order to analyse group favouritism and social efficiency concerns relations, the decisions in both periods and the decision sub-stages are examined. Since the decision of experiment is a categorical variable, multinomial logistic regression is utilized in overall decision explanation, and binary logistic regression is used to explain "maximise or not" and among maximisers "Decision 2 or Decision 3" stages of the decision-making process.

The social outcomes of the treatments are categorised with respect to their comparative positions to baseline treatment and variables UDS, GDS and RDS are created accordingly (Table 2.34).

Table 2.34 Categories of treatments.

	Utilitarian	Egalitarian	Nash	Rawlsian
Worse than baseline (1)	T2-T3-T6	T1-T3-T5	T2-T3-T6	T3
Baseline (2)	Baseline T	Baseline T	Baseline T	Baseline T -T1-T2-T5-T6
Better than baseline (3)	T1-T4-T5	T2-T4-T6	T1-T4-T5	T4

The variables that are used in the analysis are given in Table 2.35.

Table 2.35 Variables for logistic regression.

P1Decision	First period's decision
P2Decision	Second period's decision
Control	(Dummy) 1 if the session is a control treatment's session (without group)
GD2GD3	Gini coefficient of Decision 2 / Gini coefficient of Decision 3
UD3UD2	Total payoff of Decision 3 / Total payoff of Decision 2
ND3ND2	Nash outcome of Decision 3 / Nash outcome of Decision 2
P1MAX	(Dummy) 1 if first-period decision is a maximising decision
P2MAX	(Dummy) 1 if second-period decision is a maximising decision
P1_2VS3	(Dummy) 1 if first-period decision is Decision 3
P2_2VS3	(Dummy) 1 if second-period decision is Decision 3
GDS	Equality rank of treatment
UDS	Utilitarian or Nash rank of treatment
RDS	Rawlsian rank of treatment
FirstMax	(Dummy) 1 if the first period's implemented decision is a maximising decision
First3	(Dummy) 1 if the first period's implemented decision is Decision 3

Firstly, we tried to explain the first period's decision by social outcome variables.

Best fit model to estimate the first period's decision is given in Table 2.36.

According to this model, first period's decision significantly depends on group existence. In control treatments, support for Decision 3 decreases and conversely Decision 2 support increases. Also, support for Decision 2 significantly increases by an increment in inequality. Decision 3 support seems to decrease by inequality, but the effect is not significant.

Table 2.36 Multinomial Logistic Regression for estimating period 1 decisions in all treatments without questionnaire variables.

P1Decision ~ GD2GD3+Control			
Coefficients			
	(Intercept)	GD2GD3	Control
Decision2	1.2274	-3.7295	0.8919
Decision3	-0.1033	0.8072	-0.8804
P Values			
	(Intercept)	GD2GD3	Control
Decision2	0.2399	0.0165	0
Decision3	0.8995	0.5022	0
Prediction Rate			
0.4973			
Log Likelihood			
-915.0834 (df=6)			
Number of observations			
927			

In lower steps of this decision, first “ maximising or not” step is examined, but a relevant model cannot be constructed. Secondly, the choice between Decision 2 and Decision 3 step is checked, and the best fit model is given in Table 2.37.

Table 2.37 Logistic Regression for estimating period 1 maximiser decisions in all treatments without questionnaire variables.

Dependent Variable: P1_2VS3				
Method: ML - Binary Logit (Quadratic hill climbing)				
Included observations: 570				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-1.4875	1.1059	-1.3450	0.1786
GD2GD3	4.7751	1.6543	2.8864	0.0039
CONTROL	-1.7797	0.2024	-8.7923	0.0000
McFadden R-squared	0.1338	Log-likelihood	-300.1322	
Prob (LR statistic)	0.0000	Avg. Log likelihood	-0.5265	

According to the model, maximiser participants' choice between Decision 2 and Decision 3 is highly dependent on group existence and inequality level of the treatment. Decision 3 proportion increases in group treatments and decreases by inequality.

Table 2.38 Multinomial Logistic Regression for estimating period 2 decisions in all treatments without questionnaire variables.

P2Decision ~ UD3UD2+Control+FirstMax				
Coefficients				
	(Intercept)	UD3UD2	Control	FirstMax
Decision2	0.3170	-1.6317	1.1064	0.4796
Decision3	-8.1896	8.6184	-0.6575	0.5919
P Values				
	(Intercept)	UD3UD2	Control	FirstMax
Decision2	0.9224	0.6267	0.000	0.0107
Decision3	0.0071	0.0058	0.000	0.0002
Prediction Rate				
0.4833				
Log Likelihood				
-915.0834 (df=6)				
Number of observations				
927				

Interestingly, in the second period's decision distribution best fit model (Table 2.38), UD3/UD2 becomes relevant rather than GD2/GD3. Group existence and the first period's implemented decision variables are significant as expected. According to the model, the existence of group increases the probability of Decision 3 and decreases the probability of Decision 2. If the first period's implemented decision is a maximising decision, probabilities of Decision 2 and Decision 3 increases significantly. Moreover, in the treatments that harm total payoff less, the probability of Decision 3 increases.

Table 2.39 Logistic Regression for estimating period 2 “maximising or not” decision in all treatments without questionnaire variables.

Dependent Variable: P2MAX				
Method: ML - Binary Logit (Quadratic hill climbing)				
Included observations: 927				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.117946	0.18938	0.622801	0.5334
UDS	0.140571	0.078242	1.796608	0.0724
FirstMax	0.535576	0.142168	3.767211	0.0002
McFadden R-squared	0.014538	Log likelihood		-579.4
Prob (LR statistic)	0.000194	Avg. Log likelihood		-0.62503

In “maximising or not” decision step of the second period, the best fit model (Table 2.39) indicates that only UDS and FirstMax variables are relevant. If the first period’s implemented, decision is a maximising decision and/or maximising decisions’ damage to total payoff are relatively low, the probability of maximising decision increases.

Table 2.40 Logistic Regression for estimating period 2 maximiser decisions in all treatments without questionnaire variables.

Dependent Variable: P2_2VS3				
Method: ML - Binary Logit (Quadratic hill climbing)				
Included observations: 621				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-1.1035	1.0171	-1.0850	0.2779
GD2GD3	3.8722	1.5114	2.5620	0.0104
CONTROL	-1.7514	0.1861	-9.4095	0.0000
McFadden R-squared	0.1296	Log-likelihood		-348.1191
Prob (LR statistic)	0.0000	Avg. Log likelihood		-0.5606

Second period’s choice between Decision 2 and Decision 3 analysis (Table 2.40) shows that group existence increases Decision 3 proportion where increment in inequality increases Decision 2 proportion.

The models show high dependence on control variable which can be interpreted as a dominant factor that suppress underlying relations. In other words, group existence is a game changer. Hence group and control treatments should also be analysed separately.

2.1.4.1 Group Treatments

The best fit multinomial logistic regression model (Table 2.41) for first-period decision distribution of group treatments only reveals some weak evidence for dependence on the inequality of the treatment.

Table 2.41 Multinomial Logistic Regression for estimating period 1 decisions in group treatments without questionnaire variables.

P1Decision ~ GD2GD3		
Coefficients		
	(Intercept)	GD2GD3
Decision2	2.0915	-5.0353
Decision3	0.0634	0.5601
P Values		
	(Intercept)	GD2GD3
Decision2	0.2244	0.0524
Decision3	0.9511	0.7129
Prediction Rate		
0.548		
Log Likelihood		
-489.7192 (df=4)		
Number of observations		
531		

In lower steps of this decision, no relevant model can be extracted for “maximise or not” decision. However, according to the analysis, the choice between Decision 2 and Decision 3 is related to the relative inequalities of the decisions (Table 2.42).

Table 2.42 Logistic Regression for estimating period 1 maximiser decisions in group treatments without questionnaire variables.

Dependent Variable: P1_2VS3				
Method: ML - Binary Logit (Quadratic hill climbing)				
Included observations: 344				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-2.2086	1.6951	-1.3030	0.1926
GD2GD3	5.8660	2.5591	2.2922	0.0219
McFadden R-squared	0.0183	Log-likelihood		-145.1113
Prob (LR statistic)	0.0200	Avg. Log likelihood		-0.4218

In the second periods of group treatments, the best fit model's findings are in the same line with total decision distribution of second periods analysis (Table 2.43). If the first period's implemented decision is a maximising decision both probabilities of Decision 2 and Decision 3 increases, and if treatment's possible damage to total payoff increases, the probabilities of Decision 1 and Decision 2 increase.

Table 2.43 Multinomial Logistic Regression for estimating period 2 decisions in group treatments without questionnaire variables.

P2Decision ~ UD3UD2+FirstMax			
Coefficients			
	(Intercept)	UD3UD2	FirstMax
Decision2	2.9335	-4.5485	0.7715
Decision3	-8.1100	8.6234	0.4398
P Values			
	(Intercept)	UD3UD2	FirstMax
Decision2	0.5449	0.362	0.0132
Decision3	0.0317	0.026	0.0241
Prediction Rate			
0.5537			
Log Likelihood			
-497.5211 (df=6)			
Number of observations			
531			

Second-period maximising decisions of group treatment subjects highly related to the first period's implemented the decision as expected (Table 2.44). Also, as damage to total payoff increases, maximiser proportion decreases.

Table 2.44 Logistic Regression for estimating period 2 “maximising or not” decision in group treatments without questionnaire variables.

Dependent Variable: P2MAX				
Method: ML - Binary Logit (Quadratic hill climbing)				
Included observations: 531				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.0631	0.2569	0.2458	0.8058
FirstMax	0.5047	0.1882	2.6813	0.0073
UDS	0.1804	0.1040	1.7337	0.0830
McFadden R-squared	0.0137	Log-likelihood		-332.6596
Prob (LR statistic)	0.0097	Avg. Log likelihood		-0.6265

Among maximisers of group treatments' second periods, ND3/ND2 variable seems to affect subjects' choices between Decision 2 and Decision 3 (Table 2.45). In the treatments that Nash outcomes are relatively lower, Decision 2 probability becomes higher.

Table 2.45 Logistic Regression for estimating period 2 maximiser decisions in group treatments without questionnaire variables.

Dependent Variable: P2_2VS3				
Method: ML - Binary Logit (Quadratic hill climbing)				
Included observations: 355				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-6.6146	2.8331	-2.3348	0.0196
ND3ND2	8.4647	2.9658	2.8541	0.0043
McFadden R-squared	0.0223	Log-likelihood		-165.2328
Prob (LR statistic)	0.0060	Avg. Log likelihood		-0.4654

2.1.4.2 Control Treatments

Control treatments differ from group treatment by the absence of the group concept which is a strong determinant of decision distributions. Thus, without group, the analysis does not offer an acceptable explanatory model for overall decision distributions. Even so, some models can be offered in sub-steps of the decision-making process.

Table 2.46 Logistic Regression for estimating period 1 maximiser decisions in control treatments without questionnaire variables.

Dependent Variable: P1_2VS3				
Method: ML - Binary Logit (Quadratic hill climbing)				
Included observations: 226				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-2.7307	1.4662	-1.8624	0.0626
GD2GD3	3.9782	2.1689	1.8342	0.0666
McFadden R-squared	0.0109	Log-likelihood		-154.8622
Prob (LR statistic)	0.0645	Avg. Log likelihood		-0.6852

As in the group treatments, first period choices of subjects between Decision 2 and Decision 3 are affected by inequality of treatments (Table 2.46). Higher inequality decreases Decision 3 probability.

Table 2.47 Logistic Regression for estimating period 2 “maximising or not” decision in control treatments without questionnaire variables.

Dependent Variable: P2MAX				
Method: ML - Binary Logit (Quadratic hill climbing)				
Included observations: 396				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-0.1391	0.1671	-0.8327	0.4050
FirstMax	0.6754	0.2120	3.1856	0.0014
McFadden R-squared	0.0189	Log-likelihood		-265.3943
Prob (LR statistic)	0.0014	Avg. Log likelihood		-0.6702

The second period “maximise or not” decision seems to be affected only by the first period’s implemented decision. Implementation of maximiser decisions in first periods of control treatments significantly increases maximising probability in second periods (Table 2.47).

Table 2.48 Logistic Regression for estimating period 2 maximiser decisions in control treatments without questionnaire variables.

Dependent Variable: P2_2VS3				
Method: ML - Binary Logit (Quadratic hill climbing)				
Included observations: 266				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-2.8915	1.3732	-2.1057	0.0352
GD2GD3	3.3538	2.0123	1.6667	0.0956
FirstMax	0.5581	0.2745	2.0330	0.0420
McFadden R-squared	0.0201	Log-likelihood	-178.7837	
Prob (LR statistic)	0.0256	Avg. Log likelihood	-0.6721	

Interestingly, maximiser subjects in the second period of control treatments decide between Decision 2 and Decision 3 mostly according to whether the first period’s implemented decision is a maximiser decision (Table 2.48). If the first period’s implemented decision is a maximiser decision, Decision 3 probability increases. Also, a weak effect of inequality can be observed; lower inequality increases Decision 3 proportion.

2.1.5 Questionnaire

At the end of each session, a questionnaire is conducted to the experiment participants. In the first round of the experiment, the questionnaire consists of questions asking about their gender, scholarship status, father and mother education level and reasons of their choices in the periods, yet, in the second round, the questionnaire is enriched with social preferences questions of surveys and homo

economicus module of 2017 survey. Thus, the preferences analysis of incentivised group favouritism choices has only the sample size of 261. Nevertheless, some significant results are observable on group favouritism choices and social preferences relations.

Although analysis of the questionnaire is conducted in both total decision distribution and for each treatment's decision distribution separately, only total distributions' results are given in this part considering the number of the treatments along with reduced sample size.

2.1.5.1 Gender

Decision distributions of the participants with respect to their gender is given in Table 2.49. The p-value of the chi-square independence of distribution test indicates that there is no statistical evidence for gender dependence of decision choices.

Table 2.49 Total decision distribution with respect to gender.

Total	Decision 1	Decision 2	Decision 3
Female	202	98	232
Male	155	71	169
Chi-square	0.155		
p-value	0.925		

In lower stages of decision making, no statistical evidence for dependence to gender neither in maximizing or not decision stage (chi-square goodness of fit test, p-value = 0.69380225), nor in choosing between Decision 2 and Decision 3 (chi-square goodness of fit test, p-value = 0.97477288) can be observed in total decision distributions.

Because of the distribution differences between group and control treatments, same tests are conducted separately for group and control treatments' decision distributions according to gender (Table 2.50).

Table 2.50 Group and control treatments decision distributions according to gender.

Gender	Group			Control		
	Decision 1	Decision 2	Decision 3	Decision 1	Decision 2	Decision 3
Female	104	24	171	98	74	61
Male	83	29	120	72	42	49
Chi-square	3.368			1.796		
p-value	0.1886			0.407		

Similar to total decision distribution, control treatments' decision distribution yields no gender difference neither in maximising or not decision stage (chi-square goodness of fit test, p-value = 0.67570585) nor in choosing between Decision 2 and Decision 3 stage (chi-square goodness of fit test, p-value = 0.20142664). However, although there is no significant difference in maximizing or not decision among genders in group treatments (chi-square goodness of fit test, p-value = 0.81293361), with weak significance, that can be claimed that male participants choose Decision 2 more often than female participants among maximizing decisions (chi-square goodness of fit test, p-value = 0.06852514).

2.1.5.2 Scholarship

The scholarship status of participants is considered to be used for a weak proxy variable for academic performance. However, total decision distribution with respect to scholarship status does not yield any difference neither in total (Table 2.51) nor in sub-stages of decision-making process (chi-square goodness of fit test, p-value for first stage= 0.4506033, p-value for the second stage= 0.73116051).

Also, decision distributions extracted via splitting decision distribution by group and control treatment distinction are independent of the scholarship status of the participants (Table 2.52).

Table 2.51 Total decision distribution with respect to scholarship status.

Scholarship	Total		
	Decision 1	Decision 2	Decision 3
0%	47	22	47
25%	26	11	22
50%	176	76	189
75%	9	9	13
100%	99	51	130
Chi-square	5.896		
p-value	0.659		

Table 2.52 Group and control treatments decision distributions according to scholarship status.

Scholarship	Group			Control		
	Decision 1	Decision 2	Decision 3	Decision 1	Decision 2	Decision 3
0	25	6	36	22	16	11
25%	14	3	19	12	8	3
50%	96	22	141	80	54	48
75%	4	2	5	5	7	8
100%	48	20	90	51	31	40
Chi-square	1.796			4.502		
p-value	0.407			0.809		

2.1.5.3 Know Anybody

Participants' decision distribution with respect to their answer to "Do you know any participant in the session?" and the corresponding test result are given in Table 2.53.

Moreover, neither the distribution of maximising or not decision (chi-square goodness of fit test, p-value = 0.69853536), nor among maximisers, Decision 2 and Decision 3, decision distribution (chi-square goodness of fit test, p-value =

0.57952697) is statistically significant. Also, there is no significant relation in group or control treatments.

Table 2.53 Total decision distribution with respect to KnowAnybody variable.

	Yes	No
Decision 1	131	226
Decision 2	57	112
Decision 3	145	256
Chi-square	0.456	
p-value	0.79612426	

2.1.5.4 Experience

Participants' decision distribution with respect to their answer to "Have you ever attended a similar experiment?" is given in Table 2.54.

Table 2.54 Total decision distribution with respect to Experience variable.

	Yes	No
Decision 1	64	293
Decision 2	49	120
Decision 3	125	276
Chi-square	180556	
p-value	0.00009346	

Maximising or not decision step is also significantly different (chi-square goodness of fit test, p-value = 0.00001927) where there is no evidence of dependence in the second step of the decision-making process (chi-square goodness of fit test, p-value = 0.60602772). In both group and control treatments, the same pattern is observed.

2.1.5.5 Father Education Level

Participants' total decision distribution with respect to their father's education level is given in Table 2.55.

Table 2.55 Total decision distribution with respect to fathers' education level.

Father Education	Total		
	Decision 1	Decision 2	Decision 3
Level 1	106	52	83
Level 2	120	58	141
Level 3	131	59	177
Chi-square	11.605		
p-value	0.02054352		

It is observable that Decision 1 and Decision 2 proportions are decreasing, and Decision 3 proportion is increasing as education levels of fathers increase. The relation is not significant when decisions are grouped as maximising decisions and non-maximizing decision (chi-square goodness of fit test, p-value = 0.11169314), yet it is statistically significant in comparison of maximising decisions among themselves (chi-square goodness of fit test, p-value = 0.02281128).

Table 2.56 Group and control treatments decision distributions according to the fathers' education level.

Father Education	Group			Control		
	Decision 1	Decision 2	Decision 3	Decision 1	Decision 2	Decision 3
Level 1	60	21	63	46	31	20
Level 2	58	13	96	62	45	45
Level 3	69	19	132	62	40	45
Chi-square	11.415			3.493		
p-value	0.02227537			0.47894351		

In group treatments (Table 2.56), the same relation exists including insignificance of maximising or not decision stage (chi-square goodness of fit test, p-value =

0.13035419) and significance of choice among maximising decisions stage (chi-square goodness of fit test, p-value = 0.01956525). However, in control treatments, no significant pattern can be observed neither in maximising or not decision stage (chi-square goodness of fit test, p-value = 0.57206652) nor in the choice between Decision 2 and Decision 3 (chi-square goodness of fit test, p-value = 0.28521842).

2.1.5.6 Mother Education Level

In total decision distribution with respect to mothers' education levels, a similar pattern is observed with lower significance (Table 2.57). As mother education level increases, Decision 1 proportion is decreasing, and Decision 3 proportion is increasing.

Table 2.57 Total decision distribution with respect to mothers' education level.

Mother Education	Total		
	Decision 1	Decision 2	Decision 3
Level 1	135	59	117
Level 2	113	62	135
Level 3	109	48	149
Chi-square	9.035		
p-value	0.06023058		

In sub-stages of the decision-making process, the maximising or not decision reveals weak significant relation with mother education level in total distribution (chi-square goodness of fit test, p-value = 0.09144661) where the choice between Decision 2 and Decision 3 does not have any significance (chi-square goodness of fit test, p-value = 0.12141996).

Table 2.58 Group and control treatments decision distributions according to the mothers' education level.

Mother Education	Group			Control		
	Decision 1	Decision 2	Decision 3	Decision 1	Decision 2	Decision 3
Level 1	73	18	88	62	41	29
Level 2	55	25	93	58	37	42
Level 3	59	10	110	50	38	39
Chi-square	11.854			3.695		
p-value	0.01847063			0.44885356		

Checking for group and control treatments independently shows that only in group treatments the education level of mother matters (Table 2.58). Moreover, the source of the difference is not in maximising or not decision stage (chi-square goodness of fit test, p-value = 0.15575049), but in the choice between Decision 2 and Decision 3 (chi-square goodness of fit test, p-value = 0.01991066). In control treatments, no sign of dependence can be detected neither in the first stage (chi-square goodness of fit test, p-value = 0.45932374) nor in the second stage of the decision-making process (chi-square goodness of fit test, p-value = 0.32807928).

2.1.5.7 Social Preferences

In preference scores of experiment participants with respect to their decisions in total decision distribution, Decision 1 supporter participants have the highest mean scores of altruism, trust and positive reciprocity and Decision 2 supporters have the highest negative reciprocity and inequality aversion scores (Table 2.59).

Table 2.59 Descriptive statistics of participants' preference scores with respect to their group favouritism choice.

Descriptives		Total	
		N	Mean
Altruism	Decision 1	116	0.130
	Decision 2	39	-0.107
	Decision 3	106	-0.103
Trust	Decision 1	116	0.164
	Decision 2	39	0.023
	Decision 3	106	-0.187
Positive Reciprocity	Decision 1	116	0.177
	Decision 2	39	-0.284
	Decision 3	106	-0.089
Negative Reciprocity	Decision 1	116	-0.024
	Decision 2	39	0.094
	Decision 3	106	-0.008
Inequality aversion	Decision 1	116	1.071
	Decision 2	39	1.231
	Decision 3	106	1.106

One-way ANOVA test yields that the differences of mean scores are significant for only trust and positive reciprocity (Table 2.60).

Table 2.60 ANOVA test for mean preference scores of participants with respect to their group favouritism choice.

ANOVA	Total	
	F	Sig.
Altruism	2.900	0.057 [*]
Trust	3.486	0.032 [*]
Positive Reciprocity	6.202	0.002 ^{***}
Negative Reciprocity	0.340	0.712
Inequality aversion	0.530	0.590

Categorising participants by their maximising decision shows that maximiser participants have higher negative reciprocity and inequality aversion scores in average (Table 2.61).

Table 2.61 Descriptive statistics of participants' preference scores with respect to their maximising or not choice.

		Total	
GF		N	Mean
Altruism	Maximiser	145	-0.104
	Non-Maximiser	116	0.130
Trust	Maximiser	145	-0.131
	Non-Maximiser	116	0.164
Positive Reciprocity	Maximiser	145	-0.142
	Non-Maximiser	116	0.177
Negative Reciprocity	Maximiser	145	0.020
	Non-Maximiser	116	-0.024
Inequality aversion	Maximiser	145	1.140
	Non-Maximiser	116	1.071

However, the differences of negative reciprocity and inequality aversion scores are not significant (Table 2.62). Non-maximiser participants have significantly higher altruism, trust and positive reciprocity scores.

Table 2.62 t-test of participants' preference scores with respect to their maximising or not choice.

Independent Samples Test	Total		
	t	df	Sig. (2-tailed)
Altruism	-2.413	259	0.017*
Trust	-2.384	259	0.018*
Positive Reciprocity	-3.309	257.174	0.001**
Negative Reciprocity	0.449	259	0.654
Inequality aversion	0.656	259	0.512

Comparing maximiser participants among themselves show that there is not any significant preference score difference between Decision 2 and Decision 3 supporters in experiments (Table 2.63).

Table 2.63 t-test of participants' preference scores with respect to their choice between Decision 2 and Decision 3.

Independent Samples Test	Total		
	t	df	Sig. (2-tailed)
Altruism	-0.033	143	0.974
Trust	1.057	58.1082	0.295
Positive Reciprocity	-1.253	143	0.212
Negative Reciprocity	0.710	143	0.479
Inequality aversion	0.795	143	0.428

Analysing group and control treatments separately results disperse mean preference score distributions (Table 2.64). Except for altruism scores, none of the orderings fits in both treatments.

Table 2.64 Descriptive statistics of participants' control and group treatments preference scores with respect to their group favouritism choice.

Descriptives		Group		Control	
		N	Mean	N	Mean
Altruism	Decision 1	50	0.209	66	0.070
	Decision 2	8	-0.149	31	-0.096
	Decision 3	68	-0.107	38	-0.095
Trust	Decision 1	50	0.318	66	0.046
	Decision 2	8	-0.122	31	0.060
	Decision 3	68	-0.180	38	-0.201
Positive Reciprocity	Decision 1	50	0.377	66	0.026
	Decision 2	8	-0.613	31	-0.200
	Decision 3	68	-0.021	38	-0.212
Negative Reciprocity	Decision 1	50	-0.003	66	-0.041
	Decision 2	8	0.059	31	0.103
	Decision 3	68	-0.083	38	0.127
Inequality aversion	Decision 1	50	1.000	66	1.125
	Decision 2	8	1.594	31	1.137
	Decision 3	68	1.077	38	1.158

None of the preference differences in control treatments is significant where trust and positive reciprocity score differences are statistically significant for the participants of group treatments (Table 2.65).

Table 2.65 ANOVA test for mean preference scores of control and group treatment participants with respect to their group favouritism choice.

ANOVA	Group		Control	
	F	Sig.	F	Sig.
Altruism	2.630	0.076'	0.733	0.482
Trust	3.706	0.027*	0.883	0.416
Positive Reciprocity	9.210	0.000***	1.282	0.281
Negative Reciprocity	0.224	0.800	0.658	0.519
Inequality aversion	1.926	0.150	0.017	0.983

According to the comparison of maximiser and non-maximiser participants, maximiser participants have higher inequality, lower altruism, trust and positive reciprocity scores in both group and control treatments on average (Table 2.66).

Table 2.66 Descriptive statistics of group and control treatment participants' preference scores with respect to their maximising or not choice.

		Group		Control	
		N	Mean	N	Mean
Altruism	Maximiser	76	-0.111	69	-0.096
	Non-Maximiser	50	0.209	66	0.070
Trust	Maximiser	76	-0.174	69	-0.084
	Non-Maximiser	50	0.318	66	0.046
Positive Reciprocity	Maximiser	76	-0.083	69	-0.207
	Non-Maximiser	50	0.377	66	0.026
Negative Reciprocity	Maximiser	76	-0.068	69	0.116
	Non-Maximiser	50	-0.003	66	-0.041
Inequality aversion	Maximiser	76	1.132	69	1.149
	Non-Maximiser	50	1.000	66	1.125

Although none of the differences in control treatments' participants' preference scores is statistically significant, the difference in altruism, trust and positive reciprocity scores of group treatments are significant (Table 2.67).

Table 2.67 t-test of group and control treatment participants' preference scores with respect to their maximising or not choice.

Independent Test	Samples	Group Treatment			Control Treatment		
		t	df	Sig. (2-tailed)	t	df	Sig. (2-tailed)
Altruism		-2.298	124	0.023*	-1.215	133	0.226
Trust		-2.729	124	0.007**	-0.762	133	0.447
Positive Reciprocity		-3.827	123.133	0.000***	-1.606	133	0.111
Negative Reciprocity		-0.459	124	0.647	1.145	133	0.254
Inequality aversion		0.902	124	0.369	0.156	133	0.876

Lastly, the only significant difference between Decision 2 and Decision 3 supporters' preference scores is positive reciprocity score difference (Table 2.68). Decision 3 supporters of group treatments are significantly more positively reciprocal than Decision 2 supporter participants of group treatments.

Table 2.68 t-test of group and control treatment participants' preference scores with respect to their choice between Decision 2 and Decision 3.

Independent Test	Samples	Group Treatment			Control Treatment		
		t	df	Sig. (2-tailed)	t	df	Sig. (2-tailed)
Altruism		-0.146	74	0.884	-0.007	67	0.994
Trust		0.104	7.64439	0.920	1.160	67	0.250
Positive Reciprocity		-2.056	74	0.043*	0.058	67	0.954
Negative Reciprocity		0.501	74	0.618	-0.126	67	0.900
Inequality aversion		1.629	74	0.108	-0.104	67	0.917

2.1.5.8 Homo Economicus

Homo economicus attribute scores of the experiment participants are given in Table 2.69 with respect to their decisions in sessions. In dimensions and homo

economicus attribute scores, Decision 2 supporters have the highest mean scores where Decision 1 supporters have the lowest.

Table 2.69 Descriptive statistics of all participants' homo economicus attribute scores with respect to their group favouritism choice.

Descriptives		Total	
		N	Mean
Profit Orientation	Decision 1	108	-0.209
	Decision 2	37	0.284
	Decision 3	97	0.124
Labour Orientation	Decision 1	108	-0.086
	Decision 2	37	0.080
	Decision 3	97	0.066
Homo Economicus	Decision 1	108	-0.295
	Decision 2	37	0.364
	Decision 3	97	0.189

Moreover, for profit orientation and homo economicus attribute scores the differences are statistically significant (Table 2.70).

Table 2.70 ANOVA test of all participants' homo economicus attribute scores with respect to their group favouritism choice.

ANOVA	Total	
	F	Sig.
Profit Orientation	4.732	0.010*
Labour Orientation	0.728	0.484
Homo Economicus	4.580	0.011*

Consequently, maximiser participants have higher mean scores in dimensions and total homo economicus attribute scores (Table 2.71).

Table 2.71 Descriptive statistics of all participants' homo economicus attribute scores with respect to their maximising or not decision.

Group Statistics		Total	
GF		N	Mean
Profit Orientation	Maximiser	134	0.168
	Non-Maximiser	108	-0.209
Labour Orientation	Maximiser	134	0.070
	Non-Maximiser	108	-0.086
Homo Economicus	Maximiser	134	0.238
	Non-Maximiser	108	-0.295

Also, the differences are highly significant for profit orientation and homo economicus attribute scores (Table 2.72).

Table 2.72 t-test of all participants' homo economicus attribute scores with respect to their maximising or not decision.

Independent Samples Test	Total		
	t	df	Sig. (2-tailed)
Profit Orientation	2.961	240	0.003**
Labour Orientation	1.207	240	0.229
Homo Economicus	2.960	240	0.003**

However, there is not any significant difference between Decision 2 and Decision 3 supporters' homo economicus attribute scores (Table 2.73).

Table 2.73 Descriptive statistics of all participants' homo economicus attribute scores with respect to their choice between Decision 2 and Decision 3.

Independent Samples Test	Total		
	t	df	Sig. (2-tailed)
Profit Orientation	0.900	132	0.370
Labour Orientation	0.076	132	0.939
Homo Economicus	0.691	132	0.491

Checking group and control treatments separately shows that differences between mean scores are higher in group treatments (Table 2.74).

Table 2.74 Descriptive statistics of group and control treatment participants' homo economicus attribute scores with respect to their group favouritism choice.

Descriptives		Group		Control	
		N	Mean	N	Mean
Profit Orientation	Decision 1	48	-0.314	60	-0.124
	Decision 2	7	0.402	30	0.257
	Decision 3	64	0.113	33	0.145
Labour Orientation	Decision 1	48	-0.170	60	-0.020
	Decision 2	7	0.074	30	0.082
	Decision 3	64	0.034	33	0.127
Homo Economicus	Decision 1	48	-0.484	60	-0.144
	Decision 2	7	0.475	30	0.339
	Decision 3	64	0.147	33	0.272

Thus, the differences in homo economicus scores of control treatments' participants become insignificant where the differences for profit orientation and homo economicus attribute scores are still significant for group treatments' participants (Table 2.75).

Table 2.75 ANOVA test of group and control treatment participants' homo economicus attribute scores with respect to their group favouritism choice.

ANOVA	Group		Control	
	F	Sig.	F	Sig.
Profit Orientation	3.932	0.022*	1.505	0.226
Labour Orientation	0.556	0.575	0.282	0.755
Homo Economicus	3.620	0.030*	1.506	0.226

Comparing participants by their maximising decision yields that maximiser participants have higher homo economicus scores in both group and control treatments (Table 2.76).

Table 2.76 Descriptive statistics of group and control treatment participants' homo economicus attribute scores with respect to their maximising or not decision.

GF		Group		Control	
		N	Mean	N	Mean
Profit Orientation	Maximiser	71	0.142	63	0.198
	Non-Maximiser	48	-0.314	60	-0.124
Labour Orientation	Maximiser	71	0.038	63	0.105
	Non-Maximiser	48	-0.170	60	-0.020
Homo Economicus	Maximiser	71	0.179	63	0.303
	Non-Maximiser	48	-0.484	60	-0.144

The differences in profit orientation and homo economicus attribute scores are statistically significant in group treatments, where only weak significance can be claimed for control treatments' participants (Table 2.77).

Table 2.77 t-test of group and control treatment participants' homo economicus attribute scores with respect to their maximising or not decision.

Independent Samples Test	Group Treatment			Control Treatment		
	t	df	Sig. (2-tailed)	t	df	Sig. (2-tailed)
Profit Orientation	2.692	117	0.008**	1.689	121	0.094'
Labour Orientation	1.055	117	0.294	0.730	121	0.467
Homo Economicus	2.628	117	0.010*	1.723	112.354	0.088'

Comparison of maximiser participants with regard to their choice between Decision 2 and Decision 3 yields no significant difference of homo economicus scores neither in group treatments nor in control treatments (Table 2.78).

Table 2.78 t-test of group and control treatment participants' homo economicus attribute scores with respect to their choice between Decision 2 and Decision 3.

Independent Samples Test	Group Treatment			Control Treatment		
	t	df	Sig. (2-tailed)	t	df	Sig. (2-tailed)
Profit Orientation	0.785	69	0.435	0.477	61	0.635
Labour Orientation	0.093	69	0.926	-0.192	61	0.848
Homo Economicus	0.606	69	0.547	0.209	61	0.835

2.1.6 Overall Analysis With Questionnaire

Enrichment of the analysis with some characteristics from the questionnaire can improve previous results. The same analysis, presented in the overall analysis before the questionnaire part, is conducted with the addition of variables given in Table 2.79.

Table 2.79 Additional variables for logistic regression.

Gender	(Dummy) 1 if the participant is female
Scholarship	Scholarship status of the participant
FatherEdu	The education level of the participant's father
MotherEdu	The education level of the participants mother
Experience	(Dummy) 1 if the participant attended a similar experiment previously
Altruism	Altruism score of the participant
Trust	Trust score of the participant
PositiveReciprocity	Positive reciprocity score of the participant
NegativeReciprocity	Negative reciprocity score of the participant
InequalityAversion	Inequality aversion score of the participant
LabourOrientation	Labour orientation score of the participant
ProfitOrientation	Profit orientation score of the participant
Homo economicus	Homo economicus attribute score of the participant

In best fit multinomial logistic regression model of all decisions in first periods includes profit orientation and trust scores of participants and experience variable with before questionnaire model's variables control and GD2GD3 (Table 2.80). Accordingly, probabilities of Decision 2 and Decision 3 decreases by higher trust scores and increases by higher profit orientation scores and experience.

Table 2.80 Multinomial Logistic Regression for estimating period 1 decisions in all treatments with questionnaire variables.

P1Decision ~ GD2GD3+Control+Experience+ProfitOrientation+Trust						
Coefficients						
	(Intercept)	GD2GD3	Control	Experience	ProfitOrientation	Trust
Decision2	2.9290	-7.6929	1.2126	1.1219	0.4690	-0.1356
Decision3	-1.8697	3.0996	-0.9457	0.9568	0.3072	-0.3353
P Values						
	(Intercept)	GD2GD3	Control	Experience	ProfitOrientation	Trust
Decision2	0.2338	0.0418	0.0105	0.0381	0.0221	0.5050
Decision3	0.2586	0.2108	0.0018	0.0261	0.0518	0.0268
Prediction Rate						
0.5372						
Log Likelihood						
-217.0393 (df=12)						
Average Log Likelihood						
-0.8968567						
Number of observations						
242						

In overall “maximise or not” decision stage of the first period, the significant positive effects of previous experiment experience and homo economicus attribute score along with the significant negative effect of trust score on maximising decision can be observed (Table 2.81).

Table 2.81 Logistic Regression for estimating period 1 “maximising or not” decision in all treatments with questionnaire variables.

Dependent Variable: P1MAX				
Method: ML - Binary Logit (Quadratic hill climbing)				
Included observations: 242 after adjustments				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.0800	0.1447	0.5529	0.5803
HOMO ECONOMICUS	0.2669	0.0992	2.6915	0.0071
EXPERIENCE	1.0664	0.4041	2.6392	0.0083
TRUST	-0.2841	0.1370	-2.0734	0.0381
McFadden R-squared	0.0622	Log-likelihood	-155.9932	
Prob(LR statistic)	0.0001	Avg. Log likelihood	-0.6446	

In the first period’s choice between Decision 2 and Decision 3 for all maximiser participants depends on the education level of father along with the before questionnaire analysis variables GD2GD3 and control (Table 2.82). More educated fathers’ children tend to choose Decision 3 more often.

Table 2.82 Logistic Regression for estimating period 1 maximiser decisions in all treatments with questionnaire variables.

Dependent Variable: P1_2VS3				
Method: ML - Binary Logit (Quadratic hill climbing)				
Included observations: 570				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-2.1510	1.1439	-1.8804	0.0601
GD2GD3	4.7822	1.6639	2.8741	0.0041
CONTROL	-1.7931	0.2042	-8.7825	0.0000
FATHEREDU	0.3102	0.1241	2.4989	0.0125
McFadden R-squared	0.1429	Log-likelihood	-296.9756	
Prob(LR statistic)	0.0000	Avg. Log likelihood	-0.5210	

In the second periods, best fit multinomial logistic regression model addresses gender, experience and profit orientation variables with control and UD3UD2 (Table 2.83). Accordingly, profit orientation score and experience in experiment increase Decision 2 and Decision 3 probabilities and decrease Decision 1 probability.

Table 2.83 Multinomial Logistic Regression for estimating period 2 decisions in all treatments with questionnaire variables.

P2Decision ~ UD3UD2+Control+Gender+Experience+ProfitOrientation						
Coefficients						
	(Intercept)	UD3UD2	Control	Gender	Experience	ProfitOrientation
Decision2	12.852742	-14.89966	1.4441478	0.1515689	1.2907820	0.5857998
Decision3	-1.127718	1.65098	-0.3682278	-0.5388697	0.4565198	0.3860649
P Values						
	(Intercept)	UD3UD2	Control	Gender	Experience	ProfitOrientation
Decision2	0.06701034	0.03971083	0.0003054119	0.68439831	0.01040171	0.002074103
Decision3	0.87706114	0.82508982	0.2364088630	0.07904081	0.31824977	0.017857249
Prediction Rate						
0.5082645						
Log Likelihood						
-234.6396 (df=12)						
Average Log Likelihood						
-0.966942149						
Number of observations						
242						

Second periods' "maximising or not" decision step analysis extracts homo economic attribute score and experience are explanatory variables of the model (Table 2.84).

Table 2.84 Logistic Regression for estimating period 2 “maximising or not” decision in all treatments with questionnaire variables.

Dependent Variable: P2MAX				
Method: ML - Binary Logit (Quadratic hill climbing)				
Included observations: 242 after adjustments				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.4741	0.1486	3.1892	0.0014
HOMO ECONOMICUS	0.3409	0.1031	3.3077	0.0009
EXPERIENCE	0.8053	0.4159	1.9363	0.0528
McFadden R-squared	0.0502	Log-likelihood	-	150.6589
Prob(LR statistic)	0.0003	Avg. Log likelihood	-	-0.6226

Maximising decision probability increases by higher homo economicus attribute scores and decreases by higher positive reciprocity scores.

Table 2.85 Logistic Regression for estimating period 2 maximiser decisions in all treatments with questionnaire variables.

Dependent Variable: P2_2VS3				
Method: ML - Binary Logit (Quadratic hill climbing)				
Included observations: 169 after adjustments				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-1.3096	1.1671	-1.1221	0.2618
GD2GD3	3.9063	1.7650	2.2132	0.0269
CONTROL	-1.1502	0.2197	-5.2358	0.0000
INEQUALITYAVERSION	-0.2567	0.1315	-1.9517	0.0510
McFadden R-squared	0.1692	Log-likelihood	-	93.1470
Prob(LR statistic)	0.0000	Avg. Log likelihood	-	-0.5512

Introduction of inequality aversion score improves the binary logit model for the choice between Decision 2 and Decision 3 (Table 2.85). More inequality averse maximiser participants avoid choosing Decision 3.

2.1.6.1 Group Treatments

Group treatments' first-period decision distribution analysis includes trust score and experience variables from the questionnaire (Table 2.86). Introduction of these variables increases the prediction rate of the model from 54,8% to over 59,5%. Higher trust score increases Decision 1 probability where experience decreases Decision 2 probability.

Table 2.86 Multinomial Logistic Regression for estimating period 1 decisions in group treatments with questionnaire variables.

P1Decision ~ GD2GD3+Experience+Trust				
Coefficients				
	(Intercept)	GD2GD3	Experience	Trust
Decision2	9.9773096	-18.0989839	-7.225040	-0.5106371
Decision3	0.2342564	-0.1645654	1.228494	-0.4986997
P Values				
	(Intercept)	GD2GD3	Experience	Trust
Decision2	0.1377374	0.08855929	0.85035873	0.19874684
Decision3	0.9177223	0.96118098	0.02756924	0.01338231
Prediction Rate				
0.5952381				
Log Likelihood				
-99.79446 (df=8)				
Average Log Likelihood				
-0.785714286				
Number of observations				
126				

In the same line with the previous analysis, “maximise or not” decision step analysis of group treatments' first period points out trust score and experience as significant variables (Table 2.87). Higher trust score decreases, and experience increases maximising probability.

Table 2.87 Logistic Regression for estimating period 1 “maximising or not” decision in group treatments with questionnaire variables.

Dependent Variable: P1MAX				
Method: ML - Binary Logit (Quadratic hill climbing)				
Included observations: 126 after adjustments				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.2765	0.2062	1.3412	0.1799
EXPERIENCE	1.0765	0.5538	1.9438	0.0519
TRUST	-0.4912	0.1933	-2.5414	0.0110
McFadden R-squared	0.0680	Log-likelihood		-78.8829
Prob(LR statistic)	0.0032	Avg. Log likelihood		-0.6261

In second decision step analysis of group treatments’ first periods, education level of father joins the model along with the variables from before questionnaire variable GD2D3 (Table 2.88). The increment in father’s education level stimulates Decision 3 probability among maximising decisions.

Table 2.88 Logistic Regression for estimating period 1 maximiser decisions in group treatments with questionnaire variables.

Dependent Variable: P1_2VS3				
Method: ML - Binary Logit (Quadratic hill climbing)				
Included observations: 344				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-2.9292	1.7352	-1.6881	0.0914
GD2GD3	5.6736	2.5722	2.2058	0.0274
FATHEREDU	0.4031	0.1834	2.1977	0.0280
McFadden R-squared	0.0348	Log-likelihood		-142.6713
Prob(LR statistic)	0.0058	Avg. Log likelihood		-0.4147

Second periods’ decision distribution of group treatments analysis ends up with a model different than before questionnaire (Table 2.89). According to model, the only explanatory variable, suppressing previous model’s variables, is positive

reciprocity score. Higher positive reciprocity score reduces Decision 2 and Decision 3 probabilities.

Table 2.89 Multinomial Logistic Regression for estimating period 2 decisions in group treatments with questionnaire variables.

P2Decision ~ PositiveReciprocity		
Coefficients		
	(Intercept)	PositiveReciprocity
Decision2	-1.2283872	-1.4411108
Decision3	0.4803208	-0.8884605
P Values		
	(Intercept)	PositiveReciprocity
Decision2	0.0004170595	0.001244499
Decision3	0.0246388116	0.005684422
Prediction Rate		
0.5396825		
Log Likelihood		
-111.874 (df=4)		
Average Log Likelihood		
-0.880952381		
Number of observations		
126		

Similarly, binary logit model, constructed for maximising decision of group treatments' second period, diverges from before questionnaire analysis indicating that profit orientation score has a positive effect on maximising decision (Table 2.90).

Table 2.90 Logistic Regression for estimating period 2 “maximising or not” decision in group treatments with questionnaire variables.

Dependent Variable: P2MAX				
Method: ML - Binary Logit (Quadratic hill climbing)				
Included observations: 119 after adjustments				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.4633	0.1930	2.4009	0.0164
PROFITORIENTATION	0.4514	0.2126	2.1235	0.0337
McFadden R-squared	0.0296	Log-likelihood		-77.4741
Prob(LR statistic)	0.0297	Avg. Log likelihood		-0.6510

Unfortunately, none of the questionnaire variable succeeds in improving before questionnaire analysis for the second step of decisions in group treatments' second period.

2.1.6.2 Control Treatments

In control treatments, previous experiment experience is the only significant variable to explain first-period decision distribution revealing a weak model (Table 2.91).

Table 2.91 Multinomial Logistic Regression for estimating period 1 decisions in control treatments with questionnaire variables.

P1Decision ~ Experience		
Coefficients		
	(Intercept)	Experience
Decision2	-0.5389972	0.7466342
Decision3	-0.5509729	0.5887034
P Values		
	(Intercept)	Experience
Decision2	8.640379e-05	0.01210990
Decision3	6.389270e-05	0.05547454
Prediction Rate		
0.4444444		
Log Likelihood		
-423.4938 (df=4)		
Average Log Likelihood		
-1.068181818		
Number of observations		
396		

In the same line with the previous analysis, the experience is the only significant variable for “maximise or not” decision step model of control treatments' first

period (Table 2.92). The probability of maximising increases by experiment experience.

Table 2.92 Logistic Regression for estimating period 1 “maximising or not” decision in control treatments with questionnaire variables.

Dependent Variable: P1MAX				
Method: ML - Binary Logit (Quadratic hill climbing)				
Included observations: 396				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.1482	0.1137	1.3030	0.1926
EXPERIENCE	0.6713	0.2614	2.5677	0.0102
McFadden R-squared	0.0128	Log-likelihood		-267.0577
Prob(LR statistic)	0.0086	Avg. Log likelihood		-0.6744

According to the second decision step analysis of control treatments’ first period, only scholarship variable can be related with low significance (Table 2.93). Scholarship has a slight positive effect on Decision 3 probability.

Table 2.93 Logistic Regression for estimating period 1 maximiser decisions in control treatments with questionnaire variables.

Dependent Variable: P1_2VS3				
Method: ML - Binary Logit (Quadratic hill climbing)				
Included observations: 226				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-2.9606	1.4820	-1.9977	0.0457
GD2GD3	3.6759	2.1861	1.6815	0.0927
SCHOLARSHIP	0.0072	0.0042	1.7081	0.0876
McFadden R-squared	0.0204	Log-likelihood		-153.3821
Prob(LR statistic)	0.0412	Avg. Log likelihood		-0.6787

Best fit multinomial logistic regression model for second periods of control treatments includes experience and profit orientation variables (Table 2.94). Both variables affect Decision 2 and Decision 3 positively. However, the model is relatively weak.

Table 2.94 Multinomial Logistic Regression for estimating period 2 decisions in control treatments with questionnaire variables.

P2Decision ~ Experience+ProfitOrientation			
Coefficients			
	(Intercept)	Experience	ProfitOrientation
Decision2	-0.08836721	1.583195	0.5165580
Decision3	-0.21924549	1.252313	0.2464337
P Values			
	(Intercept)	Experience	ProfitOrientation
Decision2	0.7131776	0.05231001	0.02361497
Decision3	0.3758371	0.14484562	0.28980697
Prediction Rate			
0.4878049			
Log Likelihood			
-128.3468 (df=6)			
Average Log Likelihood			
-1.040650407			
Number of observations			
123			

Maximising decision model of control treatments' second periods includes three binary variables, the first period's implemented decision, gender and experiment experience (Table 2.95). If the participant has experiment experience and/or a maximising decision is implemented in the first period, the probability of maximising decisions increases.

Table 2.95 Logistic Regression for estimating period 2 "maximising or not" decision in control treatments with questionnaire variables.

Dependent Variable: P2MAX				
Method: ML - Binary Logit (Quadratic hill climbing)				
Included observations: 396				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.4688	0.2313	2.0267	0.0427
FIRSTMAX	0.6160	0.2228	2.7652	0.0057
GENDER	-0.4210	0.2263	-1.8607	0.0628
EXPERIENCE	0.6442	0.2895	2.2248	0.0261
McFadden R-squared	0.0343	Log-likelihood	-242.0411	
Prob(LR statistic)	0.0006	Avg. Log likelihood	-0.6112	

Lastly, second periods of control treatments' second decision step analysis include inequality aversion score as an explanatory variable of best fit binary logit model (Table 2.96). Higher inequality aversion score stimulates probability of Decision 2 against Decision 3.

Table 2.96 Logistic Regression for estimating period 2 maximiser decisions in control treatments with questionnaire variables.

Dependent Variable: P2_2VS3				
Method: ML - Binary Logit (Quadratic hill climbing)				
Included observations: 91 after adjustments				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-4.1444	2.3375	-1.7730	0.0762
GD2GD3	7.0170	3.5672	1.9671	0.0492
INEQUALITYAVERSION	-0.6918	0.3168	-2.1838	0.0290
McFadden R-squared	0.0719	Log-likelihood	-57.9197	
Prob(LR statistic)	0.0112	Avg. Log likelihood	-0.6365	

2.1.7 Reasons for Decisions

Last part of this analysis is reserved for decision reasoning based on the questionnaire responses. The reasons for their actions during the session are asked to participants via open-ended questions. After the completion of experiments, the reasons are categorised by two researchers independently.

Although the answers are not included in the overall analysis, they provide us invaluable insight to understand the reasoning behind the behaviour.

2.1.7.1 Group Treatments Reasons

In group treatments, the effects of minimal group implementation in participants are attempted to be explored. For this purpose, each decision's reasons are examined individually.

2.1.7.1.1 Decision 1 Reasons in Group Treatments

The most frequently stated reasons to choose Decision 1 are “equality” and “fairness” with around 60% in total (Figure 2.30) followed by “avoiding to harm”. Also, the utilitarian answer “maximise total payoff” has a proportion of 6%.

Figure 2.30 First period Decision 1 reasons in total group treatments.

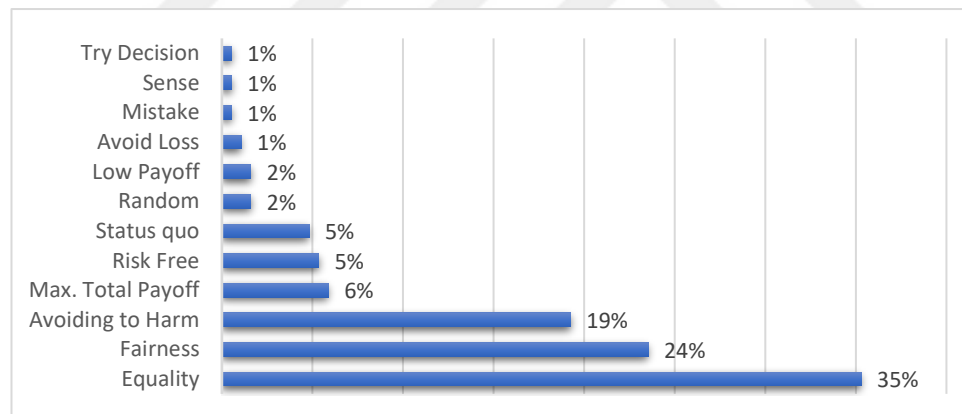
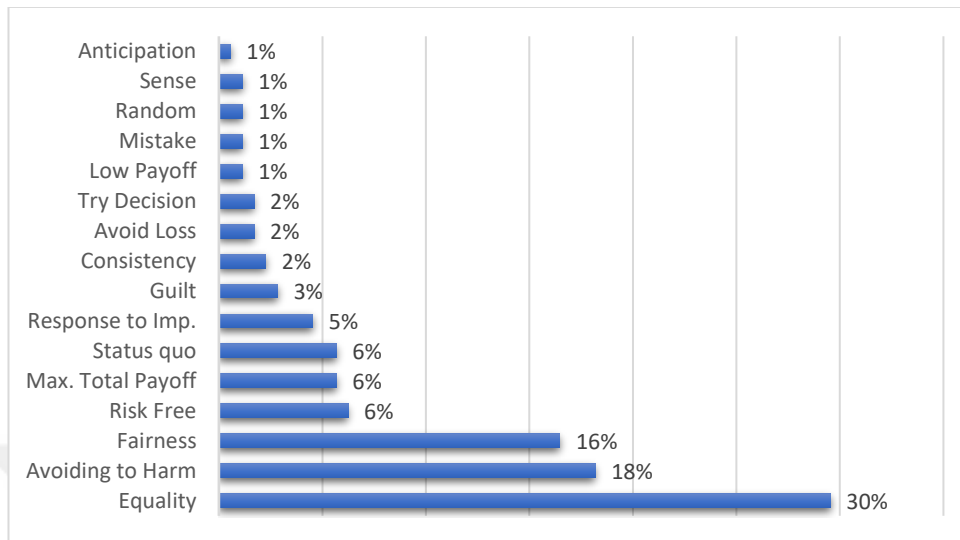


Figure 2.31 Second period Decision 1 reasons in total group treatments.



In the second period, response to implemented decision, guilt and consistency emerge as reasons specific to the second period (Figure 2.31).

Figure 2.32 First period Decision 1 reasons in group treatments.

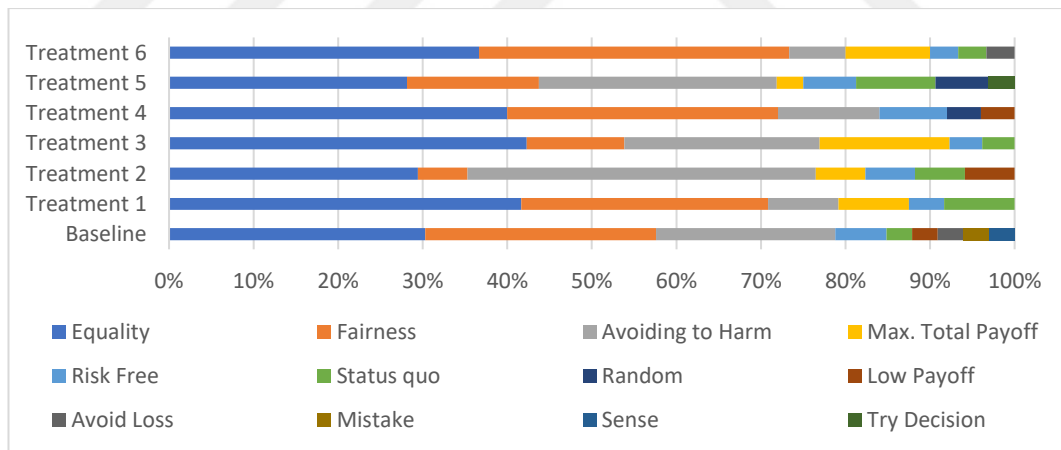
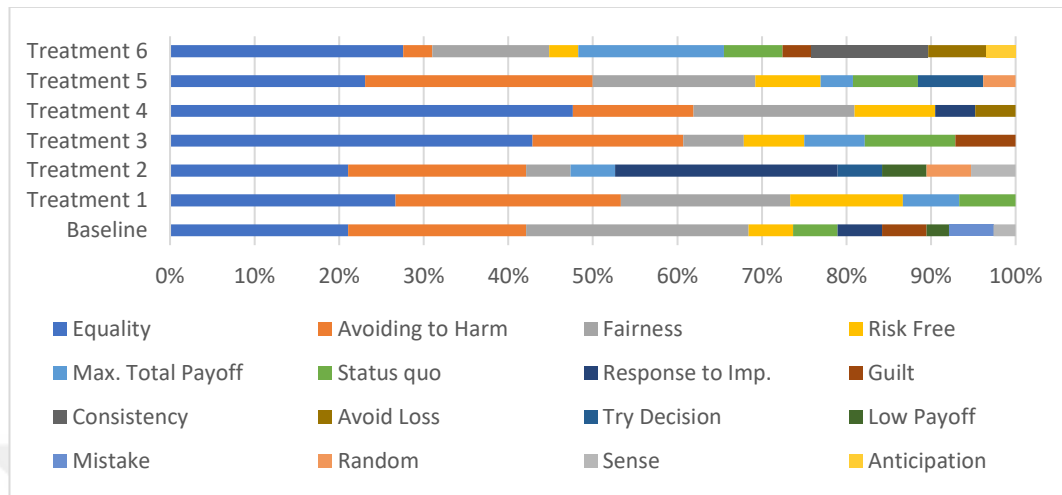


Figure 2.33 Second period Decision 1 reasons in group treatments.



The reasons according to treatments can be observed in Figure 2.32 and Figure 2.33. The reason distributions can be interpreted as consistent among treatments, except for “response to the implemented decision” reason that stated most in the second period of Treatment 2 which have the highest social inefficiency coefficient.

2.1.7.1.2 Decision 2 Reasons in Group Treatments

The most stated reasons for Decision 2 are “maximise” and “maximise with least harm” with over 70% in total (Figure 2.34). Although participants who utilise “maximise” as reason can be indifferent between Decision 2 and Decision 3, others, who state “maximise with least harm”, have definite social concerns.

Figure 2.34 First period Decision 2 reasons in total group treatments.

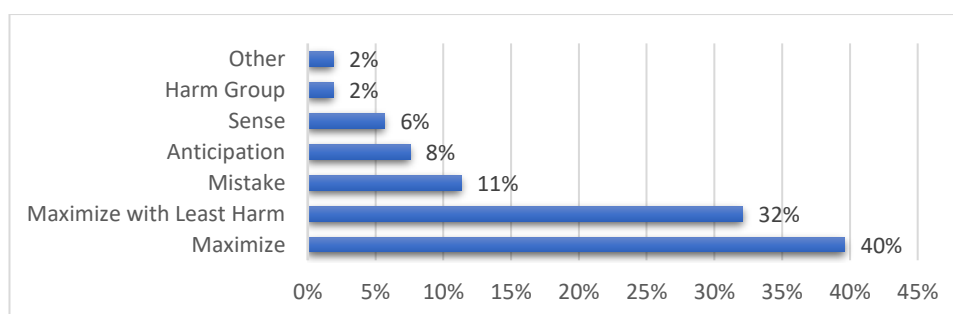
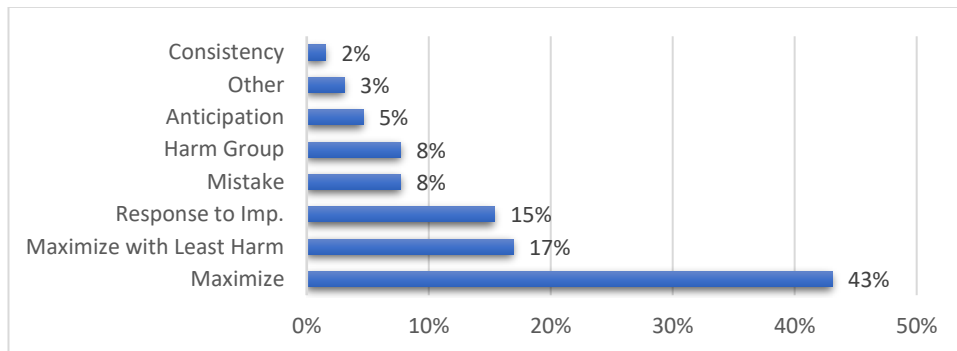


Figure 2.35 Second period Decision 2 reasons in total group treatments.



Similar to second-period Decision 1 reasons, in second-period Decision 2 reasons, “response to the implemented decision” and “consistency” are emerged (Figure 2.35).

Also, as an interesting outcome of the analysis, “harm group” reason is observed multiple times, indicating in-group hate in minimal group design.

Figure 2.36 First period Decision 2 reasons in group treatments.

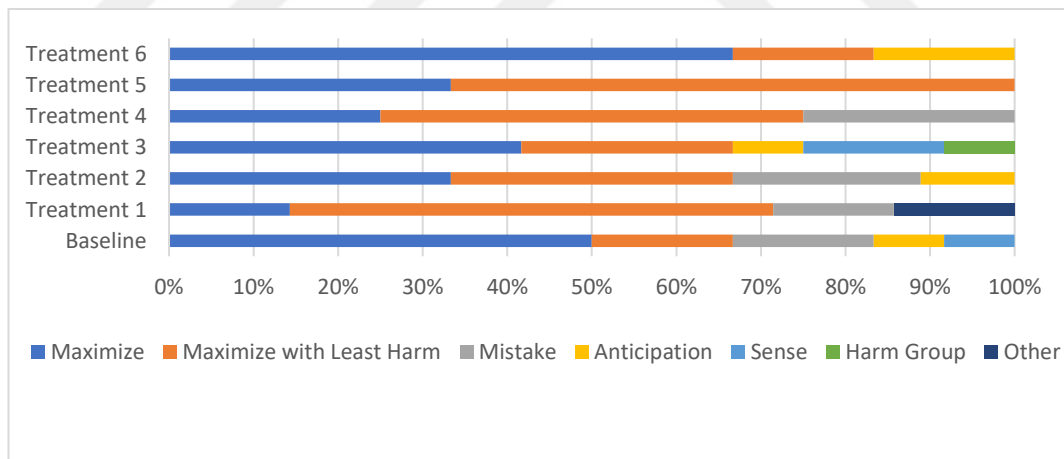
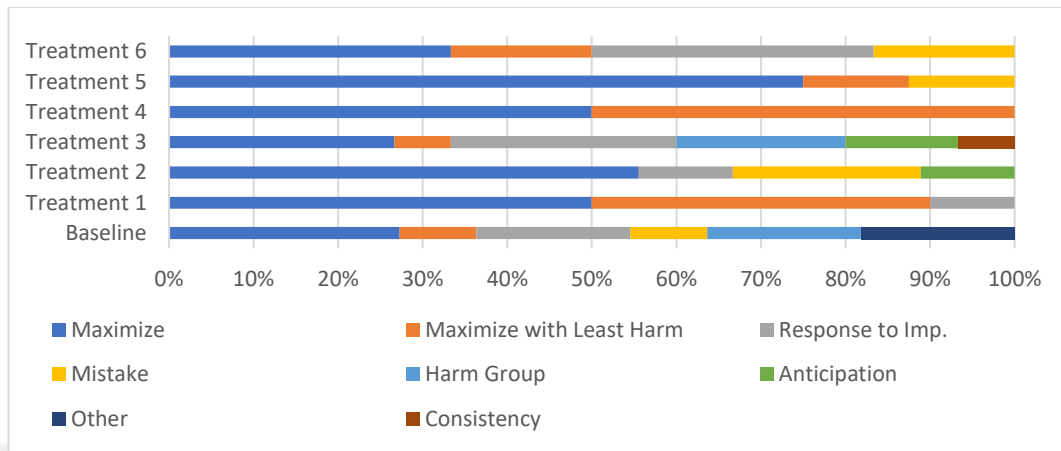


Figure 2.37 Second period Decision 2 reasons in total treatments.



The reason distributions among treatments (Figure 2.36 and Figure 2.37) do not reveal any significant property considering the total number of Decision 2 supporters in group treatments.

2.1.7.1.3 Decision 3 Reasons in Group Treatments

In Decision 3 reasons of group treatments, group related reasons as “care group”, “maximise group”, “avoid harming group” and “harm other group” are summed up to over 75% of the answers (Figure 2.38). Thus, this can be stated that even in minimal group design group favouritism can overcome social efficiency concerns for a considerable proportion of society. However, the participants who claim only “maximise” reason can be interpreted indifferent between Decision 2 and Decision 3 as in Decision 2 reasons.

Figure 2.38 First period Decision 3 reasons in total group treatments.

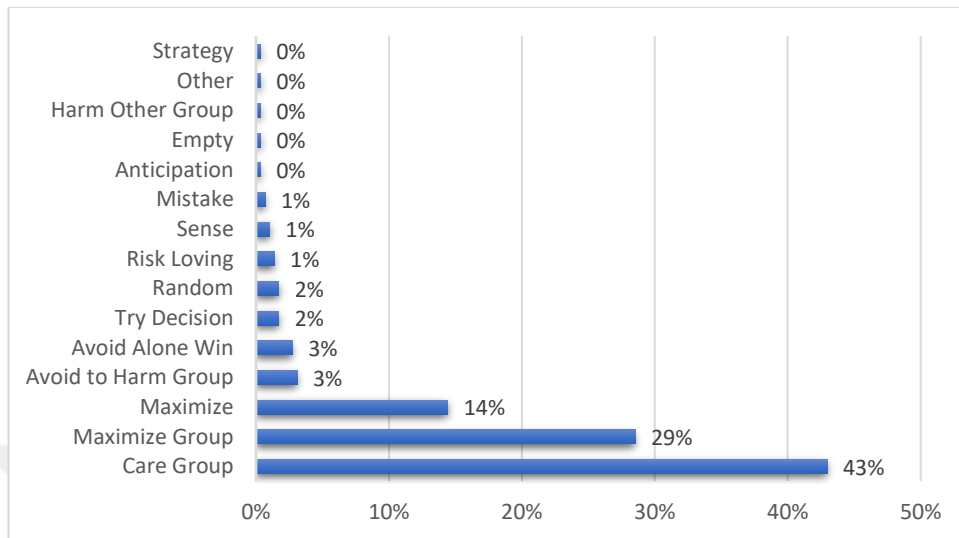
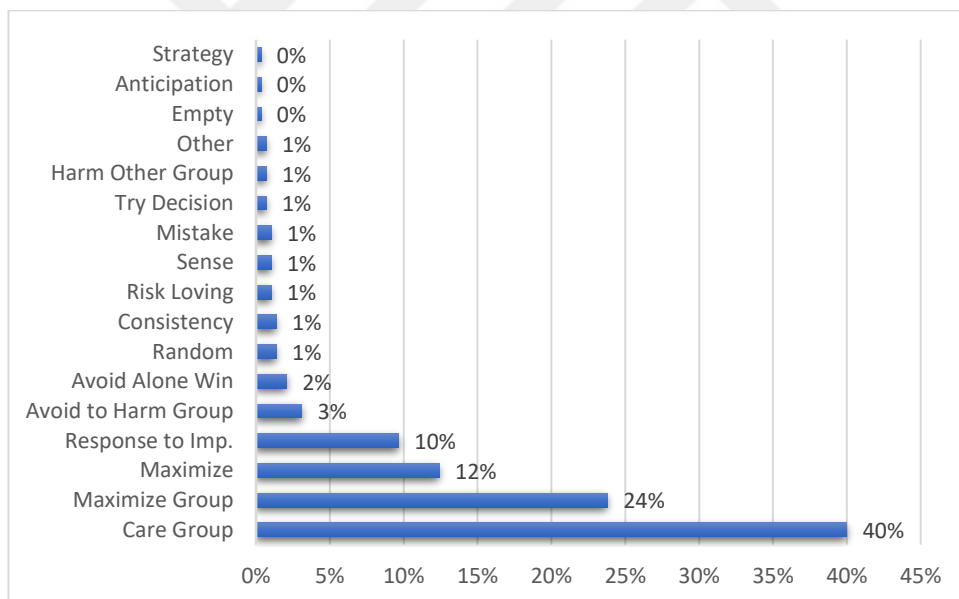


Figure 2.39 Second period Decision 3 reasons in total group treatments.



In second period reasons for Decision 3, similar reason distribution is observed. Like Decision 2 reasons, “response to the first period’s implemented decision” and “consistency” are added to first period’s reason list (Figure 2.39).

Figure 2.40 First period Decision 3 reasons in group treatments.

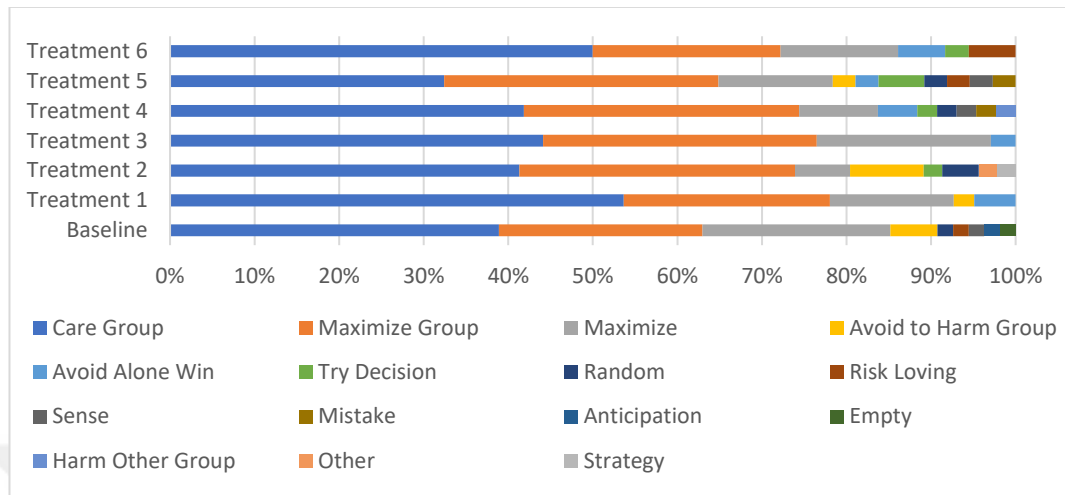
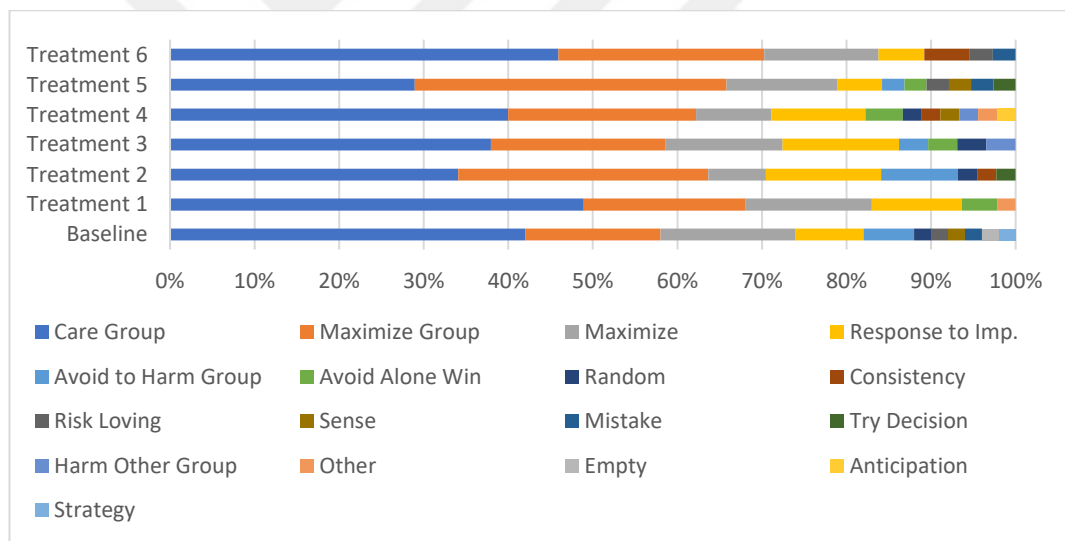


Figure 2.41 Second period Decision 3 reasons in group treatments.



Comparing the reason distributions of treatments (Figure 2.40 and Figure 2.41) show that none of the treatments diverges from other treatments in terms of group related reason proportions.

2.1.7.2 Control Treatments Reasons

In the group-free environment, namely control treatments, participants behave differently, yet still, choose socially most harmful option with a considerably high proportion. Thus, to distinguish group effect properly, reasons of control treatments should also be examined.

2.1.7.2.1 Decision 1 Reasons in Control Treatments

Control treatments' Decision 1 reason list in both periods (Figure 2.42 and Figure 2.43) is nearly identical to group treatments' Decision 1 reasons with close proportional distributions.

Figure 2.42 First period Decision 1 reasons in total control treatments.

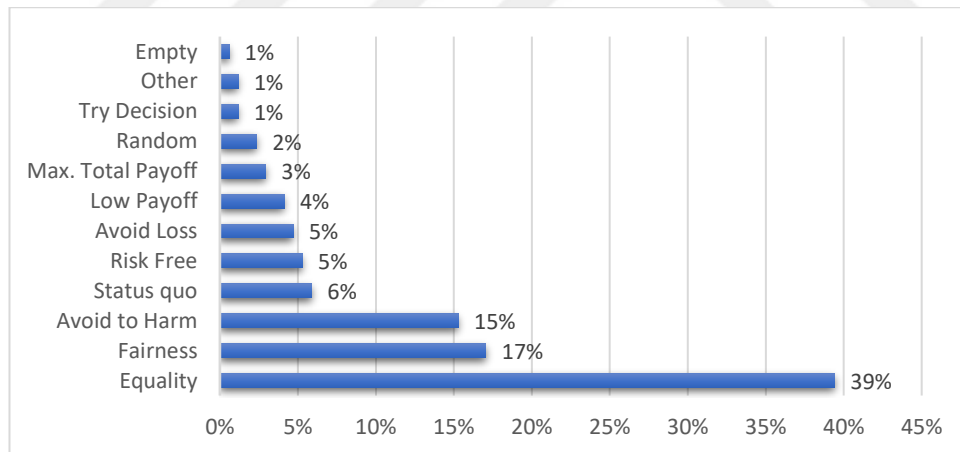
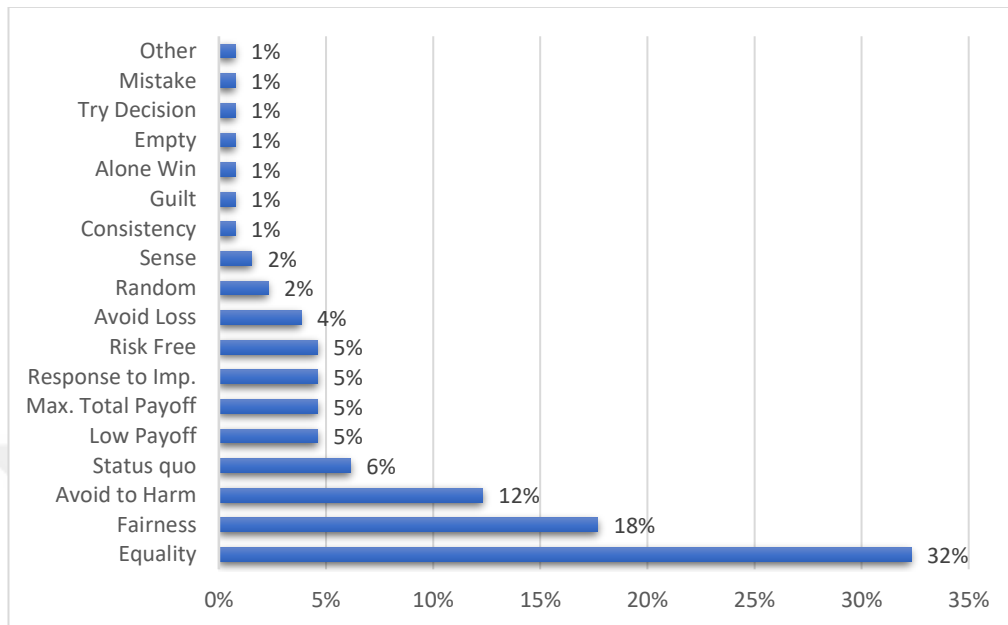


Figure 2.43 Second period Decision 1 reasons in total control treatments.



Even in reason distributions among treatments (Figure 2.44 and Figure 2.45), very similar distributions can be observed suggesting that the first stage of the decision-making process is independent of the group setting.

Figure 2.44 First period Decision 1 reasons in control treatments.

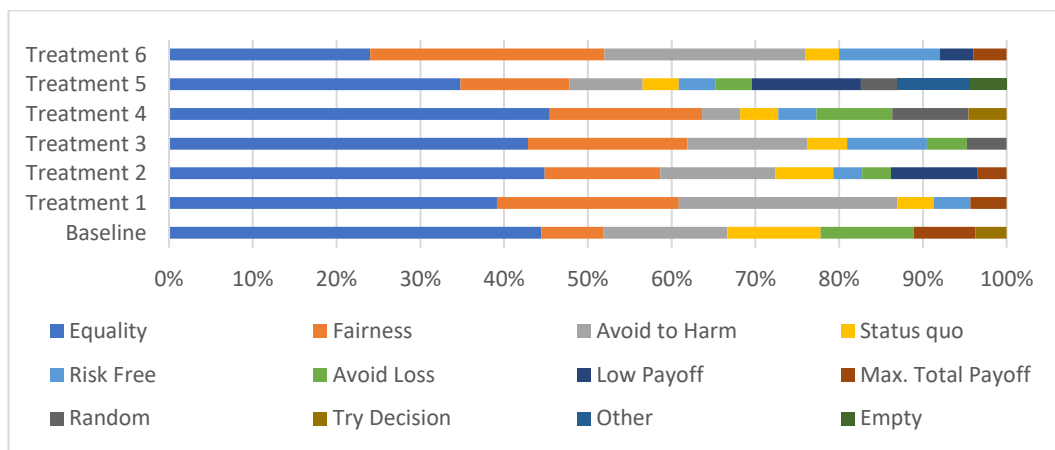
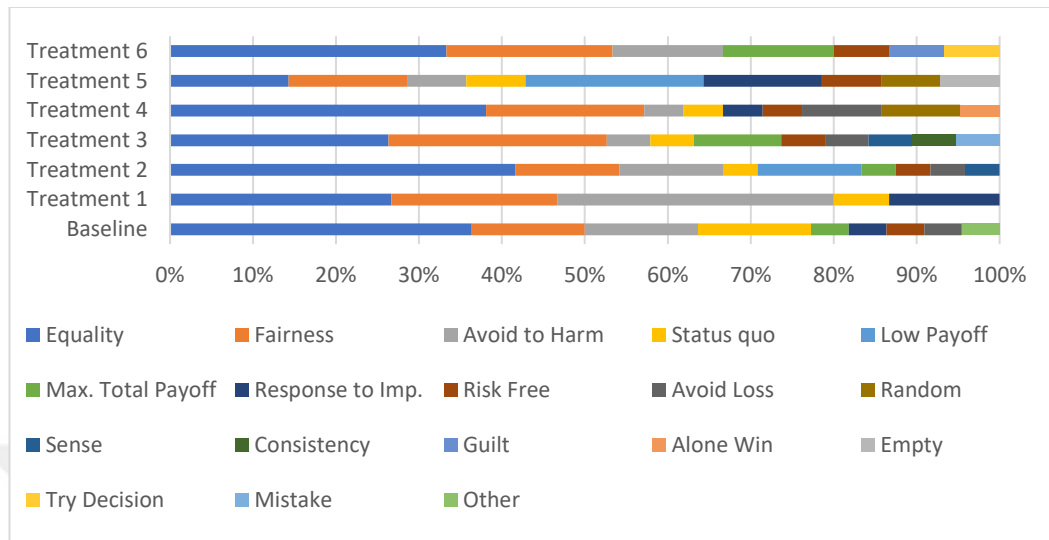


Figure 2.45 Second period Decision 1 reasons in control treatments.



2.1.7.2.2 Decision 2 Reasons in Control Treatments

Decision 2 reasons of control treatments are also very similar to group treatments' Decision 2 reasons except for a few different reasons with small proportions and reverse order of most stated two reasons (Figure 2.46 and Figure 2.47). "Maximise with least harm" and "maximise" are leading reasons with over 70% support as well. Interestingly, there are, also, "harm other" and "avoid equality" reasons that can be considered like a match for "harm group" reason of group treatments.

Figure 2.46 First period Decision 2 reasons in total control treatments.

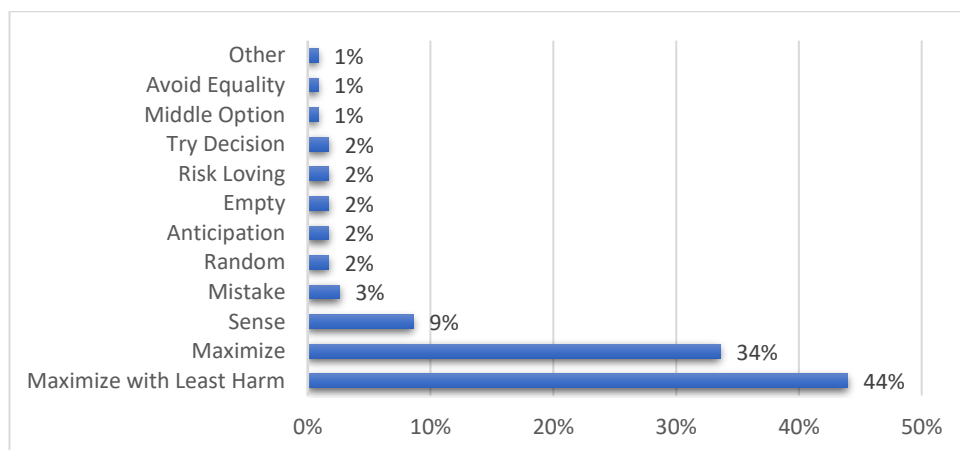
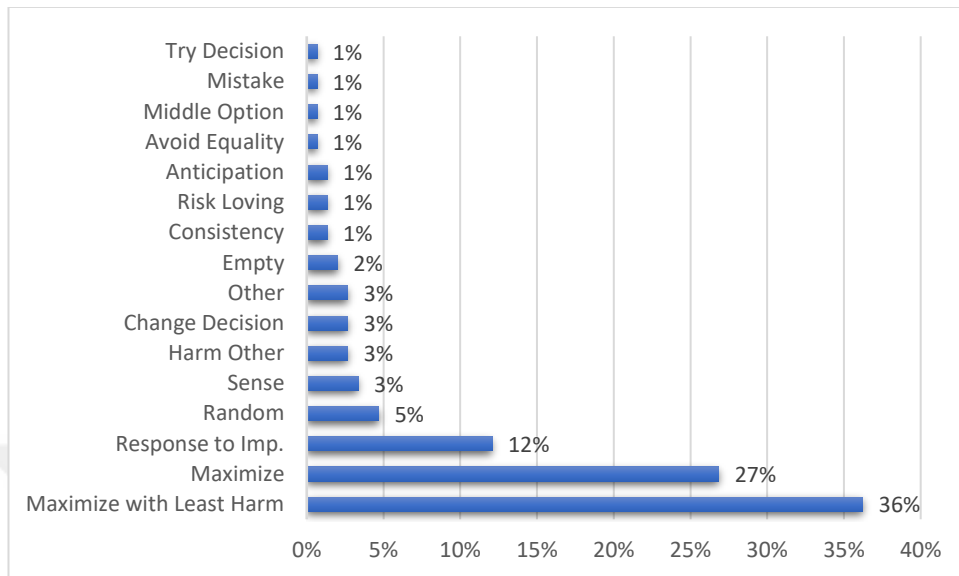


Figure 2.47 Second period Decision 2 reasons in total control treatments.



Similar to all other decisions' reason lists, "response to the first period's implemented decision" and "consistency" are added to reason list in the second period.

Figure 2.48 First period Decision 2 reasons in control treatments.

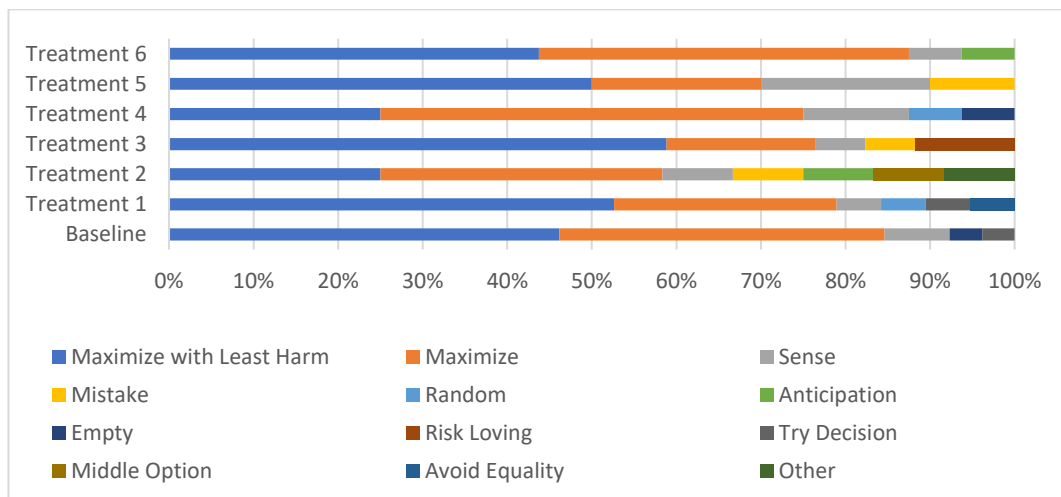
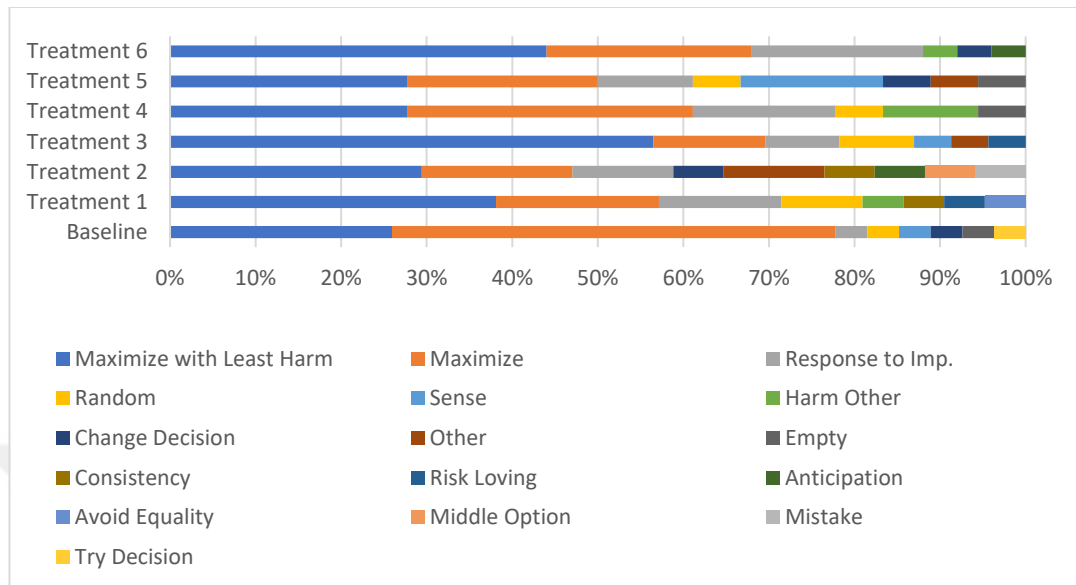


Figure 2.49 Second period Decision 2 reasons in control treatments.



Converse to group treatments, in Decision 2 reasons distribution with respect to treatments, the highest proportion of “maximise with least harm” in Treatment 3 is noticeable in both periods (Figure 2.48 and Figure 2.49). Since the temptation for maximising is comparatively high in Treatment 3, the increment in “maximising with least harm” proportion is acceptable.

2.1.7.2.3 Decision 3 Reasons in Control Treatments

Since Decision 3 is the group favouring choice of group treatments, in group-free setting the major reasons of group treatments’ Decision 3 cannot be proposed. As expected, the reasons with high proportions are different from group treatments in control treatments except for “maximise” reason (Figure 2.50 and Figure 2.51).

Figure 2.50 First period Decision 3 reasons in total control treatments.

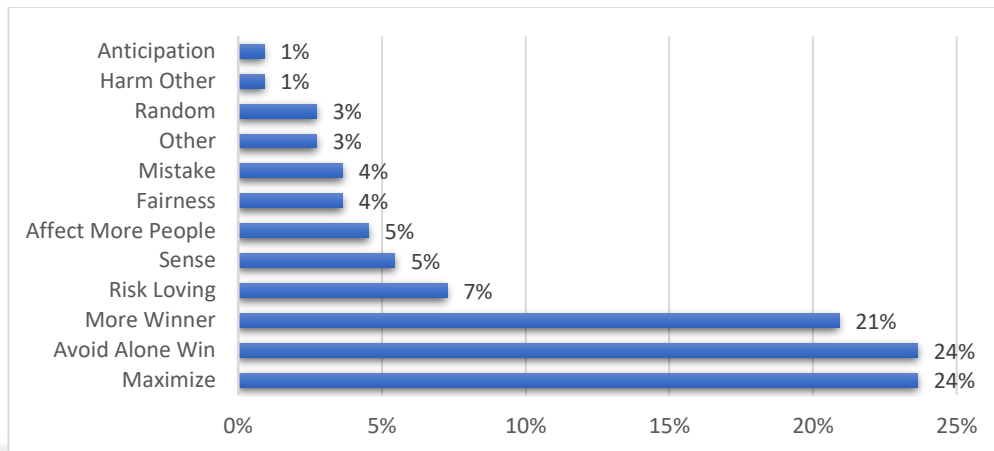
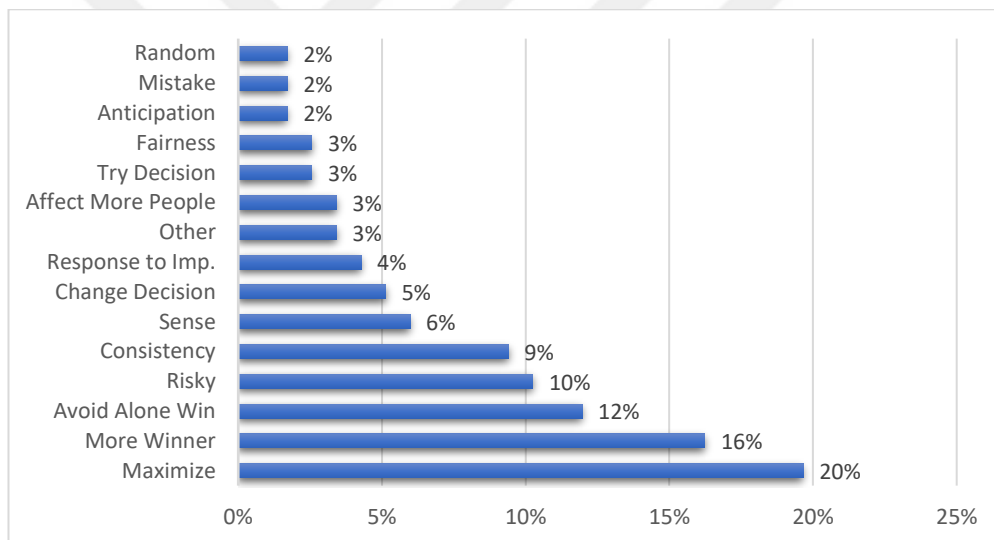


Figure 2.51 Second period Decision 3 reasons in total control treatments.



Interestingly, “more winner”, “avoid alone win”, and “affect more people” can be interpreted as reflections of group-related reasons in the group-free environment. As usual, “response to the first period’s implemented decision” and “consistency” are emerged, in second-period reasons.

Figure 2.52 First period Decision 3 reasons in control treatments.

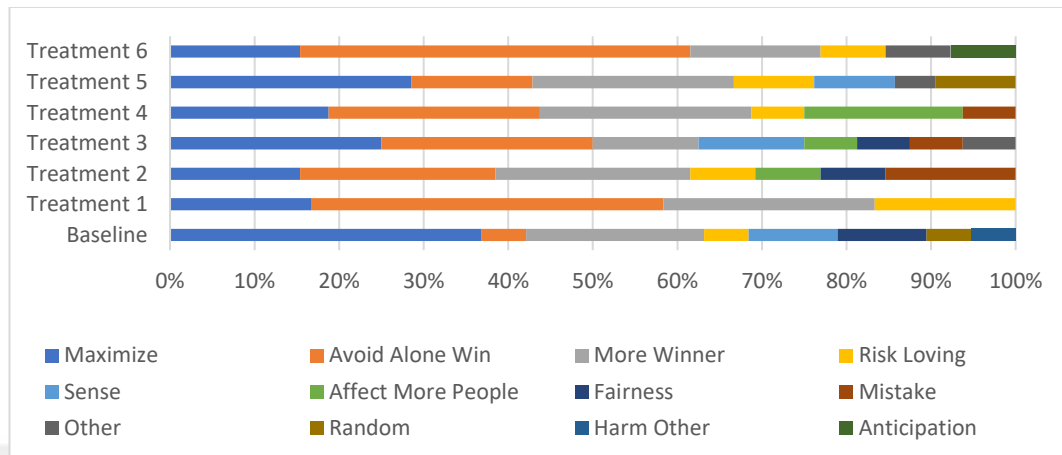
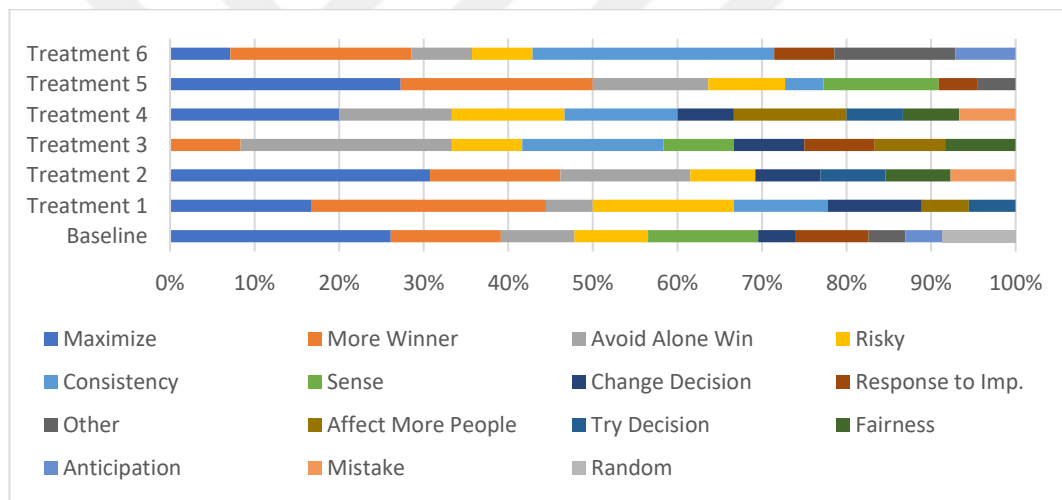


Figure 2.53 Second period Decision 3 reasons in control treatments.



The Decision 3 reason distributions with respect to treatments do not differ significantly (Figure 2.52 and Figure 2.53). Only, lack of “maximise” reason among second-period reasons of Treatment 3 can be mentioned.

2.1.8 Results Summary

The treatment analysis, given in Table 2.97, shows that group favouritism is observable in all treatments. Even so, it is weaker in Treatment 3 and Treatment 5 suggesting the behaviour reacts only to larger changes in parameter values.

Table 2.97 Summary of treatment analysis.

(p-values)	All	Maximiser vs. Non-maximiser	Decision 2 vs. Decision 3
Baseline treatment	0.00008512***	0.57281206	0.00001585***
Treatment 1 (q=0,25)	0.00006609***	0.28756214	0.00001604***
Treatment 2 (q=0,75)	0.00004894***	0.00051654***	0.00287366**
Treatment 3 (x=40)	0.06677009*	0.74944263	0.02074605*
Treatment 4 (x=5)	0.00015579***	0.48932963	0.00003137***
Treatment 5 (a=40)	0.02689002*	0.83572527	0.0074672**
Treatment 6 (a=5)	0.00117088**	0.60400337	0.00025015***

Moreover, except for Treatment 2, there is no statistical evidence of a difference in maximise or not decision. The difference in Treatment 2 can be interpreted as that when the cost of transfer is higher; people avoid maximising in the absence of groups. However, in the presence of groups, the social cost of endowment transfer becomes irrelevant.

On the other hand, the differences of Decision 2 and Decision 3 distributions among group and control treatments significant in all treatments.

In decision change analysis, it is observed that participants of control treatments change their decision in seconds period significantly more often than group treatment participants and Decision 3 supporters of group treatments choose to keep their first-period decision significantly more often than other participants. Also, the first period's implemented decision affects decision changes. For both group and treatment sessions, if the first period's implemented decision is a maximising decision (Decision 2 or Decision 3), the decision change rate is significantly higher.

Addition to treatment analysis, the questionnaire outcomes are examined. In demographics analysis, significant relations of experience in maximising or not decision and parents' education level in the choice between Decision 2 and Decision 3 are observable (Table 2.98).

Table 2.98 Demographics analysis of the experiment.

		Gender	Scholarship	KnowAnybody	Experience	FatherEdu	MotherEdu
Total	All	0.925	0.659	0.796	0.000***	0.021*	0.060'
	Maximiser vs. Non-maximiser	0.694	0.451	0.699	0.000***	0.112	0.091'
	Decision 2 vs. Decision 3	0.975	0.731	0.58	0.606	0.023*	0.121
Group	All	0.189	0.407	-	-	0.022*	0.018*
	Maximiser vs. Non-maximiser	0.813	-	-	-	0.13	0.156
	Decision 2 vs. Decision 3	0.069'	-	-	-	0.020*	0.020*
Control	All	0.407	0.809	-	-	0.479	0.449
	Maximiser vs. Non-maximiser	0.676	-	-	-	0.572	0.459
	Decision 2 vs. Decision 3	0.201	-	-	-	0.285	0.328

Social preference and homo economicus scores of participants are mostly related to maximising or not decision stage (Table 2.99).

Table 2.99 Social preference and homo economicus analysis of the experiment.

	Total			Group			Control		
	All	Maximiser vs. Non-maximiser	Decision 2 vs. Decision 3	All	Maximiser vs. Non-maximiser	Decision 2 vs. Decision 3	All	Maximiser vs. Non-maximiser	Decision 2 vs. Decision 3
Altruism	0.057'	0.017*	0.974	0.076'	0.023*	0.884	0.482	0.226	0.994
Trust	0.032*	0.018*	0.295	0.027*	0.007**	0.92	0.416	0.447	0.25
Positive Reciprocity	0.002**	0.001***	0.212	0.000***	0.000***	0.043*	0.281	0.111	0.954
Negative Reciprocity	0.712	0.654	0.479	0.8	0.647	0.618	0.519	0.254	0.9
Inequality aversion	0.59	0.512	0.428	0.15	0.369	0.108	0.983	0.876	0.917
Profit Orientation	0.01**	0.003**	0.37	0.022*	0.008**	0.435	0.226	0.094'	0.635
Labour Orientation	0.484	0.229	0.939	0.575	0.294	0.926	0.755	0.467	0.848
Homo Economicus	0.011*	0.003**	0.491	0.03*	0.01**	0.547	0.226	0.088'	0.835

As expected, Decision 1 supporters have higher altruism, trust, and positive reciprocity scores and lower profit orientation and homo economicus scores. Only positive reciprocity scores of Decision 2 and Decision 3 supporters differ significantly; Decision 3 supporters have higher positive reciprocity scores.

Also, for all decision stages, decision models are offered. Most of the before questionnaire models include inequality outcomes of treatments, the existence of group variable, and for second periods, the first period's decision variables. After questionnaire models are improved by the addition of inequality aversion, trust, profit orientation scores, experience and education level of father variables.

Last but not least analysis is on reasons of the decisions that provide an invaluable source to understand the motivation behind group favouritism behaviour. Group treatments' Decision 3 reasons mostly about groups including "maximising group", "caring group", and "avoid to harm group" with 75% support.

2.2 GROUP FAVOURITISM AND OTHER PREFERENCES ANALYSIS

In this part, the relation of group favouritism behaviour with other social and economic preferences is tried to be captured via classifying survey responders by their choice in group favouritism question and comparing the classes by their mean preference scores.

However, the clear distinction of generations led us to analyse the data in two age categories which are young participants who are at most 30 years old and older participants who are older than 30 years old. The categorisation enables us to compare these consecutive generations. The age distributions of the all possible categories (2016, 2017 and merged) are given in Figure 2.54. The counts of the participants according to the categories can be found in Table 2.100.

Figure 2.54 Age distributions of the all possible categories (2016, 2017 and merged).

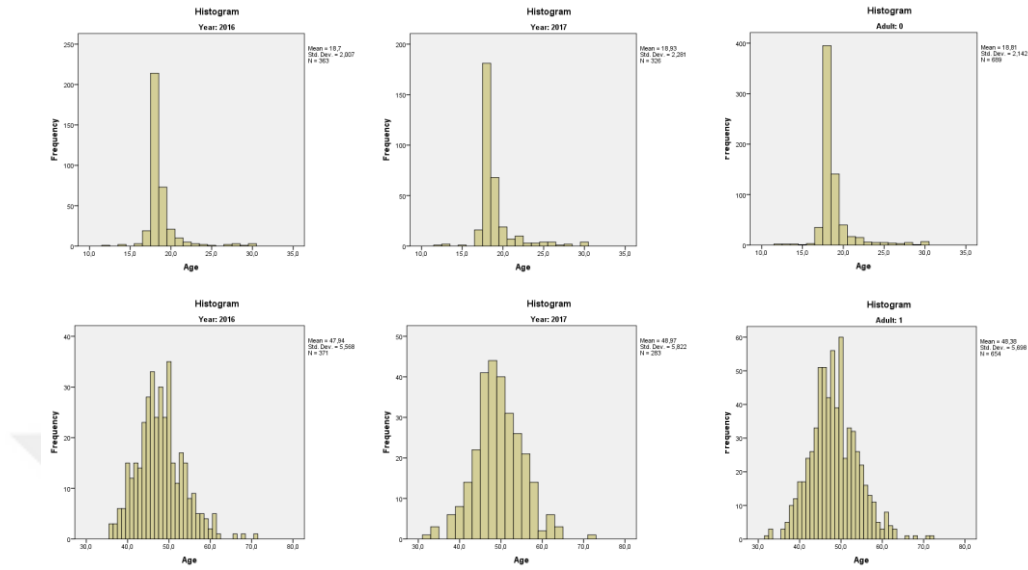


Table 2.100 Age categories distribution of participants according to years.

	Year		Total
	2016	2017	
Younger	364	326	690
Adult	403	293	696
Total	767	619	1386

Because of different contents of the two years' surveys, we presented analysis in three parts; common preferences which consist of altruism, trust, positive and negative reciprocity, inequality aversion and time preferences, 2016 specific preferences which consist of risk preferences, and 2017 specific preferences which are homo economicus attributes. Moreover, since for most of the preferences the score distribution differs among age categories, we checked the preference relations for each of the age categories as well.

2.2.1 Common Preferences

In this part, the relation of group favouritism behaviour with the preferences which are measured in both years' surveys is presented in three categories; analysis for all participants, for younger participants whose age is at most 30 and for older participants whose age is over 30. Besides overall analysis, the comparison of maximiser and non-maximiser participants, in other words the ones who choose Decision 1 for group favouritism question of the survey and the ones who choose Decision 2 or Decision 3, and the comparison of Decision 2 and Decision 3 supporters, maximisers among themselves, take place along with the descriptives.

Table 2.101 Descriptive statistics of participants with respect to their group favouritism choice.

		N	Mean
Altruism	Decision 1	831	0.067
	Decision 2	104	-0.112
	Decision 3	377	-0.119
Trust	Decision 1	830	0.036
	Decision 2	103	-0.016
	Decision 3	378	-0.101
PReciprocity	Decision 1	832	0.045
	Decision 2	104	0.040
	Decision 3	378	-0.064
NReciprocity	Decision 1	829	-0.043
	Decision 2	104	-0.002
	Decision 3	378	0.125
Inequality	Decision 1	825	1.157
	Decision 2	104	1.553
	Decision 3	374	1.260
Time	Decision 1	832	-0.001
	Decision 2	104	-0.015
	Decision 3	378	-0.026

The mean values of participants' preference scores with respect to the decisions they choose in group favouritism question are given in Table 2.101. According to the table, Decision 1 supporters have the highest average score in altruism, trust, positive reciprocity and patience, conversely Decision 3 supporters have the lowest

average scores in these preferences. Oppositely for patience and negative reciprocity scores, Decision 3 supporters have the highest values where Decision 1 supporters have the lowest. Lastly, in inequality aversion following by Decision 3 supporters, Decision 2 supporters have the highest average score.

Table 2.102 ANOVA test for mean preference scores of participants with respect to their group favouritism choice.

	F	Sig.
Altruism	9.337	0***
Trust	2.5	0.082'
PReciprocity	2.981	0.051'
NReciprocity	7.693	0***
Inequality	6.935	0.001**
Time	0.13	0.878

One-way ANOVA test (Table 2.102) reveals that the differences in altruism, negative reciprocity and inequality aversion scores have high significance, where the differences in positive reciprocity and trust scores have lower significance levels. However, patience score differences are insignificant.

The descriptive statistics of the younger participants' score distributions among group favouritism question decisions (Table 2.103) show that Decision 1 supporters have the highest average score in altruism, trust, positive reciprocity and patience as well. As in all participants' distributions, Decision 2 supporters have the highest average score in inequality aversion, and Decision 3 supporters have the highest score in negative reciprocity. Moreover, the differences are statically significant for altruism, trust, negative reciprocity and inequality aversion scores (Table 2.104).

Table 2.103 Descriptive statistics of younger participants' preference scores with respect to their group favouritism choice.

Age <= 30		N	Mean
Altruism	Decision 1	423	0.011
	Decision 2	45	-0.094
	Decision 3	220	-0.161
Trust	Decision 1	423	-0.08
	Decision 2	45	-0.187
	Decision 3	220	-0.288
PReciprocity	Decision 1	423	-0.105
	Decision 2	45	-0.119
	Decision 3	220	-0.188
NReciprocity	Decision 1	423	0.096
	Decision 2	45	0.17
	Decision 3	220	0.228
Inequality	Decision 1	422	1.228
	Decision 2	45	1.617
	Decision 3	218	1.337
Time	Decision 1	423	0.051
	Decision 2	45	-0.049
	Decision 3	220	-0.039

Table 2.104 ANOVA test for mean preference scores of younger participants with respect to their group favouritism choice.

ANOVA		
Age<= 30	F	Sig.
Altruism	4.342	0.013*
Trust	3.239	0.040*
PReciprocity	0.955	0.385
NReciprocity	2.994	0.051'
Inequality	3.292	0.038*
Time	1.199	0.302

Table 2.105 Descriptive statistics of elder participants' preference scores with respect to their group favouritism choice.

Age > 30		N	Mean
Altruism	Decision 1	408	0.126
	Decision 2	59	-0.125
	Decision 3	157	-0.061
Trust	Decision 1	407	0.157
	Decision 2	58	0.117
	Decision 3	158	0.158
PReciprocity	Decision 1	409	0.201
	Decision 2	59	0.161
	Decision 3	158	0.109
NReciprocity	Decision 1	406	-0.188
	Decision 2	59	-0.134
	Decision 3	158	-0.020
Inequality	Decision 1	403	1.083
	Decision 2	59	1.504
	Decision 3	156	1.152
Time	Decision 1	409	-0.054
	Decision 2	59	0.011
	Decision 3	158	-0.007

The means and standard deviations of the preference scores with respect to the group favouritism question choice of the older participants are presented in Table 2.105. According to the one-way ANOVA test given below in Table 2.106, group favouritism behaviour can be associated with altruism, negative reciprocity and inequality aversion for older participants.

Table 2.106 ANOVA test for mean preference scores of older participants with respect to their group favouritism choice.

ANOVA		
Age>30	F	Sig.
Altruism	4.921	0.008**
Trust	0.045	0.956
PReciprocity	0.982	0.375
NReciprocity	3.290	0.038*
Inequality	3.925	0.020*
Time	0.287	0.751

In order to distinguish the group favouring behaviour, we need to explore the common features of maximiser participants and exclude non-maximisers from the analysis. Thus, in this part, the descriptive statistics and comparison of the

participants' preferences are presented with respect to their maximising behaviour in group favouritism question.

Table 2.107 Descriptive statistics of participants' preference scores with respect to their "maximise or not" choice.

GF		N	Mean
Altruism	Decision 2 or 3	481	-0.118
	Decision 1	831	0.067
Trust	Decision 2 or 3	481	-0.083
	Decision 1	830	0.036
PReciprocity	Decision 2 or 3	482	-0.041
	Decision 1	832	0.045
NReciprocity	Decision 2 or 3	482	0.097
	Decision 1	829	-0.043
Inequality	Decision 2 or 3	478	1.324
	Decision 1	825	1.157
Time	Decision 2 or 3	482	-0.023
	Decision 1	832	-0.001

According to the data summary above (Table 2.107), maximiser participants exhibit lower altruistic behaviour, trust and positive reciprocity, higher inequality aversion, negative reciprocity and patience than non-maximisers. With the help of t-test for equality of means (Table 2.108), we can claim that except for the time preferences, the inequalities are statistically significant.

Table 2.108 Statistical test for equality of participants' preference scores with respect to their "maximise or not" choice.

	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
Altruism	-4.322	1310	0***
Trust	-2.098	1309	0.036*
PReciprocity	-2.076	1312	0.038*
NReciprocity	3.55	1309	0***
Inequality	2.644	883.062	0.008**
Time	-0.495	1312	0.621

Table 2.109 Descriptive statistics of younger participants' preference scores with respect to their "maximise or not" choice.

GF	Age≤30	N	Mean
Altruism	Decision 2 or 3	265	-0.150
	Decision 1	423	0.011
Trust	Decision 2 or 3	265	-0.271
	Decision 1	423	-0.079
PReciprocity	Decision 2 or 3	265	-0.176
	Decision 1	423	-0.105
NReciprocity	Decision 2 or 3	265	0.218
	Decision 1	423	0.096
Inequality	Decision 2 or 3	263	1.385
	Decision 1	422	1.228
Time	Decision 2 or 3	265	-0.041
	Decision 1	423	0.051

For the younger participants whose age is at most 30, the same preference relations are observed (Table 2.109). In average, the maximiser participants are less altruistic, less trustful, less patient, more inequality averse and have less positive reciprocity and more negative reciprocity than non-maximisers. However, although the differences in altruism, trust, negative reciprocity and inequality aversion are statistically significant, positive reciprocity and time preference differences are insignificant (Table 2.110).

Table 2.110 Statistical test for equality of younger participants' preference scores with respect to their "maximise or not" choice.

Age≤30	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
Altruism	-2.891	686	0.004**
Trust	-2.469	686	0.014*
PReciprocity	-1.256	686	0.210
NReciprocity	2.387	686	0.017*
Inequality	1.872	482.817	0.062'
Time	-1.577	594.676	0.115

Table 2.111 Descriptive statistics of elder participants' preference scores with respect to their "maximise or not" choice.

GF	Age>30	N	Mean
Altruism	Decision 2 or 3	216	-0.0784
	Decision 1	408	0.12572
Trust	Decision 2 or 3	216	0.14734
	Decision 1	407	0.15704
PReciprocity	Decision 2 or 3	217	0.12331
	Decision 1	409	0.20054
NReciprocity	Decision 2 or 3	217	-0.0509
	Decision 1	406	-0.1879
Inequality	Decision 2 or 3	215	1.2488
	Decision 1	403	1.0831
Time	Decision 2 or 3	217	-0.0019
	Decision 1	409	-0.054

Same analysis for the older participants, whose age is more than 30, give similar results except for the time preferences (Table 2.111). Accordingly, among older participants, maximisers are more patient than non-maximisers with the very slight difference in average. The orderings have a high significance in altruism, moderate in negative reciprocity, low in inequality aversion (Table 2.112). Trust, positive reciprocity and time preferences do not diverge enough to provide statistical evidence.

Table 2.112 Statistical test for equality of elder participants' preference scores with respect to their "maximise or not" choice.

Age>30	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
Altruism	-3.093	622	0.002**
Trust	-0.118	621	0.906
PReciprocity	-1.314	624	0.189
NReciprocity	2.332	621	0.020*
Inequality	1.747	394.385	0.081'
Time	0.745	624	0.456

Lastly, the comparison of Decision 2 and Decision 3 supporters is presented by excluding the non-maximisers.

Table 2.113 Descriptive statistics of maximiser participants' preference scores with respect to their choice between Decision 2 and Decision 3.

GF		N	Mean
Altruism	Decision 2	104	-0.1116
	Decision 3	377	-0.1194
Trust	Decision 2	103	-0.0158
	Decision 3	378	-0.1014
PReciprocity	Decision 2	104	0.04003
	Decision 3	378	-0.0637
NReciprocity	Decision 2	104	-0.0022
	Decision 3	378	0.1245
Inequality	Decision 2	104	1.5529
	Decision 3	374	1.26
Time	Decision 2	104	-0.0149
	Decision 3	378	-0.0255

The mean and the standard deviation of the preferences of the maximisers are given in Table 2.113 with respect to the decision they choose. Decision 3 supporters seem to have lower altruism, trust, positive reciprocity, inequality aversion, time preference and higher negative reciprocity scores, yet, only the difference in inequality aversion scores is statistically significant (Table 2.114). Decision 2 supporters are more inequality averse than Decision 3 supporters.

Table 2.114 Statistical test for equality of maximiser participants' preference scores with respect to their choice between Decision 2 and Decision 3.

	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
Altruism	0.095	479	0.925
Trust	0.743	479	0.458
PReciprocity	1.300	480	0.194
NReciprocity	-1.539	147.971	0.126
Inequality	2.303	476	0.022*
Time	0.122	480	0.903

Table 2.115 Descriptive statistics of younger maximiser participants' preference scores with respect to their choice between Decision 2 and Decision 3.

GF	Age≤30	N	Mean
Altruism	Decision 2	45	-0.094
	Decision 3	220	-0.161
Trust	Decision 2	45	-0.187
	Decision 3	220	-0.288
PReciprocity	Decision 2	45	-0.119
	Decision 3	220	-0.188
NReciprocity	Decision 2	45	0.170
	Decision 3	220	0.228
Inequality	Decision 2	45	1.617
	Decision 3	218	1.337
Time	Decision 2	45	-0.049
	Decision 3	220	-0.039

According to descriptive statistics of Decision 2 and Decision 3 supporters of the younger participants in Table 2.115, Decision 3 supporters are less altruistic, less trustful, less positive, more negative reciprocal, less inequality averse and more patient than Decision 2 supporters. However, none of the relations is statistically significant (Table 2.116).

Table 2.116 Statistical test for equality of younger maximiser participants' preference scores with respect to their choice between Decision 2 and Decision 3.

Age≤30	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
Altruism	0.561	263	0.576
Trust	0.589	263	0.556
PReciprocity	0.576	263	0.565
NReciprocity	-0.549	263	0.583
Inequality	1.352	57.9	0.182
Time	-0.085	263	0.932

Table 2.117 Descriptive statistics of elder maximiser participants' preference scores with respect to their choice between Decision 2 and Decision 3.

GF	Age>30	N	Mean
Altruism	Decision 2	59	-0.125
	Decision 3	157	-0.061
Trust	Decision 2	58	0.117
	Decision 3	158	0.158
PReciprocity	Decision 2	59	0.161
	Decision 3	158	0.109
NReciprocity	Decision 2	59	-0.134
	Decision 3	158	-0.020
Inequality	Decision 2	59	1.504
	Decision 3	156	1.152
Time	Decision 2	59	0.011
	Decision 3	158	-0.007

In the older participants preference score distributions (Table 2.117), the only significant result is the difference in inequality aversion scores (Table 2.118) revealing that the source of the difference in inequality aversion scores that detected in overall comparison is the older participants.

Table 2.118 Statistical test for equality of elder maximiser participants' preference scores with respect to their choice between Decision 2 and Decision 3.

Age>30	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
Altruism	-0.552	214	0.582
Trust	-0.275	214	0.784
PReciprocity	0.505	215	0.614
NReciprocity	-1.056	215	0.292
Inequality	1.987	213	0.048*
Time	0.135	215	0.892

2.2.2 2016 specific preferences (Risk preference)

The only 2016 specific preference is the risk preference which is measured as the weighted average of the outcomes of one self-assessment question and a question set that assigns a risk value via the staircase method explained detailed previously.

Risk preference and group favouritism behaviour relation is analysed through the comparison of the mean risk preference scores of the different decision supporters of group favouritism question. The analysis is presented in three parts; overall analysis with one-way ANOVA, maximiser non-maximiser comparison and comparison of maximisers among themselves with t-test for the equality of means.

The participants' risk preference scores' means given in Table 2.119 with respect to their responses to group favouritism question. The means are very close as can be seen in Table 2.120. Consequently there is no statistical evidence of relation.

Table 2.119 Descriptive statistics of participants' risk scores with respect to their group favouritism choice.

	N	Mean
Decision 1	436	0.021
Decision 2	48	0.014
Decision 3	208	-0.007

Table 2.120 ANOVA test for mean risk scores of participants with respect to their group favouritism choice.

	F	Sig.
Risk	.054	0.948

In the age categories, we have similar results. Although the means become some disperse (Table 2.121 and Table 2.123), there is no statistically significant relation between risk preference scores and the choices in the group favouritism question (Table 2.122 and Table 2.124).

Table 2.121 Descriptive statistics of younger participants' risk scores with respect to their group favouritism choice.

Age<=30	N	Mean
Decision 1	215	0.237
Decision 2	21	0.082
Decision 3	120	0.117

Table 2.122 ANOVA test for mean risk scores of younger participants with respect to their group favouritism choice.

ANOVA	Age<=30	
	F	Sig.
Risk	0.808	0.447

Table 2.123 Descriptive statistics of elder participants' risk scores with respect to their group favouritism choice.

Age>30	N	Mean
Decision 1	221	-0.190
Decision 2	27	-0.040
Decision 3	88	-0.175

Table 2.124 ANOVA test for mean risk scores of older participants with respect to their group favouritism choice.

ANOVA	Age>30	
	F	Sig.
Risk	0.252	0.777

The comparison of the maximisers and non-maximisers risk preference scores give similar results. Their means are close (Table 2.125), and the small difference between them is statistically insignificant (Table 2.126).

Table 2.125 Descriptive statistics of participants' risk scores with respect to their "maximise or not" choice.

		N	Mean
Risk	Decision 2 or 3	256	-0.003
	Decision 1	436	0.021

Table 2.126 Statistical test for equality of participants' risk scores with respect to their "maximise or not" choice.

	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
Risk	-0.300	690	0.763

Likewise, in age categories, the risk preference scores do not differ among maximisers and non-maximisers (Table 2.128 and Table 2.130).

Table 2.127 Descriptive statistics of younger participants' risk scores with respect to their "maximise or not" choice.

GF	Age≤30	N	Mean
Risk	Decision 2 or 3	141	0.111
	Decision 1	215	0.237

Table 2.128 Statistical test for equality of younger participants' risk scores with respect to their "maximise or not" choice.

Age≤30	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
Risk	-1.260	354	0.207

Table 2.129 Descriptive statistics of elder participants' risk scores with respect to their "maximise or not" choice.

GF	Age>30	N	Mean
Risk	Decision 2 or 3	115	-0.143
	Decision 1	221	-0.190

Table 2.130 Statistical test for equality of elder participants' risk scores with respect to their "maximise or not" choice.

Age>30	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
Risk	0.392	334	0.695

Moreover, as expected, no significant difference can be detected between Decision 2 and Decision 3 supporters' risk preference scores even in age categories (Table 2.131 and Table 2.132).

Table 2.131 Descriptive statistics of maximiser participants' risk scores with respect to their choice between Decision 2 and Decision 3.

GF		N	Mean
Risk	Decision 2	48	0.014
	Decision 3	208	-0.007

Table 2.132 Statistical test for equality of maximiser participants' risk scores with respect to their choice between Decision 2 and Decision 3.

	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
Risk	0.132	254	0.895

Table 2.133 Descriptive statistics of younger maximiser participants' risk scores with respect to their choice between Decision 2 and Decision 3.

GF	Age<30	N	Mean
Risk	Decision 2	21	0.082
	Decision 3	120	0.117

Table 2.134 Statistical test for equality of younger maximiser participants' risk scores with respect to their choice between Decision 2 and Decision 3.

Age<30	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
Risk	-0.150	139	0.879

Table 2.135 Descriptive statistics of elder maximiser participants' risk scores with respect to their choice between Decision 2 and Decision 3.

GF	Age>30	N	Mean
Risk	Decision 2	27	-0.040
	Decision 3	88	-0.175

Table 2.136 Statistical test for equality of elder maximiser participants' risk scores with respect to their choice between Decision 2 and Decision 3.

Age>30	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
Risk	0.622	113	0.535

2.2.3 2017 specific preferences (Homo economicus module)

One of the most important preferences of 2017 survey is homo economicus attributes. As explained in detail above, the homo economicus module consists of 5 questions that aim to explore participants' perception of economic efficiency via some dilemmas.

Factor analysis of the responses led us to define two dimensions for homo economicus attributes; profit orientation and labour orientation. The responses for profit maximisation questions and the responses for the wage settings clustered separately. Moreover, intuitively, the two dimensions have opposite correlation with homo economicus attribute. That is why, in order to get one acceptable homo economicus attribute score, we decided to subtract labour orientation score from profit orientation.

Following this part, the analysis of the responses is given starting from response distribution of each question individually, then the distribution of dimensions, and, lastly, the analysis for the homo economicus attribute scores.

2.2.3.1 Question-Based Analysis

The variables that are extracted via the first four questions of the module can be analysed as scale variables. However the fifth question's variable is nominal. Therefore, one-way ANOVA is applied to analyse the relation of the first four questions with group favouritism question, and chi-square goodness of fit test is applied to explore the last question's relation.

Table 2.137 Descriptive statistics of participants' 4 homo economicus question responses with respect to their group favouritism choice.

GF		Mean	Std. Error
HE-Q1	Decision 1	161.46	1.774
	Decision 2	158.41	5.702
	Decision 3	143.33	2.812
HE-Q2	Decision 1	0.75	0.062
	Decision 2	1.48	0.242
	Decision 3	0.98	0.107
HE-Q3	Decision 1	2.76	0.15
	Decision 2	3.53	0.442
	Decision 3	3.57	0.242
HE-Q4	Decision 1	45704.6	160.953
	Decision 2	45575	426.13
	Decision 3	45343.1	204.115

The means and standard errors of the answers of the homo economicus module's first four questions distributed according to group favouritism question's decisions are presented in Table 2.137. As can be seen in the table, Decision 1 supporters decided to fire least workers where Decision 3 supporters fired most; Decision 2 supporters found economical efficiency more fair in ticket distribution comparing to Decision 1 and 3 supporters; Decision 2 and 3 supporters evaluated the hardware store owners action fairer than Decision 1 supporters; and Decision 1 supporters offered the highest amount where Decision 3 supporters offered the least on average. In order to check the significance of the differences among the groups we applied one-way ANOVA and found that the differences of the first three questions' answers have high significance. However, there is no significant difference between wage offerings (Table 2.138).

Table 2.138 ANOVA test for 4 homo economicus question responses of participants with respect to their group favouritism choice.

ANOVA	Total	
	F	Sig.
HE-Q1	15.211	0.000***
HE-Q2	7.641	0.001**
HE-Q3	4.916	0.008**
HE-Q4	0.860	0.424

Table 2.139 5th homo economicus question responses of participants with respect to their group favouritism choice.

		HE-Q5	
		Reject	Accept
GF	Decision 1	202	177
	Decision 2	20	30
	Decision 3	92	73

The last question of the module is about the reaction to the last wage offer, which is to accept or reject. The counts of rejecting and accepting answers according to group favouritism question's decisions are given in Table 2.139. Most of Decision 1 and 3 supporters rejected the wage offer where most of Decision 2 supporters accepted. However, the difference is not significant (Table 2.140).

Table 2.140 Statistical test for equality of participants' 5th homo economicus question responses with respect to their group favouritism choice.

Chi-Square Tests	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	3,904	2	.142
Likelihood Ratio	3.909	2	.142
Linear-by-Linear Association	.084	1	.772
N of Valid Cases	594		

Knowing that participants answers differ significantly among age categories required us to apply the same analysis for each of the age categories.

Table 2.141 Descriptive statistics of younger participants' 4 homo economicus question responses with respect to their group favouritism choice.

Age <= 30	GF	Mean	Std. Error
HE-Q1	Decision 1	151.70	2.596
	Decision 2	137.20	8.478
	Decision 3	131.45	3.165
HE-Q2	Decision 1	.87	.091
	Decision 2	1.83	.359
	Decision 3	1.14	.135
HE-Q3	Decision 1	3.28	.196
	Decision 2	4.75	.565
	Decision 3	4.18	.297
HE-Q4	Decision 1	45537.90	197.675
	Decision 2	45350.00	492.176
	Decision 3	45558.24	243.620

Table 2.142 5th homo economicus question responses of younger participants with respect to their group favouritism choice.

		HE-Q5	
Age <= 30		Reject	Accept
GF	Decision 1	106	93
	Decision 2	6	18
	Decision 3	57	42

The younger participants' answer distributions according to group favouritism decisions are given in Table 2.141 and Table 2.142. The distributions are similar to previous distribution for questions 1, 2 and 5 but differ in questions 3 and 4 by higher approval for the hardware store owner from Decision 2 supporters in question 3 and higher wage offerings from Decision 3 supporters in question 4. Moreover, the difference of Decision 2 supporters' acceptance rate becomes more visible in question 5.

Table 2.143 ANOVA test for 4 homo economicus question responses of younger participants with respect to their group favouritism choice.

ANOVA		
Age<=30	F	Sig.
HE-Q1	11.463	0.000***
HE-Q2	5.922	0.003**
HE-Q3	5.190	0.006**
HE-Q4	0.056	0.945

Table 2.144 Statistical test for equality of younger participants' 5th homo economicus question responses with respect to their group favouritism choice.

Chi-Square Tests			
Age≤30	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	8,348b	2	0.015*
Likelihood Ratio	8.615	2	0.013
Linear-by-Linear Association	0.182	1	0.67
N of Valid Cases	322		

The results of statistical tests for the distributions are similar to previous analysis except for the last question (Table 2.143). The difference of Decision 2 supporters' acceptance rate becomes statistically significant among younger participants (Table 2.144).

Table 2.145 Descriptive statistics of elder participants' 4 homo economicus question responses with respect to their group favouritism choice.

Age > 30	GF	Mean	Std. Error
HE-Q1	Decision 1	171.78	2.151
	Decision 2	176.08	5.663
	Decision 3	161.35	4.309
HE-Q2	Decision 1	0.61	0.082
	Decision 2	1.16	0.32
	Decision 3	0.73	0.172
HE-Q3	Decision 1	2.18	0.223
	Decision 2	2.44	0.602
	Decision 3	2.68	0.385
HE-Q4	Decision 1	45898.7	261.353
	Decision 2	45800	705.617
	Decision 3	45027.4	353.439

Table 2.146 5th homo economicus question responses of younger participants with respect to their group favouritism choice.

		HE-Q5	
		Reject	Accept
Age>30	GF Decision 1	96	84
	Decision 2	14	12
	Decision 3	35	31

In Table 2.145 and Table 2.146, the means, standard deviations and counts of the homo economicus module questions' answers of the older participants are given with respect to the group favouritism question's answers. Other than the increment of Decision 2 supporters' mean answer to the first question and the disappearance of difference in the acceptance rate of the last question, the distributions are similar.

Table 2.147 ANOVA test for 4 homo economicus question responses of older participants with respect to their group favouritism choice.

ANOVA		
Age>30	F	Sig.
HE-Q1	3.414	0.034*
HE-Q2	2.352	0.097'
HE-Q3	0.671	0.512
HE-Q4	1.720	0.181

Table 2.148 Statistical test for equality of elder participants' 5th homo economicus question responses with respect to their group favouritism choice.

Age>30	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	,005	2	0.997
Likelihood Ratio	0.005	2	0.997
Linear-by-Linear Association	0.001	1	0.974
N of Valid Cases	272		

The analysis outcomes which are given in tables Table 2.147 and Table 2.148 indicate that the significance level of differences decrease for all of the questions except for the wage offerings, even that the third question's difference becomes insignificant.

The separateness of the survey outcome from experimental results on the proportion of Decision 1 is required us to organise the analysis in two parts as mentioned

previously. First, the comparison of the maximisers with non-maximisers, namely Decision 2 or 3 supporters with the ones who have chosen Decision 1. Then, the comparison of Decision 2 and 3 supporters with each other is presented.

Table 2.149 Descriptive statistics of participants' 4th homo economicus question responses with respect to their "maximise or not" choice.

GF		N	Mean
HE-Q1	Decision 2 or 3	200	146.650
	Decision 1	360	161.460
HE-Q2	Decision 2 or 3	208	1.100
	Decision 1	355	0.750
HE-Q3	Decision 2 or 3	219	3.560
	Decision 1	388	2.760
HE-Q4	Decision 2 or 3	193	45391.190
	Decision 1	342	45704.600

Table 2.150 Statistical test for equality of participants' 5th homo economicus question responses with respect to their "maximise or not" choice.

	HE-Q5	
	Reject	Accept
Decision 2 or 3	112	103
Decision 1	202	177
Chi-square	0.08	
p-value	0.777	

Decision distributions are given in Table 2.149 and Table 2.150 with respect to the maximising behaviour in group favouritism question. In average, the maximiser participants fired more workers in the first question, supported more economically efficient ticket distribution mechanisms in the second question, found the hardware store owner fairer in the third question, offered lower amounts in the fourth question and more often accepted the wage offer in the fifth question. These are all in line with the classical economic theory's rational man assumption. However, the differences are significant only for the first three questions (Table 2.151 and Table 2.150).

Table 2.151 Statistical test for equality of participants' 4 homo economicus question responses with respect to their "maximise or not" choice.

	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
HE-Q1	-4.858	558	0.000***
HE-Q2	2.938	366.937	0.004**
HE-Q3	3.137	605	0.002**
HE-Q4	-1.282	450.011	0.200

Applying the same analysis for the age categories show that the differences stay still, but the significance levels generally decrease for older participants' results except for the fourth question, wage offerings. Counter to these results; younger participants have much more similar wage offerings with respect to maximising behaviour.

Table 2.152 Descriptive statistics of younger participants' 4 homo economicus question responses with respect to their "maximise or not" choice.

GF	Age<=30	N	Mean
HE-Q1	Decision 2 or 3	114	132.460
	Decision 1	185	151.700
HE-Q2	Decision 2 or 3	121	1.270
	Decision 1	192	0.870
HE-Q3	Decision 2 or 3	121	0.480
	Decision 1	194	0.330
HE-Q4	Decision 2 or 3	111	45520.700
	Decision 1	184	45537.900

Table 2.153 Statistical test for equality of younger participants' 5th homo economicus question responses with respect to their "maximise or not" choice.

Age <= 30	HE-Q5	
	Reject	Accept
Decision 2 or 3	63	60
Decision 1	106	93
Chi-square	0.128	
p-value	0.721	

Table 2.154 Statistical test for equality of younger participants' 4 homo economicus question responses with respect to their "maximise or not" choice.

Age≤30	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
HE-Q1	-4.743	297	0.000***
HE-Q2	2.606	311	0.010*
HE-Q3	1.881	219.722	0.061'
HE-Q4	-0.056	293	0.955

The descriptive statistics for younger participants can be found above in Table 2.152 and Table 2.153, with the relevant tests in Table 2.154 and Table 2.153. Similarly, the same tables for older participants presented below in Table 2.155, Table 2.156 and Table 2.157.

Table 2.155 Descriptive statistics of elder participants' 4 homo economicus question responses with respect to their "maximise or not" choice.

GF	Age>30	N	Mean
HE-Q1	Decision 2 or 3	86	165.470
	Decision 1	175	171.780
HE-Q2	Decision 2 or 3	87	0.850
	Decision 1	163	0.610
HE-Q3	Decision 2 or 3	88	0.280
	Decision 1	164	0.170
HE-Q4	Decision 2 or 3	82	45215.850
	Decision 1	158	45898.730

Table 2.156 Statistical test for equality of elder participants' 5th homo economicus question responses with respect to their "maximise or not" choice.

Age >30	HE-Q5	
	Reject	Accept
Decision 2 or 3	49	43
Decision 1	96	84
Chi-square	0	
p-value	1	

Table 2.157 Statistical test for equality of elder participants' 4 homo economicus question responses with respect to their "maximise or not" choice.

Age>30	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
HE-Q1	-1.601	259	0.111
HE-Q2	1.394	136.35	0.166
HE-Q3	1.403	132.046	0.163
HE-Q4	-1.660	184.172	0.099 [*]

Excluding non-maximisers reduces our sample size that inevitably decreases the significance levels of the analysis. The means of the first four questions and acceptance rates of the fifth question are presented in Table 2.158 and Table 2.159 with Decision 2 and Decision 3 division.

Table 2.158 Descriptive statistics of maximiser participants' 4 homo economicus question responses with respect to their choice between Decision 2 and Decision 3.

GF		N	Mean
HE-Q1	Decision 2	44	158.410
	Decision 3	156	143.330
HE-Q2	Decision 2	48	1.480
	Decision 3	160	0.980
HE-Q3	Decision 2	48	0.560
	Decision 3	161	0.350
HE-Q4	Decision 2	40	45575.000
	Decision 3	153	45343.140

Table 2.159 Statistical test for equality of maximiser participants' 5th homo economicus question responses with respect to their choice between Decision 2 and Decision 3.

	HE-Q5	
	Reject	Accept
Decision 2	20	30
Decision 3	92	73
Chi-square	3.818	
p-value	0.051 [*]	

The analysis (Table 2.160 and Table 2.159) let us claim that Decision 2 supporters fired fewer workers, choose more economically efficient ticket distribution mechanisms and accepted the wage offerings more often than Decision 3 supporters in a less confident manner.

Table 2.160 Statistical test for equality of maximiser participants' 4 homo economicus question responses with respect to their choice between Decision 2 and Decision 3.

	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
HE-Q1	2.472	198	0.014*
HE-Q2	1.883	66.422	0.064'
HE-Q3	1.612	65.1	0.112
HE-Q4	0.510	191	0.611

Splitting the data according to age categories gives the distributions that are presented below in Table 2.161 and Table 2.162 for younger participants and in Table 2.164 and Table 2.165 for older participants. The relevant statistical tests for the distributions are given in Table 2.163 and Table 2.162 for younger participants and in Table 2.166 and Table 2.165 for older participants. The most significant result of the analysis is the high acceptance rate of Decision 2 supporters in the fifth question among younger participants.

Table 2.161 Descriptive statistics of younger maximiser participants' 4 homo economicus question responses with respect to their choice between Decision 2 and Decision 3.

GF	Age<=30	N	Mean
HE-Q1	Decision 2	20	137.200
	Decision 3	94	131.450
HE-Q2	Decision 2	23	1.830
	Decision 3	98	1.140
HE-Q3	Decision 2	23	0.700
	Decision 3	98	0.430
HE-Q4	Decision 2	20	45350.000
	Decision 3	91	45558.240

Table 2.162 Statistical test for equality of younger maximiser participants' 5th homo economicus question responses with respect to their choice between Decision 2 and Decision 3.

Age<=30	HE-Q5	
	Reject	Accept
Decision 2	6	18
Decision 3	57	42
Chi-square	8.204	
p-value	0.004**	

Table 2.163 Statistical test for equality of younger maximiser participants' 4 homo economicus question responses with respect to their choice between Decision 2 and Decision 3.

Age≤30	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
HE-Q1	0.730	112	0.467
HE-Q2	1.781	28.474	0.086'
HE-Q3	1.367	28.713	0.182
HE-Q4	-0.366	109	0.715

Table 2.164 Descriptive statistics of elder maximiser participants' 4 homo economicus question responses with respect to their choice between Decision 2 and Decision 3.

GF	Age>30	N	Mean
HE-Q1	Decision 2	24	176.080
	Decision 3	62	161.350
HE-Q2	Decision 2	25	1.160
	Decision 3	62	0.730
HE-Q3	Decision 2	25	0.440
	Decision 3	63	0.220
HE-Q4	Decision 2	20	45800.000
	Decision 3	62	45027.420

Table 2.165 Statistical test for equality of elder maximiser participants' 5th homo economicus question responses with respect to their choice between Decision 2 and Decision 3.

Age>30	HE-Q5	
	Reject	Accept
Decision 2	14	12
Decision 3	35	31
Chi-square	0.005	
p-value	0.944	

Table 2.166 Statistical test for equality of elder maximiser participants' 4 homo economicus question responses with respect to their choice between Decision 2 and Decision 3.

Age>30	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
HE-Q1	1.894	84	0.062'
HE-Q2	1.282	85	0.203
HE-Q3	1.203	34.939	0.237
HE-Q4	1.045	80	0.299

2.2.3.2 Dimension Based Analysis

As explained in detail above, factor analysis of the homo economicus module's question set led us to define two dimensions of the homo economicus attribute; profit orientation and labourer orientation. In this part, the analysis of the dimensions' relation with the group favouritism question's outcome is presented in three categories, as the overall comparison, maximiser and non-maximiser comparison, Decision 2 and Decision 3 supporters comparison.

Table 2.167 Descriptive statistics of participants' dimension scores with respect to their group favouritism choice.

GF		N	Mean
Profit orientation	Decision 1	305	-0.152
	Decision 2	34	0.140
	Decision 3	138	0.298
Labourer orientation	Decision 1	305	-0.019
	Decision 2	34	-0.247
	Decision 3	138	0.112

Table 2.168 ANOVA test for dimension scores of participants with respect to their group favouritism choice.

ANOVA		
	F	Sig.
Profit orientation	10.880	0.000***
Labourer orientation	1.962	0.142

The descriptive statistics of the participants' dimensions scores according to their answers for the group favouritism questions are given in Table 2.167. The summary shows that Decision 3 supporters have the highest average score in both dimensions, where Decision 1 supporters have the lowest in profit orientation and Decision 2 supporters in labourer orientation scores. One-way ANOVA test of the means indicates that the difference in profit orientation is statistically significant (Table 2.168).

Table 2.169 Descriptive statistics of younger participants' dimension scores with respect to their group favouritism choice.

Age <= 30		N	Mean
Profit orientation	Decision 1	165	0.088
	Decision 2	16	0.891
	Decision 3	85	0.600
Labourer orientation	Decision 1	165	0.022
	Decision 2	16	-0.284
	Decision 3	85	0.256

Table 2.170 ANOVA test for dimension scores of younger participants with respect to their group favouritism choice.

ANOVA		
Age<30	F	Sig.
Profit orientation	12.423	0.000***
Labourer orientation	2.987	0.052'

The distributions differ among age categories (Table 2.169 and Table 2.171). Although the sample size decrease, significance level of ANOVA tests increased significantly for younger participants (Table 2.170) for both dimensions. However, the means become closer for older participants (Table 2.172).

Table 2.171 Descriptive statistics of elder participants' dimension scores with respect to their group favouritism choice.

Age >30		N	Mean
Profit orientation	Decision 1	140	-0.434
	Decision 2	18	-0.527
	Decision 3	53	-0.186
Labourer orientation	Decision 1	140	-0.068
	Decision 2	18	-0.214
	Decision 3	53	-0.120

Table 2.172 ANOVA test for dimension scores of older participants with respect to their group favouritism choice.

ANOVA		
Age>30	F	Sig.
Profit orientation	1.833	0.163
Labourer orientation	0.176	0.839

Maximiser participants have higher scores than non-maximisers in both dimensions (Table 2.173). However, the difference is significant for only profit orientation (Table 2.174).

Table 2.173 Descriptive statistics of participants' dimension scores with respect to their "maximise or not" choice.

GF		N	Mean
Profit orientation	Decision 2 or 3	172	0.267
	Decision 1	305	-0.152
Labourer orientation	Decision 2 or 3	172	0.041
	Decision 1	305	-0.019

Table 2.174 Statistical test for equality of participants' dimension scores with respect to their "maximise or not" choice.

	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
Profit orientation	4.401	313.413	0.000***
Labourer orientation	0.628	475	0.530

The younger participants have similar relations, maximisers have higher dimension scores than non-maximisers in average (Table 2.175) with higher significance (Table 2.176). Only profit orientation difference is statistically significant as well.

Table 2.175 Descriptive statistics of younger participants' dimension scores with respect to their "maximise or not" choice.

GF	Age<=30	N	Mean
Profit orientation	Decision 2 or 3	101	0.646
	Decision 1	165	0.088
Labourer orientation	Decision 2 or 3	101	0.171
	Decision 1	165	0.022

Table 2.176 Statistical test for equality of younger participants' dimension scores with respect to their "maximise or not" choice.

Age<=30	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
Profit orientation	4.842	264	0.000***
Labourer orientation	1.239	264	0.217

However, the older participants' scores differ from the pattern. Maximiser participants have higher profit orientation score but lower labourer orientation score than non-maximiser participants in average (Table 2.177). Both differences are insignificant statistically (Table 2.178).

Table 2.177 Descriptive statistics of elder participants' dimension scores with respect to their "maximise or not" choice.

GF	Age>30	N	Mean
Profit orientation	Decision 2 or 3	71	-0.272
	Decision 1	140	-0.434
Labourer orientation	Decision 2 or 3	71	-0.144
	Decision 1	140	-0.068

Table 2.178 Statistical test for equality of elder participants' dimension scores with respect to their "maximise or not" choice.

Age>30	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
Profit orientation	1.267	209	0.207
Labourer orientation	-0.496	209	0.621

In order to observe the distinction of group favouring behaviour among maximisers, we excluded non-maximisers and got the group statistic given below in Table 2.179. Decision 3 supporters have higher dimension scores than Decision 2 supporters, yet the difference of profit orientation is insignificant where labourer orientation difference has only weak significance (Table 2.180).

Table 2.179 Descriptive statistics of maximiser participants' dimension scores with respect to their choice between Decision 2 and Decision 3.

GF		N	Mean
Profit orientation	Decision 2	34	0.140
	Decision 3	138	0.298
Labourer orientation	Decision 2	34	-0.247
	Decision 3	138	0.112

Table 2.180 Statistical test for equality of maximiser participants' dimension scores with respect to their choice between Decision 2 and Decision 3.

	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
Profit orientation	-0.786	170	0.433
Labourer orientation	-1.903	170	0.059 [*]

In age categories, we were able to observe a significant difference in labourer orientation of younger participants (Table 2.182). Decision 3 supporters are more labourer oriented than Decision 2 supporters among younger participants (Table 2.181).

Table 2.181 Descriptive statistics of younger maximiser participants' dimension scores with respect to their choice between Decision 2 and Decision 3.

GF	Age≤30	N	Mean
Profit orientation	Decision 2	16	0.891
	Decision 3	85	0.600
Labourer orientation	Decision 2	16	-0.284
	Decision 3	85	0.256

Table 2.182 Statistical test for equality of younger maximiser participants' dimension scores with respect to their choice between Decision 2 and Decision 3.

Age≤30	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
Profit orientation	1.118	99	0.266
Labourer orientation	-2.245	99	0.027 [*]

Among older participants, Decision 3 supporters have higher dimension scores than Decision 2 supporters for both dimensions (Table 2.183), but the differences are not statistically significant (Table 2.184).

Table 2.183 Descriptive statistics of elder maximiser participants' dimension scores with respect to their choice between Decision 2 and Decision 3.

GF	Age>30	N	Mean
Profit orientation	Decision 2	18	-0.527
	Decision 3	53	-0.186
Labourer orientation	Decision 2	18	-0.214
	Decision 3	53	-0.120

Table 2.184 Statistical test for equality of elder maximiser participants' dimension scores with respect to their choice between Decision 2 and Decision 3.

Age>30	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
Profit orientation	-1.345	69	0.183
Labourer orientation	-0.315	69	0.754

2.2.3.3 Homo Economicus Attribute

Homo economicus attribute scores of the participants are calculated as the differences of the two dimension scores, by subtracting labourer orientation score from profit orientation score. Higher homo economicus attribute score indicates being closer to the rational man of the classical economic theory. Therefore, the relation of the homo economicus attribute score with group favouritism question is an important topic for our purpose.

The table below (Table 2.185) gives the homo economicus average scores of the participants with respect to their choice in group favouritism question. Decision 2 supporters have the highest score where Decision 1 supporters have the lowest on average. With the support of the one-way ANOVA test, we can claim that homo economicus attribute is related to the choice in group favouritism question (Table 2.186).

Table 2.185 Descriptive statistics of participants' homo economicus attribute scores with respect to their group favouritism choice.

HE	N	Mean
Decision 1	305	-0.133
Decision 2	34	0.388
Decision 3	138	0.186

Table 2.186 ANOVA test for homo economicus attribute scores of participants with respect to their group favouritism choice.

ANOVA		
	F	Sig.
Homo economicus Attribute	3.857	0.022*

By the analysis of the distributions according to age categories, the source of the relation appears to be the younger participants. The divergence of the means is much more obvious (Table 2.187) for younger participants, and the significance level becomes higher (Table 2.188)

Table 2.187 Descriptive statistics of younger participants' homo economicus attribute scores with respect to their group favouritism choice.

HE Age<=30	N	Mean
Decision 1	165	0.065
Decision 2	16	1.175
Decision 3	85	0.343

Table 2.188 ANOVA test for homo economicus attribute scores of younger participants with respect to their group favouritism choice.

ANOVA		
Age<=30	F	Sig.
Homo economicus Attr.	5.605	0.004**

On the other hand, for older participants, we observed the convergence of the means among decision choices (Table 2.189) and lost the significance (Table 2.190).

Table 2.189 Descriptive statistics of elder participants' homo economicus attribute scores with respect to their group favouritism choice.

HE Age>30	N	Mean
Decision 1	140	-0.366
Decision 2	18	-0.312
Decision 3	53	-0.066

Table 2.190 ANOVA test for homo economicus attribute scores of elder participants with respect to their group favouritism choice.

ANOVA		
Age>30	F	Sig.
Homo economicus Attr.	.833	.436

In line with the assumptions of the classical economic theory, the maximiser participants have higher homo economicus attribute scores (Table 2.191) in total and in both of the age categories (Table 2.193 and Table 2.195). Despite the strong results of overall or younger participants choice comparison (Table 2.192 and Table 2.194), the significance diminishes in older participants choices (Table 2.196).

Table 2.191 Descriptive statistics of participants' homo economicus attribute scores with respect to their "maximise or not" choice.

GF		N	Mean
HE	Decision 2 or 3	172	0.226
	Decision 1	305	-0.133

Table 2.192 Statistical test for equality of participants' homo economicus attribute scores with respect to their "maximise or not" choice.

t-test for Equality of Means			
	t	df	Sig. (2-tailed)
HE	2.676	475	0.008**

Table 2.193 Descriptive statistics of younger participants' homo economicus attribute scores with respect to their "maximise or not" choice.

GF		N	Mean
HE	Age<=30 Decision 2 or 3	101	0.475
	Decision 1	165	0.065

Table 2.194 Statistical test for equality of younger participants' homo economicus attribute scores with respect to their "maximise or not" choice.

t-test for Equality of Means			
Age<=30	t	df	Sig. (2-tailed)
HE	2.419	264	0.016*

Table 2.195 Descriptive statistics of elder participants' homo economicus attribute scores with respect to their "maximise or not" choice.

GF	Age>30	N	Mean
HE	Decision 2 or 3	71	-0.128
	Decision 1	140	-0.366

Table 2.196 Statistical test for equality of elder participants' homo economicus attribute scores with respect to their "maximise or not" choice.

	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
HE	1.131	209	0.259

Lastly, the comparison of the maximisers among themselves shows that Decision 2 supporters have slightly high homo economicus score than Decision 3 supporters (Table 2.197), but the difference is not statistically significant (Table 2.198).

Table 2.197 Descriptive statistics of maximiser participants' homo economicus attribute scores with respect to their choice between Decision 2 and Decision 3.

GF	N	Mean
HE	Decision 2	0.388
	Decision 3	0.186

Table 2.198 Statistical test for equality of maximiser participants' homo economicus attribute scores with respect to their choice between Decision 2 and Decision 3.

	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
HE	0.758	170	0.450

Although the younger participants' comparison is in line with the overall relation (Table 2.199) with significant statistical test results (Table 2.200), in older participants', we observed that Decision 3 supporters' homo economicus scores are higher than Decision 2 supporters' (Table 2.201) without statistical significance (Table 2.202).

Table 2.199 Descriptive statistics of younger maximiser participants' homo economicus attribute scores with respect to their choice between Decision 2 and Decision 3.

GF	Age<=30	N	Mean
HE	Decision 2	16	1.175
	Decision 3	85	0.343

Table 2.200 Statistical test for equality of younger maximiser participants' homo economicus attribute scores with respect to their choice between Decision 2 and Decision 3.

Age<=30	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
HE	2.407	99	0.018*

Table 2.201 Descriptive statistics of elder maximiser participants' homo economicus attribute scores with respect to their choice between Decision 2 and Decision 3.

GF	Age>30	N	Mean
HE	Decision 2	18	-0.312
	Decision 3	53	-0.066

Table 2.202 Statistical test for equality of elder maximiser participants' homo economicus attribute scores with respect to their choice between Decision 2 and Decision 3.

Age>30	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
HE	-0.623	69	0.535

2.2.4 Results Summary

Table 2.203 Probability values of test results.

	All			Decision 1 vs Decision 2 or 3			Decision 2 vs Decision 3		
	All	Age ≤ 30	Age > 30	All	Age ≤ 30	Age > 30	All	Age ≤ 30	Age > 30
Altruism	0.000***	0.013*	0.008**	0.000***	0.004**	0.002**	0.925	0.576	0.582
Trust	0.082'	0.040*	0.956	0.036*	0.014*	0.906	0.458	0.556	0.784
Positive Reciprocity	0.051'	0.385	0.375	0.038*	0.210	0.189	0.194	0.565	0.614
Negative Reciprocity	0.000***	0.051'	0.038*	0.000***	0.017*	0.020*	0.126	0.583	0.292
Inequality Aversion	0.001**	0.038*	0.020*	0.008**	0.062'	0.081'	0.022*	0.182	0.048*
Patience	0.878	0.302	0.751	0.621	0.115	0.456	0.903	0.932	0.892
Risk taking	0.948	0.447	0.777	0.763	0.207	0.695	0.895	0.879	0.535
HE-Q1	0.000***	0.000***	0.034*	0.000***	0.000***	0.111	0.014*	0.467	0.062'
HE-Q2	0.001**	0.003**	0.097'	0.004**	0.010*	0.166	0.064'	0.086'	0.203
HE-Q3	0.008**	0.006**	0.512	0.801	0.061'	0.163	0.112	0.267	0.237
HE-Q4	0.424	0.945	0.181	0.200	0.955	0.099'	0.611	0.715	0.299
HE-Q5	0.142	0.015*	0.997	0.777	0.721	1.000	0.051'	0.004**	0.944
Profit Orientation	0.000***	0.000***	0.163	0.000***	0.000***	0.207	0.433	0.266	0.183
Labour Orientation	0.142	0.052'	0.839	0.530	0.217	0.621	0.059'	0.027*	0.754
Homo Economicus	0.022*	0.004**	0.436	0.008**	0.016*	0.259	0.450	0.018*	0.535

Summary of the results' significance values are given in Table 2.203. According to the table and the previous analysis;

- Decision 1 supporters are significantly more altruistic than Decision 2 and 3 supporters, but there is no difference between Decision 2 and 3 supporters. This relation is substantial for all age categories.
- Decision 1 supporters are significantly more trustful than Decision 2 and 3 supporters. However, this relation is substantial for younger participants only. There is no statistical evidence of a difference between Decision 2 and 3 supporters.

- Decision 1 supporters are significantly more positive reciprocal than Decision 2 and 3 supporters. There is no statistical evidence of a difference between Decision 2 and 3 supporters.
- Decision 1 supporters are significantly less negative reciprocal than Decision 2 and 3 supporters, but there is no statistical evidence of a difference between Decision 2 and 3 supporters. This relation is substantial for all age categories.
- Decision 1 supporters have significantly lower inequality aversion scores than Decision 2 and 3 supporters. Moreover, among Decision 2 and 3 supporters, Decision 2 supporters significantly higher inequality aversion scores.
- There is no statistical evidence of a difference in time or risk preference scores of the participants with respect to their choices in group favouritism question neither in total nor in any of the age categories.
- Decision 1 supporters are less profit-oriented than Decision 2 and 3 supporters. However, this relation is substantial for younger participants only. There is no statistical evidence of a difference between Decision 2 and 3 supporters.
- There is no statistical evidence of a difference in labour orientation between Decision 1 supporters and Decision 2 or 3 supporters. However, especially in younger participants, Decision 2 supporters are less labour oriented than Decision 3 supporters.
- Decision 1 supporters have significantly lower homo economicus attribute scores than Decision 2 and 3 supporters. However, this relation is statistically significant for younger participants only. Also, among younger Decision 2 and 3 supporters, Decision 2 supporters have significantly higher homo economicus attribute scores.

Observing the participants' score distributions acquiring different characters with respect to their age categories, higher mean scores of prosocial behaviours and lower mean scores of antisocial behaviours with lower standard deviations in older participants' responses, lead us to three possible explanations; generation, age, or desire to be seen politically correct. First, the previous generation may be more altruistic, more trustful, more positive less negative reciprocal than current young people. Second, getting older can be stimulating prosocial attributes. Last, the older participants may have wanted to give more politically correct answers which can be expected considering their position as a parent or elder of a student in the university.

Consequently, we tried to avoid possible complications that can be occurred because of the difference in preferences with respect to the age categories by presenting analysis for age categories along with the overall analysis.

As expected, non-maximisers have higher scores in prosocial behaviours except for inequality aversion scores. Surprisingly, maximisers have significantly higher inequality aversion scores on average. Moreover, maximisers have significantly higher homo economicus attribute scores than non-maximisers, also, among maximisers, Decision 2 supporters are closer to rational man assumption of classical economic theory than Decision 3 supporters. The relations are generally more clear for younger participants.

In total, the most interesting and important result of the analysis is the direction of inequality aversion score difference between maximisers and non-maximisers and presence of a difference between Decision 2 and Decision 3 supporters. Thus, the decision in maximising is independent of avoiding inequality where the choice between Decision 2 and Decision 3 can be rooted from inequality aversion for Decision 2 supporters.

2.3 GROUP FAVOURITISM IN FAMILY

The surveys conducted with families in registration days of İstanbul Bilgi University in 2016 and 2017 provided us with an invaluable data source to analyse the group favouritism behaviour in family dynamics. More specifically, intergenerational transmission of the group favouritism behaviour or the common preference properties that observed in group favouring decision takers' family members can be examined via the analysis of the survey data sets.

In this part of the study, the relations of group favouritism behaviour within the family are tried to be explored in detail. For this analysis, participants categorised into two groups as child and parent, then the groups are divided into two by gender revealing groups of daughter, son, mother and father. Each possible intergenerational link is taken resulting in nine link categories for each preference relation analysis. The counts of observed links according to said categories are given in Table 2.204.

Table 2.204 Child-parent links

Link Category	Count
Child-Parent	676
Child - Mother	364
Child - Father	304
Daughter - Parent	396
Son - Parent	277
Daughter - Mother	230
Daughter - Father	161
Son - Mother	133
Son - Father	141

The analysis is presented in three parts; group favouritism decision of parent – group favouritism decision of child, group favouritism decision of parent – other social and economic preferences of child and other social and economic preferences of parent – group favouritism decision of child. Moreover, employing the two-stage

decision outcome of the previous analysis, the decision distributions of each stage is also analysed in the same context.

2.3.1 Group Favouritism Data

Group favouritism behaviour of the participants is tried to be captured via their decision in the group favouritism question which is an illustration of the parametric experiment design's baseline treatment as explained in detail in the previous chapter.

The differences in contents of the surveys required us to present decision distributions of group favouritism question in categories for both years individually and in merged forms. Also, because of the different presentations of the decision options in surveys, the statistical test results for merging are given with the distribution tables.

There are 637 young participants (children of families) in total revealing 337 valid answers to group favouritism question in 2016 and 293 in 2017. The distributions of the decisions with respect to the years can be seen in Figure 2.55.

Figure 2.55 Children's decision distributions in 2016 and 2017.

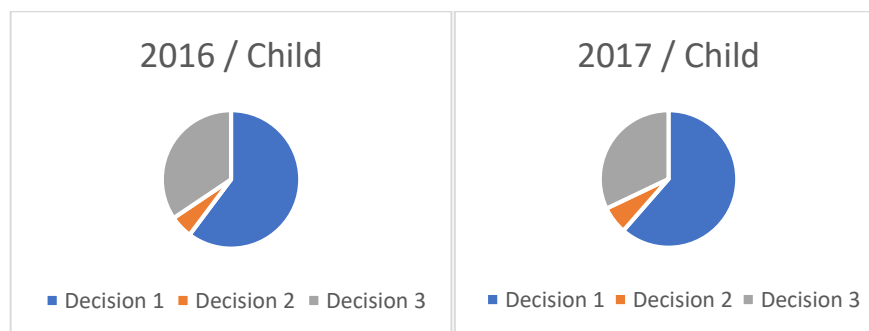
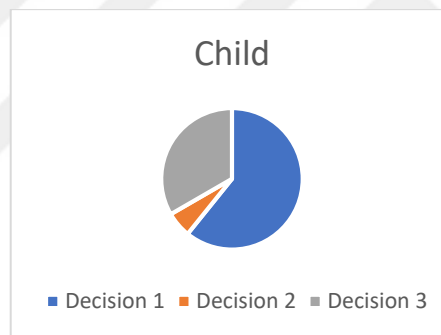


Table 2.205 Children's decision distributions with respect to years.

Child	2016	2017	Total
Decision 1	203 (60%)	180 (61%)	383 (61%)
Decision 2	18 (5%)	19 (6%)	37 (6%)
Decision 3	116 (34%)	94 (32%)	210 (33%)
Total	337	293	630
p-value	0.72506063		

Approximately 60 per cent of young participants decided to take the non-maximising decision, and one third chose Decision 3 in both of the years (Table 2.205). The merged distribution is given below in Figure 2.56.

Figure 2.56 Children's decision distribution in total.



In the female subset of children, a slight difference in decision distributions can be observed (Figure 2.57), but, the difference is not statistically significant (Table 2.206).

Figure 2.57 Female children's decision distributions in 2016 and 2017.

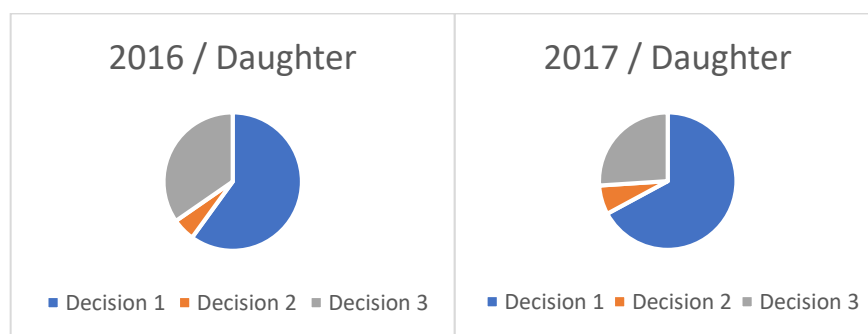
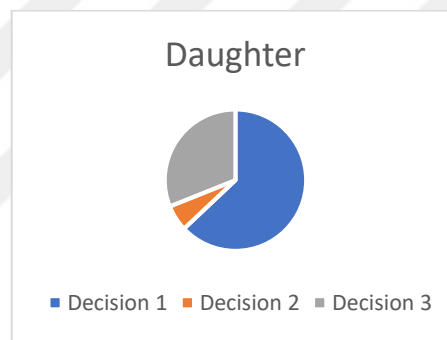


Table 2.206 Female children's decision distributions with respect to years.

Daughter	2016	2017	Total
Decision 1	123 (60%)	98 (67%)	221 (63%)
Decision 2	11 (5%)	10 (7%)	21 (6%)
Decision 3	71 (35%)	38 (26%)	109 (31%)
Total	205	146	351
p-value	0.21925935		

In total, 63 per cent of young female participants chose Decision 1, 6 per cent chose Decision 2 and the rest, 31 per cent, chose Decision 3 (Figure 2.58).

Figure 2.58 Female children's decision distribution in total.



Similarly, in the male subset of children, we can observe a slight difference in decision distributions according to the years (Figure 2.59), and again the difference is statistically insignificant (Table 2.207).

Figure 2.59 Male children's decision distributions in 2016 and 2017.

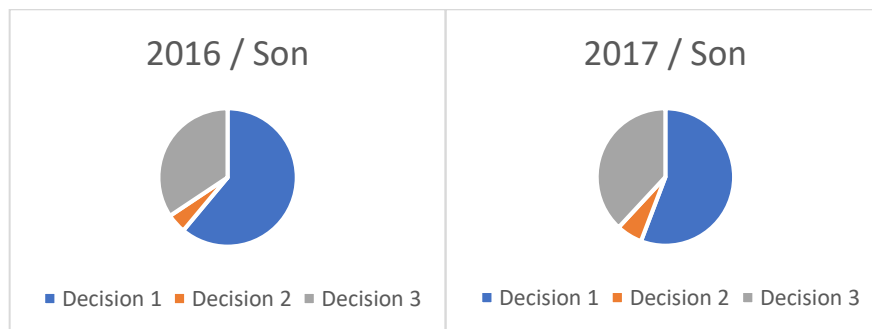
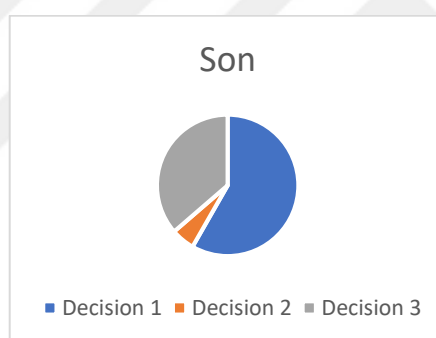


Table 2.207 Male children's decision distributions with respect to years.

Son	2016	2017	Total
Decision 1	80 (61%)	82 (56%)	162 (58%)
Decision 2	6 (5%)	9 (6%)	15 (5%)
Decision 3	45 (34%)	56 (38%)	101 (36%)
Total	131	147	278
p-value	0.63603607		

In merged form, Decision 1's proportion is 58 per cent, Decision 2's 15 per cent and Decision 3's proportion is 36 per cent for younger male members of families (Figure 2.60).

Figure 2.60 Male children's decision distribution in total.



Comparison of decision distributions of younger family members according to their gender shows that the difference is statistically insignificant (Table 2.208).

Table 2.208 Children's decision distributions with respect to gender.

	Daughter	Son
Decision 1	221	162
Decision 2	21	15
Decision 3	109	101
Total	351	278
p-value	0.378	

The decision distributions of parents are nearly identical among years (Figure 2.61 and Table 2.209).

Figure 2.61 Parents' decision distributions in 2016 and in 2017.

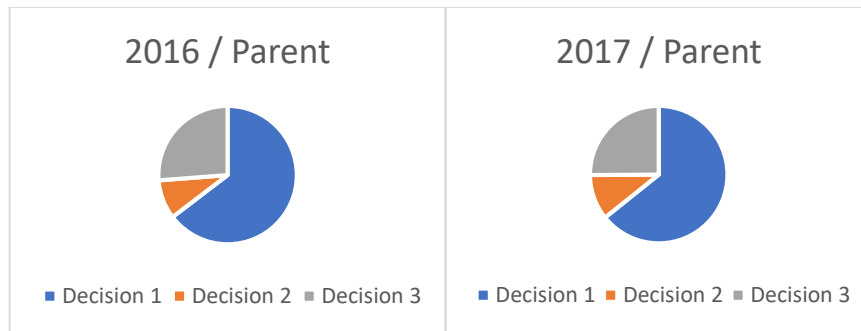
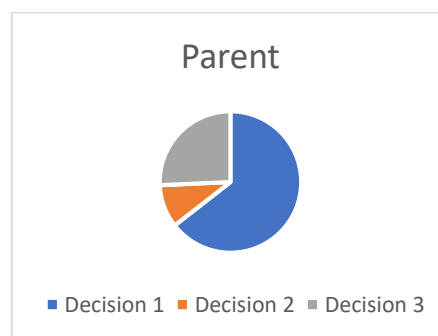


Table 2.209 Parents' decision distributions with respect to years.

Parent	2016	2017	Total
Decision 1	212 (65%)	169 (64%)	381 (64%)
Decision 2	30 (9%)	28 (11%)	58 (10%)
Decision 3	86 (26%)	66 (25%)	152 (26%)
Total	328	263	591
p-value	0.815		

Merged data yields 64 percent Decision 1, 10 percent Decision 2 and 26 percent Decision 3 for parents in total (Figure 2.62).

Figure 2.62 Parents' decision distribution in total.



Mothers' decision distributions in two years, also, perform small difference (Figure 2.63) which is statistically insignificant (Table 2.210).

Figure 2.63 Mothers' decision distributions in 2016 and 2017.

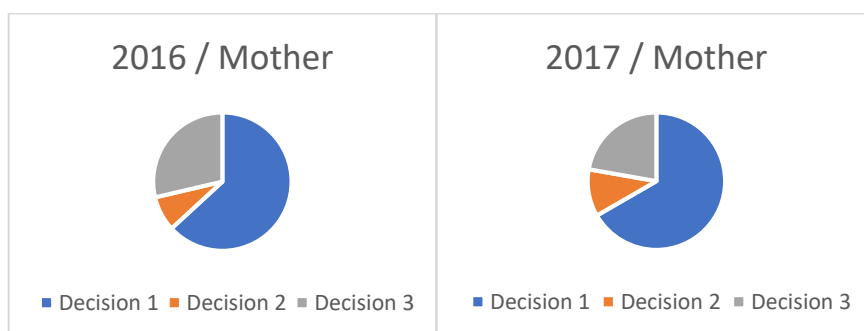
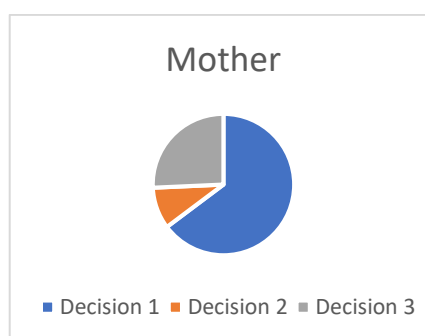


Table 2.210 Mothers' decision distributions with respect to years.

Mother	2016	2017	Total
Decision 1	108 (63%)	96 (67%)	204 (65%)
Decision 2	14 (8%)	16 (11%)	30 (10%)
Decision 3	49 (29%)	32 (22%)	81 (26%)
Total	171	144	315
p-value	0.349		

The decision distribution of mothers become 65 per cent Decision 1, 10 per cent Decision 2 and 26 per cent Decision after merging (Figure 2.64).

Figure 2.64 Mothers' decision distribution in total.



Fathers' decision distributions in two years (Figure 2.65) have statistically insignificant difference (Table 2.211) as well.

Figure 2.65 Fathers' decision distributions in 2016 and 2017.

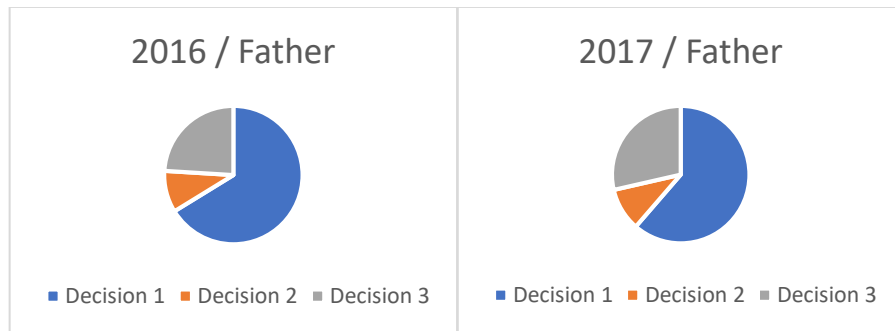
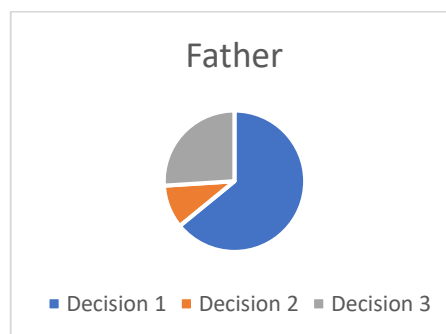


Table 2.211 Fathers' decision distributions with respect to years.

Father	2016	2017	Total
Decision 1	102 (66%)	73 (61%)	175 (64%)
Decision 2	15 (10%)	12 (10%)	27 (10%)
Decision 3	37 (24%)	34 (29%)	71 (26%)
Total	154	119	273
p-value	0.673		

Fathers decided not to maximise with the proportion of 64 per cent in total, choose Decision 2 with a proportion of 10 per cent and Decision 3 with the proportion of 26 per cent (Figure 2.66).

Figure 2.66 Fathers' decision distribution in total.



Total decision distributions of mothers and fathers are approximately the same (Table 2.212).

Table 2.212 Parents' decision distributions with respect to gender.

	Mother	Father
Decision 1	204	175
Decision 2	30	27
Decision 3	81	71
Total	315	273
p-value	0.983	

However, in line with the previous result of generation difference, children and parents behave differently (Table 2.213).

Table 2.213 Decision distributions of participants with respect to their role in the family.

	Child	Parent
Decision 1	383	381
Decision 2	37	58
Decision 3	210	152
Total	630	591
p-value	0.002**	

2.3.1.1 Group Favouritism of Parents vs Group Favouritism of Children

Two years' survey data yield 616 child-parent couples in total without missing value in group favouritism question. The decision distributions of parents with respect to the decisions of their children are given in Table 2.214. There is no statistical evidence of dependence (chi-square goodness of fit test, $p = 0.50624$) between the distributions.

Table 2.214 Parents' decision distributions with respect to their children's decision.

Parent\Child	Decision 1	Decision 2	Decision 3	Total
Decision 1	240	20	138	398
Decision 2	29	4	26	59
Decision 3	97	10	52	159
Total	366	34	216	616

Categorising decisions according to maximising behaviour (Table 2.215) let us observe that the association of children's maximisation decisions with their parents' is also statistically insignificant (chi-square goodness of fit test, $p = 0.54519$).

Table 2.215 Parents' "maximising or not" decision distributions with respect to their children's "maximising or not" decision.

Parent\Child	Decision 2 or 3	Decision 1
Decision 2 or 3	92	126
Decision 1	158	240

Moreover, the decision distribution of maximiser children are independent of their parents' (chi-square goodness of fit test, $p = 0.79493097$) and vice versa (chi-square goodness of fit test, $p = 0.27049545$).

2.3.1.2 Group Favouritism of Mothers vs Group Favouritism of Children

In order to get a complete analysis of possible relations, all link categories are tested individually. There are 331 mother-child couples that have the decision matching distribution given in Table 2.216. The distribution is statistically insignificant (chi-square goodness of fit test with Yate's correction, $p = 0.86896285$) as well.

Table 2.216 Mothers' decision distributions with respect to their children's decision.

Mother\Child	Decision 1	Decision 2	Decision 3	Total
Decision 1	130	9	75	214
Decision 2	18	3	11	32
Decision 3	55	5	25	85
Total	203	17	111	331

The maximising decision distribution of mother-child couples (Table 2.217) is also insignificant (chi-square goodness of fit test, $p = 0.76932529$).

Table 2.217 Mothers’ “maximising or not” decision distributions with respect to their children’s “maximising or not” decision.

Mother\Child	Decision 2 or 3	Decision 1
Decision 2 or 3	44	73
Decision 1	84	130

Additionally, the decision distribution of maximiser children are independent of their mothers’ (Fisher exact test, $p = 0.379$) and vice versa (chi-square goodness of fit test, $p = 0.64823629$).

2.3.1.3 Group Favouritism of Fathers vs Group Favouritism of Children

Father-child links also reveal statistically insignificant (chi-square goodness of fit test with Yate’s correction, $p = 0.57520751$) decision distributions in group favouritism question (Table 2.218).

Table 2.218 Fathers’ decision distributions with respect to their children’s decision.

Father\Child	Decision 1	Decision 2	Decision 3	Total
Decision 1	109	11	62	182
Decision 2	11	1	14	26
Decision 3	42	5	27	74
Total	162	17	103	282

According to the test result (chi-square goodness of fit test, $p = 0.26298027$), there is no statistically significant evidence of a relation in “maximise or not decisions” of fathers and their children (Table 2.219). Furthermore, the decision distribution of maximising children is independent of their fathers’ (Fisher exact test, $p = 0.860$) and vice versa (Fisher exact test, $p = 0.286$).

Table 2.219 Fathers’ “maximising or not” decision distributions with respect to their children’s “maximising or not” decision.

Father\Child	Decision 2 or 3	Decision 1
Decision 2 or 3	47	53
Decision 1	73	109

2.3.1.4 Group Favouritism of Parents vs Group Favouritism of Daughters

In the other way around, parent-daughter and parent-son links are examined. There are 360 parent-daughter links with non-missing group favouritism decision as shown in Table 2.220, and the distribution does not provide any evidence of relation (Fisher exact test, p-value = 0.852).

Table 2.220 Parents’ decision distributions with respect to their daughters’ decision.

Parent\Daughter	Decision 1	Decision 2	Decision 3	Total
Decision 1	147	11	76	234
Decision 2	19	4	13	36
Decision 3	60	6	24	90
Total	226	21	113	360

Also, the maximising decision of daughters is not related to their parents’ maximising decision (chi-square goodness of fit test, $p = 0.97477288$) as seen in Table 2.221. For the last analysis of parent-daughter links, the lack of statistical evidence of relation between Decision 2 or 3 decision of daughters and parents’ choice on group favouritism question (Fisher exact test, $p = 0.373$), or conversely, Decision 2 or 3 decision of parents and daughters’ choice on group favouritism question (chi-square goodness of fit test, $p = 0.33087984$).

Table 2.221 Parents’ “maximising or not” decision distributions with respect to their daughters’ “maximising or not” decision.

Parent\Daughter	Decision 2 or 3	Decision 1
Decision 2 or 3	47	79
Decision 1	87	147

2.3.1.5 Group Favouritism of Parents vs Group Favouritism of Sons

The decision matching distribution of 254 parent-son links is presented in Table 2.222, and this distribution is statistically insignificant (Fisher exact test, $p = 0.499$), too.

Table 2.222 Parents' decision distributions with respect to their sons' decision.

Parent\Son	Decision 1	Decision 2	Decision 3	Total
Decision 1	93	7	62	162
Decision 2	10	0	13	23
Decision 3	37	4	28	69
Total	140	11	103	254

In the choice between maximising or not (Table 2.223), sons' and parents' decisions cannot be associated statistically (chi-square goodness of fit test, $p = 0.3302289$).

Table 2.223 Parents' "maximising or not" decision distributions with respect to their sons' "maximising or not" decision.

Parent\Son	Decision 2 or 3	Decision 1
Decision 2 or 3	45	47
Decision 1	69	93

Moreover, the decision distribution of maximiser sons are independent of their parents' decisions (Fisher exact test, $p = 0.520$) and vice versa (Fisher exact test, $p = 0.308$).

2.3.1.6 Group Favouritism of Mothers vs Group Favouritism of Daughters

In the last part of the analysis, individual links of the categories are examined. Namely, mother-daughter, father-daughter, mother-son and father-son links are presented respectively.

Although the most crowded link is mother-daughter with 207 observations, no significant relation is observed (Fisher exact test, $p = 0.341$) in decision matching distribution (Table 2.224).

Table 2.224 Mothers' decision distributions with respect to their daughters' decision.

Mother\Daughter	Decision 1	Decision 2	Decision 3	Total
Decision 1	87	6	44	137
Decision 2	13	3	6	22
Decision 3	34	3	11	48
Total	134	12	61	207

Maximising decision distribution (Table 2.225) also yields the same result, insignificant relation between mothers and their daughters (chi-square goodness of fit test, $p = 0.60400337$).

Table 2.225 Mothers' "maximising or not" decision distributions with respect to their daughters' "maximising or not" decision.

Mother\Daughter	Decision 2 or 3	Decision 1
Decision 2 or 3	23	47
Decision 1	50	87

Maximiser daughters' decisions among Decision 2 and Decision 3 and their mothers' choice in group favouritism question could not be related (Fisher exact test, $p = 0.173$), too, as well as the opposite (Fisher exact test, $p = 0.422$).

2.3.1.7 Group Favouritism of Fathers vs Group Favouritism of Daughters

In father-daughter links' decision distribution (Table 2.226), the similar results came out. Neither for general distribution, nor in first (Table 2.227) or second (in both direction) decision stages we can claim any relation supported by data (Fisher exact test, $p = 0.719$, chi-square goodness of fit test, $p = 0.60066107$, Fisher exact test, $p = 0.870$ and Fisher exact test, $p = 0.546$, respectively).

Table 2.226 Fathers' decision distributions with respect to their daughters' decision.

Father\Daughter	Decision 1	Decision 2	Decision 3	Total
Decision 1	60	5	31	96
Decision 2	6	1	6	13
Decision 3	26	3	13	42
Total	92	9	50	151

Table 2.227 Fathers' "maximising or not" decision distributions with respect to their daughters' "maximising or not" decision.

Father\Daughter	Decision 2 or 3	Decision 1
Decision 2 or 3	23	32
Decision 1	36	60

2.3.1.8 Group Favouritism of Mothers vs Group Favouritism of Sons

The link with least observation count is mother-son couples which have statistically insignificant (Fisher exact test, $p = 0.852$) decision matching distribution given in Table 2.228.

Table 2.228 Mothers' decision distributions with respect to their sons' decision.

Mother\Son	Decision 1	Decision 2	Decision 3	Total
Decision 1	43	2	31	76
Decision 2	5	0	5	10
Decision 3	21	2	14	37
Total	69	4	50	123

In addition, there is no statistical proof of any relation in the decision stages. The maximisation decision distribution (Table 2.229) seems independent (chi-square goodness of fit test, $p = 0.89036649$) along with the choices among Decision 2 and Decision 3 in sons (Fisher exact test, $p = 0.724$) and mothers (Fisher exact test, $p = 0.828$).

Table 2.229 Mothers’ “maximising or not” decision distributions with respect to their sons’ “maximising or not” decision.

Mother\Son	Decision 2 or 3	Decision 1
Decision 2 or 3	21	26
Decision 1	33	43

2.3.1.9 Group Favouritism of Fathers vs Group Favouritism of Sons

Lastly, the link between male members of the families, father-son link, is analysed. No significant relation can be observed (Fisher exact test, $p = 0.545$) between their decisions of group favouritism question (Table 2.230).

Table 2.230 Fathers’ decision distributions with respect to their sons’ decision.

Father\Son	Decision 1	Decision 2	Decision 3	Total
Decision 1	49	5	31	85
Decision 2	5	0	8	13
Decision 3	16	2	14	32
Total	70	7	53	130

According to the test result (chi-square goodness of fit test, $p = 0.23225466$), there is no statistically significant evidence of a relation in “maximise or not” decisions of fathers and their sons (Table 2.231).

Table 2.231 Fathers’ “maximising or not” decision distributions with respect to their sons’ “maximising or not” decision.

Father\Son	Decision 2 or 3	Decision 1
Decision 2 or 3	24	21
Decision 1	36	49

Moreover, the decision distribution of maximiser sons is independent of their fathers’ (Fisher exact test, $p = 0.729$) and vice versa (Fisher exact test, $p = 0.548$).

2.3.1.10 Results Summary

In order to summarise, we can state that there is no sign of direct group favouritism transmission in our data. All possible in-family links are tested for the independence of decision distributions, and no sign of dependence is detected. Furthermore, statistical tests of decision steps, which are defined as “maximise or not” and “if maximise, Decision 2 or Decision3”, also, failed to establish a relation. The probability values of the tests with respect to links are given as a summary of the analysis in Table 2.232.

Table 2.232 Probability values of statistical tests.

Link Category	GF - GF	Maximise or not	Decision 2 or 3 (Child) GF (Parent)	Decision 2 or 3 (Parent) GF (Child)
Child - Parent	0.506	0.545	0.795	0.270
Child - Mother	0.869	0.769	0.379	0.648
Child - Father	0.575	0.263	0.860	0.286
Daughter - Parent	0.391	0.975	0.373	0.331
Son - Parent	0.499	0.330	0.520	0.308
Daughter - Mother	0.341	0.604	0.173	0.422
Daughter - Father	0.719	0.601	0.870	0.546
Son - Mother	0.852	0.890	0.724	0.828
Son - Father	0.545	0.232	0.729	0.548

2.3.2 Sources of Group Favouritism Behaviour

This part of the analysis focuses on group favouritism decision’s relation with other social and economic preferences within the family bonds. More specifically, the common preferences of parents with respect to their child’s decision in the group favouritism question of the survey are tried to be captured. For this purpose, parents are categorized by their children’s group favouritism question choices, and the mean preference scores of the categories are compared for each of possible link categories.

Because of the different content of the surveys, the analysis is organised in three parts; common preferences, 2017 specific preferences and 2016 specific

preferences. In each part, parent-child couples and all relative subsets are tested for decisions and decision stages.

2.3.2.1 Common Preferences

In this part, the association of parents' altruism, trust, positive, negative reciprocity, inequality aversion and time preferences with their children's choice on group favouritism question is tried to be explored.

2.3.2.1.1 Child-Parent

In Table 2.233, parents' score means are given with respect to their children's decision. Interestingly, parents of Decision 1 supporter children have the lowest positive reciprocity and altruism scores with the highest negative reciprocity score on average. Decision 2 supporter children's parents have the highest trust and inequality aversion, lowest time preference score, as the reverse of parents of Decision 3 supporter children. However, they have very close positive reciprocity scores on average.

Table 2.233 Descriptive statistics of parents' preference scores with respect to their children's decision.

Descriptives			
Child		N	Mean
P-Altruism	Decision 1	398	0.037
	Decision 2	35	0.13
	Decision 3	230	0.079
P-Trust	Decision 1	397	0.163
	Decision 2	35	0.36
	Decision 3	228	0.116
P-PReciprocity	Decision 1	399	0.136
	Decision 2	36	0.204
	Decision 3	230	0.203
P-NReciprocity	Decision 1	398	-0.13
	Decision 2	35	-0.302
	Decision 3	230	-0.17
P-Inequality	Decision 1	390	1.146
	Decision 2	35	1.379
	Decision 3	226	1.14
P-Time	Decision 1	400	-0.012
	Decision 2	36	-0.044
	Decision 3	231	0.023

Nonetheless, none of the differences is statistically significant (Table 2.234).

Table 2.234 ANOVA test of parents' preference scores with respect to their children's decision.

ANOVA		
	F	Sig.
P-Altruism	0.370	0.691
P-Trust	0.960	0.384
P-PReciprocity	0.699	0.497
P-NReciprocity	1.075	0.342
P-Inequality	0.745	0.475
Time	0.180	0.836

Preference score average values of maximiser and non-maximiser children's parents are given in Table 2.235.

Table 2.235 Descriptive statistics of parents' preference scores with respect to their children's maximising or not decision.

Child's GF		N	Mean
P-Altruism	Decision 2 or 3	265	0.086
	Decision 1	398	0.037
P-Trust	Decision 2 or 3	263	0.148
	Decision 1	397	0.163
P-PReciprocity	Decision 2 or 3	266	0.203
	Decision 1	399	0.136
P-NReciprocity	Decision 2 or 3	265	-0.187
	Decision 1	398	-0.13
P-Inequality	Decision 2 or 3	261	1.172
	Decision 1	390	1.146
P-Time	Decision 2 or 3	267	0.014
	Decision 1	400	-0.012

Parents of maximiser children have higher altruism, positive reciprocity, inequality aversion and time preference in average, but the differences are not statistically significant (Table 2.236).

Table 2.236 t-test of parents' preference scores with respect to their children's maximising or not decision.

	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
P-Altruism	0.784	661	0.433
P-Trust	-0.185	658	0.853
P-PReciprocity	1.183	663	0.237
P-NReciprocity	-1.037	661	0.3
P-Inequality	0.296	649	0.767
P-Time	0.398	665	0.691

Table 2.237 Descriptive statistics of parents' preference scores with respect to their children's choice between Decision 2 and Decision 3.

Child's GF		N	Mean
P-Altruism	Decision 2	35	0.13
	Decision 3	230	0.079
P-Trust	Decision 2	35	0.36
	Decision 3	228	0.116
P-PReciprocity	Decision 2	36	0.204
	Decision 3	230	0.203
P-NReciprocity	Decision 2	35	-0.302
	Decision 3	230	-0.17
P-Inequality	Decision 2	35	1.379
	Decision 3	226	1.14
P-Time	Decision 2	36	-0.044
	Decision 3	231	0.023

In the last part of the parent-child analysis, the preference scores of maximising children's parents (Table 2.237) are compared with each other. No significant difference is detected in the preferences (Table 2.238) as well.

Table 2.238 t-test of parents' preference scores with respect to their children's choice between Decision 2 and Decision 3.

	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
P-Altruism	0.353	263	0.725
P-Trust	1.403	261	0.162
P-PReciprocity	0.005	264	0.996
P-NReciprocity	-1.038	263	0.3
P-Inequality	1.169	259	0.243
P-Time	-0.45	265	0.653

Although no significant relation is detected in parents' preferences and children's group favouritism choices, there can be gender-specific effects that we missed in general comparison. Hence, analysis for all possible subsets of child-parent couples is conducted and given starting from the larger subsets, namely child-mother, child-

father, daughter-parent, son-parent, to the smallest ones; daughter-mother, daughter-father, son-mother, son-father.

2.3.2.1.2 Child-Mother

In the child-mother subset, we have 364 links with around 360 valid observations. Mothers' mean preference values according to their children's group favouritism decision are given in Table 2.239. The mothers whose children chose Decision 2 have the highest trust and inequality aversion values with the lowest altruism and time preference.

Table 2.239 Descriptive statistics of mothers' preference scores with respect to their children's decision.

Descriptives			
		N	Mean
M-Altruism	Decision 1	221	0.083
	Decision 2	18	-0.012
	Decision 3	121	0.206
M-Trust	Decision 1	220	0.159
	Decision 2	18	0.449
	Decision 3	119	0.13
M-PReciprocity	Decision 1	220	0.095
	Decision 2	19	0.108
	Decision 3	120	0.203
M-NReciprocity	Decision 1	221	-0.161
	Decision 2	18	-0.499
	Decision 3	121	-0.195
M-Inequality	Decision 1	216	1.296
	Decision 2	18	2
	Decision 3	119	1.212
M-Time	Decision 1	221	-0.039
	Decision 2	19	-0.092
	Decision 3	121	-0.041

Among the preference differences, only inequality aversion of mothers seems to be related to their children's group favouritism choice (Table 2.240).

Table 2.240 ANOVA test of mothers' preference scores with respect to their children's decision.

ANOVA		
	F	Sig.
M-Altruism	1.422	0.243
M-Trust	0.823	0.44
M-PReciprocity	0.907	0.405
M-NReciprocity	2.01	0.135
M-Inequality	3.903	0.021*
M-Time	0.04	0.961

Categorising mothers with their children's maximising decision results very close mean preference values for the categories (Table 2.241).

Table 2.241 Descriptive statistics of mothers' preference scores with respect to their children's maximising or not decision.

Group Statistics			
Child's GF		N	Mean
M-Altruism	Decision 2 or 3	139	0.178
	Decision 1	221	0.083
M-Trust	Decision 2 or 3	137	0.172
	Decision 1	220	0.159
M-PReciprocity	Decision 2 or 3	139	0.19
	Decision 1	220	0.095
M-NReciprocity	Decision 2 or 3	139	-0.235
	Decision 1	221	-0.161
M-Inequality	Decision 2 or 3	137	1.316
	Decision 1	216	1.296
M-Time	Decision 2 or 3	140	-0.048
	Decision 1	221	-0.039

Table 2.242 t-test of mothers' preference scores with respect to their children's maximising or not decision.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
M-Altruism	1.202	358	0.23
M-Trust	0.122	355	0.903
M-PReciprocity	1.235	357	0.218
M-NReciprocity	-0.991	358	0.323
M-Inequality	0.158	351	0.875
M-Time	-0.104	359	0.917

As a result of the closeness of mean values, there is not any statistical significance in equality of means test (Table 2.242).

However, mothers' mean preference values differ more among maximiser children (Table 2.243).

Table 2.243 Descriptive statistics of mothers' preference scores with respect to their children's choice between Decision 2 and Decision 3.

Group Statistics			
Child's GF		N	Mean
M-Altruism	Decision 2	18	-0.012
	Decision 3	121	0.206
M-Trust	Decision 2	18	0.449
	Decision 3	119	0.13
M-PReciprocity	Decision 2	19	0.108
	Decision 3	120	0.203
M-NReciprocity	Decision 2	18	-0.499
	Decision 3	121	-0.195
M-Inequality	Decision 2	18	2
	Decision 3	119	1.212
M-Time	Decision 2	19	-0.092
	Decision 3	121	-0.041

Even the sample size is decreased, mothers of Decision 2 supporters are significantly more inequality averse than mothers of Decision 3 supporter children (Table 2.244). Additionally, with lower significance, we can claim that they are less negative reciprocal.

Table 2.244 t-test of mothers' preference scores with respect to their children's choice between Decision 2 and Decision 3.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
M-Altruism	-0.865	19.571	0.397
M-Trust	1.355	135	0.178
M-Preciprocity	-0.57	137	0.569
M-NReciprocity	-1.674	137	0.096'
M-Inequality	2.433	20.597	0.024*
M-Time	-0.265	138	0.791

2.3.2.1.3 Child-Father

Table 2.245 Descriptive statistics of fathers' preference scores with respect to their children's decision.

Descriptives			
		N	Mean
F-Altruism	Decision 1	172	-0.005
	Decision 2	17	0.28
	Decision 3	107	-0.045
F-Trust	Decision 1	172	0.184
	Decision 2	17	0.265
	Decision 3	107	0.125
F-PReciprocity	Decision 1	174	0.205
	Decision 2	17	0.311
	Decision 3	108	0.211
F-NReciprocity	Decision 1	172	-0.084
	Decision 2	17	-0.093
	Decision 3	107	-0.147
F-Inequality	Decision 1	170	0.944
	Decision 2	17	0.721
	Decision 3	105	1.024
F-Time	Decision 1	174	0.028
	Decision 2	17	0.01
	Decision 3	107	0.08

In fathers' classification according to their children's group favouritism choice (Table 2.245), we observe no significance in preference score mean distributions by one-way ANOVA (Table 2.246).

Table 2.246 ANOVA test of fathers' preference scores with respect to their children's decision.

ANOVA		
	F	Sig.
F-Altruism	1.131	0.324
F-Trust	0.214	0.807
F-PReciprocity	0.166	0.847
F-NReciprocity	0.253	0.777
F-Inequality	0.666	0.514
F-Time	0.128	0.88

Moreover, categorising fathers by their children's maximising decision results in much the same preference means (Table 2.247). Therefore test for equality of means indicates an insignificant difference between father categories (Table 2.248).

Table 2.247 Descriptive statistics of fathers' preference scores with respect to their children's maximising or not decision.

Group Statistics			
Child's GF		N	Mean
F-Altruism	Decision 2 or 3	124	0
	Decision 1	172	-0.005
F-Trust	Decision 2 or 3	124	0.144
	Decision 1	172	0.184
F-PReciprocity	Decision 2 or 3	125	0.224
	Decision 1	174	0.205
F-NReciprocity	Decision 2 or 3	124	-0.14
	Decision 1	172	-0.084
F-Inequality	Decision 2 or 3	122	0.982
	Decision 1	170	0.944
F-Time	Decision 2 or 3	124	0.07
	Decision 1	174	0.028

Table 2.248 t-test of fathers' preference scores with respect to their children's maximising or not decision.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
F-Altruism	0.044	294	0.965
F-Trust	-0.348	294	0.728
F-PReciprocity	0.228	297	0.82
F-NReciprocity	-0.653	294	0.515
F-Inequality	0.303	290	0.762
F-Time	0.406	296	0.685

Focusing on only maximiser children's fathers reduces sample size to 125, hence although the preference mean values disperse more (Table 2.249), the differences are not significant (Table 2.250).

Table 2.249 Descriptive statistics of fathers' preference scores with respect to their children's choice between Decision 2 and Decision 3.

Group Statistics			
Child's GF		N	Mean
F-Altruism	Decision 2	17	0.28
	Decision 3	107	-0.045
F-Trust	Decision 2	17	0.265
	Decision 3	107	0.125
F-PReciprocity	Decision 2	17	0.311
	Decision 3	108	0.211
F-NReciprocity	Decision 2	17	-0.093
	Decision 3	107	-0.147
F-Inequality	Decision 2	17	0.721
	Decision 3	105	1.024
F-Time	Decision 2	17	0.01
	Decision 3	107	0.08

Table 2.250 t-test of fathers' preference scores with respect to their children's choice between Decision 2 and Decision 3.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
F-Altruism	1.57	122	0.119
F-Trust	0.549	122	0.584
F-PReciprocity	0.524	123	0.601
F-NReciprocity	0.301	122	0.764
F-Inequality	-1.086	120	0.28
F-Time	-0.368	25.548	0.716

2.3.2.1.4 Daughter-Parent

Parents' preference values statistics according to their daughter's group favouritism choice are given in Table 2.251. Interestingly, Decision 2 supporter daughters' parents have the highest scores in prosocial behaviours.

Table 2.251 Descriptive statistics of parents' preference scores with respect to their daughters' decision.

Descriptives			
	N	Mean	
P-Altruism	Decision 1	248	0.019
	Decision 2	22	0.167
	Decision 3	120	0.084
P-Trust	Decision 1	248	0.2
	Decision 2	22	0.536
	Decision 3	118	0.052
P-PReciprocity	Decision 1	248	0.17
	Decision 2	23	0.199
	Decision 3	119	0.187
P-NReciprocity	Decision 1	247	-0.197
	Decision 2	22	-0.326
	Decision 3	120	-0.217
P-Inequality	Decision 1	245	1.204
	Decision 2	22	1.636
	Decision 3	117	1.068
P-Time	Decision 1	249	-0.013
	Decision 2	23	-0.067
	Decision 3	121	0.044

However, the distributions can be interpreted as significant for only trust and inequality aversion with low significance (Table 2.252).

Table 2.252 ANOVA test of parents' preference scores with respect to their daughters' decision.

ANOVA		
	F	Sig.
P-Altruism	0.58	0.561
P-Trust	2.644	0.072'
P-PReciprocity	0.031	0.969
P-NReciprocity	0.339	0.713
P-Inequality	2.508	0.083'
P-Time	0.261	0.771

Table 2.253 Descriptive statistics of parents' preference scores with respect to their daughters' maximising or not decision.

Group Statistics			
Daughter's GF		N	Mean
P-Altruism	Decision 2 or 3	142	0.097
	Decision 1	248	0.019
P-Trust	Decision 2 or 3	140	0.128
	Decision 1	248	0.2
P-PReciprocity	Decision 2 or 3	142	0.189
	Decision 1	248	0.17
P-NReciprocity	Decision 2 or 3	142	-0.234
	Decision 1	247	-0.197
P-Inequality	Decision 2 or 3	139	1.158
	Decision 1	245	1.204
P-Time	Decision 2 or 3	144	0.026
	Decision 1	249	-0.013

“Maximizing or not” decision of daughters and their parents' social and economic preferences (Table 2.253) relation seems to be insignificant for all preferences. (Table 2.254).

Table 2.254 t-test of parents' preference scores with respect to their daughters' maximising or not decision.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
P-Altruism	0.968	388	0.333
P-Trust	-0.706	386	0.48
P-PReciprocity	0.242	388	0.809
P-NReciprocity	-0.494	387	0.621
P-Inequality	-0.387	382	0.699
P-Time	0.445	391	0.657

Among maximiser daughter's parents, Decision 2 supporters' parents have higher altruism, trust, positive reciprocity and inequality aversion scores than Decision 3 supporters' (Table 2.255).

Table 2.255 Descriptive statistics of parents' preference scores with respect to their daughters' choice between Decision 2 and Decision 3.

Group Statistics			
Daughter's GF		N	Mean
P-Altruism	Decision 2	22	0.167
	Decision 3	120	0.084
P-Trust	Decision 2	22	0.536
	Decision 3	118	0.052
P-PReciprocity	Decision 2	23	0.199
	Decision 3	119	0.187
P-NReciprocity	Decision 2	22	-0.326
	Decision 3	120	-0.217
P-Inequality	Decision 2	22	1.636
	Decision 3	117	1.068
P-Time	Decision 2	23	-0.067
	Decision 3	121	0.044

However only differences in trust and inequality scores are statistically significant (Table 2.256).

Table 2.256 t-test of parents' preference scores with respect to their daughters' choice between Decision 2 and Decision 3.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
P-Altruism	0.38	25.109	0.707
P-Trust	2.191	138	0.03*
P-PReciprocity	0.067	140	0.947
P-NReciprocity	-0.635	140	0.526
P-Inequality	2.217	137	0.028*
P-Time	-0.573	142	0.568

2.3.2.1.5 Son-Parent

Parents' preferences score descriptives according to their son's group favouritism decision are given in Table 2.257.

Table 2.257 Descriptive statistics of parents' preference scores with respect to their sons' decision.

Descriptives			
		N	Mean
P-Altruism	Decision 1	150	0.068
	Decision 2	11	0.035
	Decision 3	110	0.075
P-Trust	Decision 1	149	0.101
	Decision 2	11	0.143
	Decision 3	110	0.184
P-PReciprocity	Decision 1	151	0.079
	Decision 2	11	0.154
	Decision 3	111	0.22
P-NReciprocity	Decision 1	151	-0.019
	Decision 2	11	-0.273
	Decision 3	110	-0.118
P-Inequality	Decision 1	145	1.048
	Decision 2	11	0.727
	Decision 3	109	1.218
P-Time	Decision 1	151	-0.01
	Decision 2	11	-0.029
	Decision 3	110	0

The categorisation creates no significant difference between preference mean values (Table 2.258).

Table 2.258 ANOVA test of parents' preference scores with respect to their sons' decision.

ANOVA		
	F	Sig.
P-Altruism	0.012	0.988
P-Trust	0.212	0.809
P-PReciprocity	1.339	0.264
P-NReciprocity	1.179	0.309
P-Inequality	1.438	0.239
P-Time	0.009	0.991

“Maximise or not” decision of male children splits parents as shown in Table 2.259.

Table 2.259 Descriptive statistics of parents' preference scores with respect to their sons' maximising or not decision.

Group Statistics			
Son's GF		N	Mean
P-Altruism	Decision 2 or 3	121	0.071
	Decision 1	150	0.068
P-Trust	Decision 2 or 3	121	0.181
	Decision 1	149	0.101
P-PReciprocity	Decision 2 or 3	122	0.214
	Decision 1	151	0.079
P-NReciprocity	Decision 2 or 3	121	-0.132
	Decision 1	151	-0.019
P-Inequality	Decision 2 or 3	120	1.173
	Decision 1	145	1.048
P-Time	Decision 2 or 3	121	-0.003
	Decision 1	151	-0.01

None of the preference values of parents differs significantly according to their son's maximising decision (Table 2.260).

Table 2.260 t-test of parents' preference scores with respect to their sons' maximising or not decision.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
P-Altruism	0.031	269	0.975
P-Trust	0.64	268	0.523
P-PReciprocity	1.611	271	0.108
P-NReciprocity	-1.359	270	0.175
P-Inequality	0.924	263	0.357
P-Time	0.077	270	0.939

In the comparison of parents' preference values according to their sons' choice among maximising options yields close mean values (Table 2.261), hence the differences are insignificant (Table 2.262).

Table 2.261 Descriptive statistics of parents' preference scores with respect to their sons' choice between Decision 2 and Decision 3.

Group Statistics			
Son's GF		N	Mean
P-Altruism	Decision 2	11	0.035
	Decision 3	110	0.075
P-Trust	Decision 2	11	0.143
	Decision 3	110	0.184
P-PReciprocity	Decision 2	11	0.154
	Decision 3	111	0.22
P-NReciprocity	Decision 2	11	-0.273
	Decision 3	110	-0.118
P-Inequality	Decision 2	11	0.727
	Decision 3	109	1.218
P-Time	Decision 2	11	-0.029
	Decision 3	110	0

Table 2.262 t-test of parents' preference scores with respect to their sons' choice between Decision 2 and Decision 3.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
P-Altruism	-0.148	119	0.883
P-Trust	-0.137	119	0.892
P-PReciprocity	-0.315	120	0.754
P-NReciprocity	-0.74	119	0.461
P-Inequality	-2.269	18.031	0.036
P-Time	-0.109	119	0.913

2.3.2.1.6 Daughter-Mother

In gender-specific analysis of the intergenerational effect of preferences on group favouritism decision, preferences of mothers are matched with their daughters' group favouritism choice (Table 2.263).

Table 2.263 Descriptive statistics of mothers' preference scores with respect to their daughters' decision.

Descriptives			
		N	Mean
M-Altruism	Decision 1	147	0.051
	Decision 2	13	0.091
	Decision 3	68	0.183
M-Trust	Decision 1	146	0.175
	Decision 2	13	0.635
	Decision 3	66	0.087
M-PReciprocity	Decision 1	146	0.129
	Decision 2	14	0.024
	Decision 3	67	0.28
M-NReciprocity	Decision 1	147	-0.224
	Decision 2	13	-0.455
	Decision 3	68	-0.293
M-Inequality	Decision 1	144	1.316
	Decision 2	13	2.212
	Decision 3	66	1.22
M-Time	Decision 1	147	-0.069
	Decision 2	14	-0.139
	Decision 3	68	-0.06

The distribution is statistically significant for only inequality aversion scores of mothers (Table 2.264).

Table 2.264 ANOVA test of mothers' preference scores with respect to their daughters' decision.

ANOVA		
	F	Sig.
M-Altruism	0.782	0.459
M-Trust	1.758	0.175
M-PReciprocity	1.357	0.259
M-NReciprocity	0.752	0.472
M-Inequality	4.317	0.014*
M-Time	0.058	0.944

Stepwise analysis of decision process shows that maximiser daughters' mothers have similar preference scores with non-maximiser daughters' mothers (Table 2.265).

Table 2.265 Descriptive statistics of mothers' preference scores with respect to their daughters' maximising or not decision.

Group Statistics			
Daughter's GF		N	Mean
M-Altruism	Decision 2 or 3	81	0.168
	Decision 1	147	0.051
M-Trust	Decision 2 or 3	79	0.177
	Decision 1	146	0.175
M-PReciprocity	Decision 2 or 3	81	0.236
	Decision 1	146	0.129
M-NReciprocity	Decision 2 or 3	81	-0.319
	Decision 1	147	-0.224
M-Inequality	Decision 2 or 3	79	1.383
	Decision 1	144	1.316
M-Time	Decision 2 or 3	82	-0.073
	Decision 1	147	-0.069

Therefore, the differences between average preferences scores of maximiser and non-maximiser daughters are not significant as expected (Table 2.266).

Table 2.266 t-test of mothers' preference scores with respect to their daughters' maximising or not decision.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
M-Altruism	1.179	226	0.24
M-Trust	0.012	223	0.99
M-PReciprocity	1.089	225	0.278
M-NReciprocity	-0.972	226	0.332
M-Inequality	0.418	221	0.676
M-Time	-0.039	227	0.969

On the other hand, among maximiser daughters' mothers, the average preference scores (Table 2.267) differ more.

Table 2.267 Descriptive statistics of mothers' preference scores with respect to their daughters' choice between Decision 2 and Decision 3.

Group Statistics			
Daughter's GF		N	Mean
M-Altruism	Decision 2	13	0.091
	Decision 3	68	0.183
M-Trust	Decision 2	13	0.635
	Decision 3	66	0.087
M-PReciprocity	Decision 2	14	0.024
	Decision 3	67	0.28
M-NReciprocity	Decision 2	13	-0.455
	Decision 3	68	-0.293
M-Inequality	Decision 2	13	2.212
	Decision 3	66	1.22
M-Time	Decision 2	14	-0.139
	Decision 3	68	-0.06

Decision 2 supporter daughters' mothers are more inequality averse than Decision 3 supporter daughters' mothers (Table 2.268), and with less significance, we can claim that Decision 2 supporter daughters' mothers have higher trust scores.

Table 2.268 t-test of mothers' preference scores with respect to their daughters' choice between Decision 2 and Decision 3.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
M-Altruism	-0.276	13.785	0.787
M-Trust	1.985	77	0.051'
M-PReciprocity	-1.248	79	0.216
M-NReciprocity	-0.704	79	0.484
M-Inequality	2.532	15.034	0.023*
M-Time	-0.342	80	0.733

2.3.2.1.7 Daughter-Father

In fathers' preference scores by their daughters' group favouritism choices (Table 2.269) no significant difference can be observed (Table 2.270).

Table 2.269 Descriptive statistics of fathers' preference scores with respect to their daughters' decision.

Descriptives			
		N	Mean
F-Altruism	Decision 1	98	-0.02
	Decision 2	9	0.278
	Decision 3	51	-0.039
F-Trust	Decision 1	99	0.254
	Decision 2	9	0.393
	Decision 3	51	0.049
F-PReciprocity	Decision 1	99	0.258
	Decision 2	9	0.471
	Decision 3	51	0.056
F-NReciprocity	Decision 1	97	-0.147
	Decision 2	9	-0.141
	Decision 3	51	-0.135
F-Inequality	Decision 1	99	1.025
	Decision 2	9	0.806
	Decision 3	50	0.82
F-Time	Decision 1	99	0.084
	Decision 2	9	0.046
	Decision 3	51	0.17

Table 2.270 ANOVA test of fathers' preference scores with respect to their daughters' decision.

ANOVA		
	F	Sig.
F-Altruism	0.612	0.544
F-Trust	1.034	0.358
F-PReciprocity	1.673	0.191
F-NReciprocity	0.005	0.995
F-Inequality	0.781	0.46
F-Time	0.171	0.843

In the first substage of group favouritism decision, in maximise or not decision, daughters' decisions do not seem to be affected by their fathers' preferences scores (Table 2.271 and Table 2.272).

Table 2.271 Descriptive statistics of fathers' preference scores with respect to their daughters' maximising or not decision.

Group Statistics			
Daughter's GF		N	Mean
F-Altruism	Decision 2 or 3	60	0.009
	Decision 1	98	-0.02
F-Trust	Decision 2 or 3	60	0.1
	Decision 1	99	0.254
F-PReciprocity	Decision 2 or 3	60	0.119
	Decision 1	99	0.258
F-NReciprocity	Decision 2 or 3	60	-0.135
	Decision 1	97	-0.147
F-Inequality	Decision 2 or 3	59	0.818
	Decision 1	99	1.025
F-Time	Decision 2 or 3	60	0.152
	Decision 1	99	0.084

Table 2.272 t-test of fathers' preference scores with respect to their daughters' maximising or not decision.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
F-Altruism	0.218	156	0.828
F-Trust	-1.009	157	0.315
F-PReciprocity	-1.086	157	0.279
F-NReciprocity	0.101	155	0.92
F-Inequality	-1.253	156	0.212
F-Time	0.452	157	0.652

However, the comparison of the maximiser daughters' fathers' average preference values (Table 2.273) indicates a significant difference in positive reciprocity scores of fathers (Table 2.274).

Table 2.273 Descriptive statistics of fathers' preference scores with respect to their daughters' choice between Decision 2 and Decision 3.

Group Statistics			
Daughter's GF		N	Mean
F-Altruism	Decision 2	9	0.278
	Decision 3	51	-0.039
F-Trust	Decision 2	9	0.393
	Decision 3	51	0.049
F-PReciprocity	Decision 2	9	0.471
	Decision 3	51	0.056
F-NReciprocity	Decision 2	9	-0.141
	Decision 3	51	-0.135
F-Inequality	Decision 2	9	0.806
	Decision 3	50	0.82
F-Time	Decision 2	9	0.046
	Decision 3	51	0.17

Fathers of Decision 2 supporter daughters are more positive reciprocal than fathers of Decision 3 supporter daughters.

Table 2.274 t-test of fathers' preference scores with respect to their daughters' choice between Decision 2 and Decision 3.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
F-Altruism	1.273	58	0.208
F-Trust	0.967	58	0.337
F-PReciprocity	2.646	33.267	0.012*
F-NReciprocity	-0.024	58	0.981
F-Inequality	-0.041	57	0.967
F-Time	-0.376	58	0.708

2.3.2.1.8 Son-Mother

Mothers' average preference value distributions according to their sons' group favouritism decisions are given in Table 2.275. Interestingly, Decision 2 supporter male children's mothers have the lowest altruism, trust, negative reciprocity, inequality aversion and patience scores on average with the highest positive reciprocity score.

Table 2.275 Descriptive statistics of mothers' preference scores with respect to their sons' decision.

Descriptives			
		N	Mean
M-Altruism	Decision 1	74	0.148
	Decision 2	4	-0.298
	Decision 3	53	0.236
M-Trust	Decision 1	74	0.127
	Decision 2	4	0.053
	Decision 3	53	0.185
M-PReciprocity	Decision 1	74	0.027
	Decision 2	4	0.222
	Decision 3	53	0.105
M-NReciprocity	Decision 1	74	-0.035
	Decision 2	4	-0.658
	Decision 3	53	-0.07
M-Inequality	Decision 1	72	1.257
	Decision 2	4	0.938
	Decision 3	53	1.203
M-Time	Decision 1	74	0.02
	Decision 2	4	-0.035
	Decision 3	53	-0.018

However, none of the distributions is statistically significant (Table 2.276).

Table 2.276 ANOVA test of mothers' preference scores with respect to their sons' decision.

ANOVA		
	F	Sig.
M-Altruism	1.024	0.362
M-Trust	0.066	0.936
M-PReciprocity	0.28	0.756
M-NReciprocity	1.797	0.17
M-Inequality	0.18	0.836
M-Time	0.042	0.959

Categorising mothers by their sons' maximising decision shows that mothers of maximiser male children have higher altruism, trust and positive reciprocity scores on average (Table 2.277).

Table 2.277 Descriptive statistics of mothers' preference scores with respect to their sons' maximising or not decision.

Group Statistics			
Son's GF		N	Mean
M-Altruism	Decision 2 or 3	57	0.199
	Decision 1	74	0.148
M-Trust	Decision 2 or 3	57	0.176
	Decision 1	74	0.127
M-PReciprocity	Decision 2 or 3	57	0.113
	Decision 1	74	0.027
M-NReciprocity	Decision 2 or 3	57	-0.111
	Decision 1	74	-0.035
M-Inequality	Decision 2 or 3	57	1.184
	Decision 1	72	1.257
M-Time	Decision 2 or 3	57	-0.019
	Decision 1	74	0.02

However, the differences in average preferences scores of the mothers are not significant as well (Table 2.278).

Table 2.278 t-test of mothers' preference scores with respect to their sons' maximising or not decision.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
M-Altruism	0.384	129	0.702
M-Trust	0.267	129	0.79
M-PReciprocity	0.682	129	0.496
M-NReciprocity	-0.666	129	0.507
M-Inequality	-0.376	127	0.708
M-Time	-0.287	129	0.775

Among maximiser sons' mothers, Decision 2 supporter male children's mothers have a higher score in only positive reciprocity comparing to Decision 3 supporter sons' mothers (Table 2.279).

Table 2.279 Descriptive statistics of mothers' preference scores with respect to their sons' choice between Decision 2 and Decision 3.

Group Statistics			
Son's GF		N	Mean
M-Altruism	Decision 2	4	-0.298
	Decision 3	53	0.236
M-Trust	Decision 2	4	0.053
	Decision 3	53	0.185
M-PReciprocity	Decision 2	4	0.222
	Decision 3	53	0.105
M-NReciprocity	Decision 2	4	-0.658
	Decision 3	53	-0.07
M-Inequality	Decision 2	4	0.938
	Decision 3	53	1.203
M-Time	Decision 2	4	-0.035
	Decision 3	53	-0.018

The only weakly significant difference in preferences among maximiser male children's mothers is negative reciprocity (Table 2.280). Decision 2 supporter sons' mothers are less negative reciprocal than Decision 3 supporter sons' mothers.

Table 2.280 t-test of mothers' preference scores with respect to their sons' choice between Decision 2 and Decision 3.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
M-Altruism	-1.406	55	0.165
M-Trust	-0.264	55	0.793
M-PReciprocity	0.358	55	0.722
M-NReciprocity	-1.734	55	0.089'
M-Inequality	-0.47	55	0.64
M-Time	-0.043	55	0.966

2.3.2.1.9 Son-Father

The last link in common preference analysis is the father-son link with 141 observations. Fathers' preferences value statistics classified by their sons' group favouritism choices are given in Table 2.281.

Table 2.281 Descriptive statistics of fathers' preference scores with respect to their sons' decision.

Classified Descriptives			
		N	Mean
F-Altruism	Decision 1	74	0.016
	Decision 2	7	0.226
	Decision 3	56	-0.05
F-Trust	Decision 1	73	0.088
	Decision 2	7	0.194
	Decision 3	56	0.194
F-PReciprocity	Decision 1	75	0.135
	Decision 2	7	0.116
	Decision 3	57	0.349
F-NReciprocity	Decision 1	75	-0.003
	Decision 2	7	-0.053
	Decision 3	56	-0.158
F-Inequality	Decision 1	71	0.831
	Decision 2	7	0.607
	Decision 3	55	1.209
F-Time	Decision 1	75	-0.045
	Decision 2	7	-0.025
	Decision 3	56	-0.002

One-way ANOVA reveals that only inequality aversion scores of fathers differ by their sons' decision in group favouritism question with low significance (Table 2.282).

Table 2.282 ANOVA test of fathers' preference scores with respect to their sons' decision.

ANOVA		
	F	Sig.
F-Altruism	0.352	0.704
F-Trust	0.182	0.834
F-PReciprocity	1.869	0.158
F-NReciprocity	0.728	0.485
F-Inequality	2.362	0.098
F-Time	0.041	0.96

In the comparison of fathers' preference values by their sons' maximising decision (Table 2.283), we observe with low significance that fathers of maximiser male children are more positive reciprocal and inequality averse than other male children's fathers (Table 2.284).

Table 2.283 Descriptive statistics of fathers' preference scores with respect to their sons' maximising or not decision.

Group Statistics			
Son's GF		N	Mean
F-Altruism	Decision 2 or 3	63	-0.02
	Decision 1	74	0.016
F-Trust	Decision 2 or 3	63	0.194
	Decision 1	73	0.088
F-PReciprocity	Decision 2 or 3	64	0.323
	Decision 1	75	0.135
F-NReciprocity	Decision 2 or 3	63	-0.147
	Decision 1	75	-0.003
F-Inequality	Decision 2 or 3	62	1.141
	Decision 1	71	0.831
F-Time	Decision 2 or 3	63	-0.005
	Decision 1	75	-0.045

Table 2.284 t-test of fathers' preference scores with respect to their sons' maximising or not decision.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
F-Altruism	-0.242	135	0.809
F-Trust	0.606	134	0.546
F-PReciprocity	1.713	137	0.089'
F-NReciprocity	-1.156	136	0.250
F-Inequality	1.658	131	0.100'
F-Time	0.280	136	0.780

Among maximiser male children's fathers, Decision 2 supporter sons' fathers have higher altruism and negative reciprocity scores in average (Table 2.285).

Table 2.285 Descriptive statistics of fathers' preference scores with respect to their sons' choice between Decision 2 and Decision 3.

Group Statistics			
Son's GF		N	Mean
F-Altruism	Decision 2	7	0.226
	Decision 3	56	-0.05
F-Trust	Decision 2	7	0.194
	Decision 3	56	0.194
F-PReciprocity	Decision 2	7	0.116
	Decision 3	57	0.349
F-NReciprocity	Decision 2	7	-0.053
	Decision 3	56	-0.158
F-Inequality	Decision 2	7	0.607
	Decision 3	55	1.209
F-Time	Decision 2	7	-0.025
	Decision 3	56	-0.002

However, the relations are not significant (Table 2.286).

Table 2.286 t-test of fathers' preference scores with respect to their sons' choice between Decision 2 and Decision 3.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
F-Altruism	0.771	61	0.444
F-Trust	-0.001	61	0.999
F-PReciprocity	-0.879	62	0.383
F-NReciprocity	0.391	61	0.697
F-Inequality	-1.304	60	0.197
F-Time	-0.064	61	0.949

2.3.2.2 2016 specific preferences (Risk preference)

The only 2016 specific preference is risk attitude which is measured as the weighted average of the standardised value of one self-assessment question, and a set of questions which assigns a risk value from 1 to 32 in five questions by the staircase method explained previously in details. In this part, the relation between parents' risk scores and children's group favouritism choices is tried to be explored.

2.3.2.2.1 Child-Parent

In Table 2.287, parents' average risk scores are presented according to their children's group favouritism choices in both separately and merged form.

Table 2.287 Descriptive statistics of parents' risk preference scores with respect to their children's decision.

Descriptives			
		N	Mean
P-Risk	Decision 1	236	0.085
	Decision 2	21	0.379
	Decision 3	135	0.169
M-Risk	Decision 1	126	0.189
	Decision 2	9	0.246
	Decision 3	75	0.32
F-Risk	Decision 1	105	-0.013
	Decision 2	12	0.48
	Decision 3	58	0.013

Table 2.288 ANOVA test of parents' risk preference scores with respect to their children's decision.

ANOVA		
	F	Sig.
P-Risk	0.69	0.502
M-Risk	0.178	0.837
F-Risk	2.737	0.068 ^a

One-way ANOVA test shows that there is no significant relation between parents' risk attitudes and their children's group favouritism choices except for the lower significance in fathers' risk scores by their children's group favouritism decisions (Table 2.288).

Table 2.289 Descriptive statistics of parents' risk preference scores with respect to their children's maximising or not decision.

Group Statistics			
Child's GF		N	Mean
P-Risk	Decision 2 or 3	156	0.197
	Decision 1	236	0.085
M-Risk	Decision 2 or 3	84	0.312
	Decision 1	126	0.189
F-Risk	Decision 2 or 3	70	0.093
	Decision 1	105	-0.013

Focusing on children's maximising decision reveals the risk score distributions for parents given in Table 2.289. Maximiser children's parents have higher risk scores in all merged and separated forms. However, the relations are not significant, children's maximising behaviour cannot be related to their parents' risk scores as well (Table 2.290).

Table 2.290 t-test of parents' risk preference scores with respect to their children's maximising or not decision.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
P-Risk	0.908	390	0.364
M-Risk	0.581	208	0.562
F-Risk	0.98	173	0.328

Categorising maximiser children by their decisions shows that Decision 2 supporter children's parents have higher risk scores than Decision 3 supporter children's parents in total, but separation by gender exposes that mothers of Decision 2 supporters are more risk-averse than mothers of Decision 3 supporters in average (Table 2.291).

Table 2.291 Descriptive statistics of parents' risk preference scores with respect to their children's choice between Decision 2 and Decision 3.

Group Statistics			
Child's GF		N	Mean
P-Risk	Decision 2	21	0.379
	Decision 3	135	0.169
M-Risk	Decision 2	9	0.246
	Decision 3	75	0.32
F-Risk	Decision 2	12	0.48
	Decision 3	58	0.013

However, only the fathers' difference is statistically significant (Table 2.292). Fathers of Decision 2 supporter children have significantly higher risk scores than fathers of Decision 3 supporters.

Table 2.292 t-test of parents' risk preference scores with respect to their children's choice between Decision 2 and Decision 3.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
P-Risk	0.787	154	0.433
M-Risk	-0.148	82	0.882
F-Risk	2.206	68	0.031*

2.3.2.2.2 Daughter-Parent

When female children's parents' risk scores are considered, we observe that Decision 2 supporter daughters' parents have the highest risk score where Decision 3 supporters daughters' have the lowest in all merged and separated forms (Table 2.293).

Table 2.293 Descriptive statistics of parents' risk preference scores with respect to their daughters' decision.

Descriptives			
Daughter's GF		N	Mean
P-Risk	Decision 1	149	0.095
	Decision 2	14	0.356
	Decision 3	83	0.085
M-Risk	Decision 1	88	0.15
	Decision 2	8	0.221
	Decision 3	48	0.141
F-Risk	Decision 1	58	0.025
	Decision 2	6	0.536
	Decision 3	34	0.021

Nonetheless, the distributions are not statistically significant for mothers, fathers or total parents (Table 2.294).

Table 2.294 ANOVA test of parents' risk preference scores with respect to their daughters' decision.

ANOVA		
	F	Sig.
P-Risk	0.492	0.612
M-Risk	0.017	0.983
F-Risk	1.679	0.192

In maximising decision categorisation of daughters, higher risk scores from parents of maximiser daughters are observed (Table 2.295).

Table 2.295 Descriptive statistics of parents' risk preference scores with respect to their daughters' maximising or not decision.

Group Statistics			
Daughter's GF		N	Mean
P-Risk	Decision 2 or 3	97	0.124
	Decision 1	149	0.095
M-Risk	Decision 2 or 3	56	0.153
	Decision 1	88	0.15
F-Risk	Decision 2 or 3	40	0.098
	Decision 1	58	0.025

However, the differences are not statistically significant for neither any gender of parents nor in total (Table 2.296).

Table 2.296 t-test of parents' risk preference scores with respect to their daughters' maximising or not decision.

Independent Samples Test			
t-test for Equality of Means			
	t	df	Sig. (2-tailed)
P-Risk	0.232	244	0.817
M-Risk	0.013	142	0.99
F-Risk	0.534	96	0.594

The comparison of maximiser daughters by their decisions indicates that Decision 2 supporter daughters' parents have higher average risk scores than Decision 3 supporter daughters' parents (Table 2.297).

Table 2.297 Descriptive statistics of parents' risk preference scores with respect to their daughters' choice between Decision 2 and Decision 3.

Group Statistics			
Daughter's GF		N	Mean
P-Risk	Decision 2	14	0.356
	Decision 3	83	0.085
M-Risk	Decision 2	8	0.221
	Decision 3	48	0.141
F-Risk	Decision 2	6	0.536
	Decision 3	34	0.021

Testing for the equality of means shows that only the difference between fathers of Decision 2 and Decision 3 supporter daughters is weakly significant (Table 2.298). Decision 3 supporter daughters' fathers are more risk-averse than Decision 2 supporter daughters' fathers.

Table 2.298 t-test of parents' risk preference scores with respect to their daughters' choice between Decision 2 and Decision 3.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
P-Risk	1.469	95	0.145
M-Risk	0.201	7.676	0.846
F-Risk	1.957	38	0.058'

2.3.2.2.3 Son-Parent

Risk preference score statistics of parents with regard to their sons' group favouritism choice are presented in Table 2.299.

Table 2.299 Descriptive statistics of parents' risk preference scores with respect to their sons' decision.

Descriptives			
Son's GF		N	Mean
P-Risk	Decision 1	87	0.068
	Decision 2	5	0.398
	Decision 3	52	0.303
M-Risk	Decision 1	38	0.279
	Decision 2	0	0.000
	Decision 3	27	0.636
F-Risk	Decision 1	47	-0.060
	Decision 2	5	0.398
	Decision 3	24	0.001

One-way ANOVA test cannot detect any evidence of a relation between male children's group favouritism choice and their mothers' or fathers' risk scores (Table 2.300).

Table 2.300 ANOVA test of parents' risk preference scores with respect to their sons' decision.

ANOVA		
	F	Sig.
P-Risk	0.444	0.642
M-Risk	0.459	0.501
F-Risk	0.850	0.432

Parents' average risk scores with respect to their male children's maximising decision in group favouritism question of the survey are presented in Table 2.301.

Table 2.301 Descriptive statistics of parents' risk preference scores with respect to their sons' maximising or not decision.

Group Statistics			
Son's GF		N	Mean
P-Risk	Decision 2 or 3	57	0.311
	Decision 1	87	0.068
M-Risk	Decision 2 or 3	27	0.636
	Decision 1	38	0.279
F-Risk	Decision 2 or 3	29	0.069
	Decision 1	47	-0.060

Maximiser sons' parents have higher risk preference scores than non-maximiser male children's parents. Still, the differences are not statistically significant (Table 2.302).

Table 2.302 t-test of parents' risk preference scores with respect to their sons' maximising or not decision.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
P-Risk	0.936	142	0.351
M-Risk	0.677	63	0.501
F-Risk	0.731	74	0.467

Lastly, the maximiser male children's parents are compared according to their son's decision among maximising options (Table 2.303). Since there is not any Decision 2 supporter male child with his mother who has valid risk score, only fathers are compared as sub-group of parents.

Table 2.303 Descriptive statistics of parents' risk preference scores with respect to their sons' choice between Decision 2 and Decision 3.

Group Statistics			
Son's GF		N	Mean
P-Risk	Decision 2	5	0.398
	Decision 3	52	0.303
M-Risk	Decision 2	0	0
	Decision 3	27	0.636
F-Risk	Decision 2	5	0.398
	Decision 3	24	0.001

Although Decision 2 supporter sons' parents have higher risk preference scores than Decision 3 supporter sons' parents, the differences are not statistically significant (Table 2.304).

Table 2.304 t-test of parents' risk preference scores with respect to their sons' choice between Decision 2 and Decision 3.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
P-Risk	0.118	55	0.906
F-Risk	1.023	27	0.315

2.3.2.3 2017 specific preferences (Homo economicus module)

The only included 2017 specific preference is homo economicus attribute. As explained in detail previously, the homo economicus module explores two dimensions of homo economicus attribute; profit orientation and labourer orientation. In this part, parents' homo economicus attribute scores and dimensions of the scores are matched with their children's choices in group favouritism question and checked if any significant relation can be observed. For all children, daughters and sons sets, the sets of parents, mothers and fathers matchings are examined in all decision stages, namely decision distributions, "maximise or not" decisions and choices between maximising decisions, Decision 2 and Decision 3.

2.3.2.3.1 Child-Parent

In Table 2.305, parents' homo economics attribute scores are given with respect to their children's group favouritism decision.

Table 2.305 Descriptive statistics of parents' homo economicus attribute scores with respect to their children's decision.

Descriptives			
Child's GF		N	Mean
P-ProfitOrientation	Decision 1	125	-0.376
	Decision 2	6	-0.340
	Decision 3	71	-0.341
P-LabourerOrientation	Decision 1	125	-0.160
	Decision 2	6	-0.445
	Decision 3	71	-0.015
P-Homo economicus	Decision 1	125	-0.216
	Decision 2	6	0.105
	Decision 3	71	-0.327
M-ProfitOrientation	Decision 1	74	-0.363
	Decision 2	4	-0.110
	Decision 3	34	-0.472
M-LabourerOrientation	Decision 1	74	-0.291
	Decision 2	4	-0.659
	Decision 3	34	-0.256
M-Homo economicus	Decision 1	74	-0.072
	Decision 2	4	0.549
	Decision 3	34	-0.216
F-ProfitOrientation	Decision 1	51	-0.3951
	Decision 2	2	-0.8015
	Decision 3	37	-0.2208
F-LabourerOrientation	Decision 1	51	0.03
	Decision 2	2	-0.0174
	Decision 3	37	0.20744
F-Homo economicus	Decision 1	51	-0.4251
	Decision 2	2	-0.784
	Decision 3	37	-0.4282

One-way ANOVA test of the distributions reveals that there is no evidence of any relation between children's group favouritism decisions and their parents' homo economicus attribute scores including the dimensions (Table 2.306).

Table 2.306 ANOVA test of parents' homo economicus attribute scores with respect to their children's decision.

ANOVA		
	F	Sig.
P-ProfitOrientation	0.037	0.963
P-LabourerOrientation	0.729	0.483
P-Homo economicus	0.312	0.732
M-ProfitOrientation	0.474	0.624
M-LabourerOrientation	0.260	0.771
M-Homo economicus	0.548	0.580
F-ProfitOrientation	0.552	0.578
F-LabourerOrientation	0.333	0.718
F-Homo economicus	0.056	0.945

Categorising parents by their children's maximising decisions show that mothers, fathers or parents of maximising children have lower homo economicus attribute scores than parents of non-maximiser children's parents on average (Table 2.307).

Table 2.307 Descriptive statistics of parents' homo economicus attribute scores with respect to their children's maximising or not decision.

Group Statistics			
Child		N	Mean
P-ProfitOrientation	Decision 2 or 3	77	-0.341
	Decision 1	125	-0.376
P-LabourerOrientation	Decision 2 or 3	77	-0.048
	Decision 1	125	-0.160
P-Homo economicus	Decision 2 or 3	77	-0.293
	Decision 1	125	-0.216
M-ProfitOrientation	Decision 2 or 3	38	-0.434
	Decision 1	74	-0.363
M-LabourerOrientation	Decision 2 or 3	38	-0.299
	Decision 1	74	-0.291
M-Homo economicus	Decision 2 or 3	38	-0.135
	Decision 1	74	-0.072
F-ProfitOrientation	Decision 2 or 3	39	-0.251
	Decision 1	51	-0.395
F-LabourerOrientation	Decision 2 or 3	39	0.196
	Decision 1	51	0.030
F-Homo economicus	Decision 2 or 3	39	-0.446
	Decision 1	51	-0.425

However, the differences are very small and, consequently, they are statistically insignificant (Table 2.308).

Table 2.308 t-test of parents' homo economicus attribute scores with respect to their children's maximising or not decision.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
P-ProfitOrientation	0.273	200	0.785
P-LabourerOrientation	0.733	200	0.464
P-Homo economicus	-0.367	200	0.714
M-ProfitOrientation	-0.507	102.161	0.613
M-LabourerOrientation	-0.034	110	0.973
M-Homo economicus	-0.225	110	0.823
F-ProfitOrientation	0.681	88	0.497
F-LabourerOrientation	0.762	88	0.448
F-Homo economicus	-0.068	88	0.946

In Table 2.309, parents' homo economicus attribute scores are given with respect to their children's choice between Decision 2 and Decision 3.

Table 2.309 Descriptive statistics of parents' homo economicus attribute scores with respect to their children's choice between Decision 2 and Decision 3.

Group Statistics			
Child		N	Mean
P-ProfitOrientation	Decision 2	6	-0.340
	Decision 3	71	-0.341
P-LabourerOrientation	Decision 2	6	-0.445
	Decision 3	71	-0.015
P-Homo economicus	Decision 2	6	0.105
	Decision 3	71	-0.327
M-ProfitOrientation	Decision 2	4	-0.110
	Decision 3	34	-0.472
M-LabourerOrientation	Decision 2	4	-0.659
	Decision 3	34	-0.256
M-Homo economicus	Decision 2	4	0.549
	Decision 3	34	-0.216
F-ProfitOrientation	Decision 2	2	-0.801
	Decision 3	37	-0.221
F-LabourerOrientation	Decision 2	2	-0.017
	Decision 3	37	0.207
F-Homo economicus	Decision 2	2	-0.784
	Decision 3	37	-0.428

The homo economicus attribute and the dimension scores are very close, and there is no sign of relation as well (Table 2.310).

Table 2.310 t-test of parents' homo economicus attribute scores with respect to their children's choice between Decision 2 and Decision 3.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
P-ProfitOrientation	0.002	75	0.999
P-LabourerOrientation	-0.939	75	0.351
P-Homo economicus	0.747	75	0.457
M-ProfitOrientation	1.170	36	0.250
M-LabourerOrientation	-0.693	36	0.493
M-Homo economicus	1.123	36	0.269
F-ProfitOrientation	-0.708	37	0.483
F-LabourerOrientation	-0.300	37	0.766
F-Homo economicus	-0.343	37	0.733

2.3.2.3.2 Daughter-Parent

In order to check for gender-specific relations, daughters' and sons' decisions in group favouritism question are matched with their parents' homo economicus attribute scores. First, parents are classified by their daughters' group favouritism decisions (Table 2.311).

Table 2.311 Descriptive statistics of parents' homo economicus attribute scores with respect to their daughters' decision.

Descriptives			
Daughter's GF		N	Mean
P-ProfitOrientation	Decision 1	71	-0.290
	Decision 2	2	-0.354
	Decision 3	30	-0.333
P-LabourerOrientation	Decision 1	71	-0.157
	Decision 2	2	-0.291
	Decision 3	30	0.034
P-Homo economicus	Decision 1	71	-0.132
	Decision 2	2	-0.063
	Decision 3	30	-0.367
M-ProfitOrientation	Decision 1	45	-0.322
	Decision 2	2	-0.354
	Decision 3	15	-0.474
M-LabourerOrientation	Decision 1	45	-0.218
	Decision 2	2	-0.291
	Decision 3	15	-0.482
M-Homo economicus	Decision 1	45	-0.104
	Decision 2	2	-0.063
	Decision 3	15	0.008
F-ProfitOrientation	Decision 1	26	-.234
	Decision 3	15	-0.192
F-LabourerOrientation	Decision 1	26	-0.052
	Decision 3	15	0.550
F-Homo economicus	Decision 1	26	-0.181
	Decision 3	15	-0.742

One-way ANOVA test signals for only some relation of fathers' labourer orientation scores with their daughters' group favouritism decisions with weak significance (Table 2.312).

Table 2.312 ANOVA test of parents' homo economicus attribute scores with respect to their daughters' decision.

ANOVA		
Daughter	F	Sig.
P-ProfitOrientation	0.028	0.972
P-LabourerOrientation	0.373	0.690
P-Homo economicus	0.310	0.734
M-ProfitOrientation	0.200	0.819
M-LabourerOrientation	0.390	0.679
M-Homo economicus	0.039	0.962
F-ProfitOrientation	0.017	0.897
F-LabourerOrientation	3.005	0.091'
F-Homo economicus	1.454	0.235

Parents categorisation with respect to their daughters' maximisation decision results in close average homo economicus attribute scores along with the profit orientation and labourer orientation scores except for the fathers' labourer attribution scores (Table 2.313). Maximiser daughters' fathers have higher labourer orientation scores on average than non-maximiser female children's fathers.

Table 2.313 Descriptive statistics of parents' homo economicus attribute scores with respect to their daughters' maximising or not decision.

Group Statistics			
Daughter		N	Mean
P-ProfitOrientation	Decision 2 or 3	32	-0.334
	Decision 1	71	-0.290
P-LabourerOrientation	Decision 2 or 3	32	0.014
	Decision 1	71	-0.157
P-Homo economicus	Decision 2 or 3	32	-0.348
	Decision 1	71	-0.132
M-ProfitOrientation	Decision 2 or 3	17	-0.460
	Decision 1	45	-0.322
M-LabourerOrientation	Decision 2 or 3	17	-0.460
	Decision 1	45	-0.218
M-Homo economicus	Decision 2 or 3	17	0.000
	Decision 1	45	-0.104
F-ProfitOrientation	Decision 2 or 3	15	-0.192
	Decision 1	26	-0.234
F-LabourerOrientation	Decision 2 or 3	15	0.550
	Decision 1	26	-0.053
F-Homo economicus	Decision 2 or 3	15	-0.742
	Decision 1	26	-0.181

According to t-test for equality of means, the difference is weakly significant only (Table 2.314).

Table 2.314 t-test of parents' homo economicus attribute scores with respect to their daughters' maximising or not decision.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
P-ProfitOrientation	-0.237	101	0.814
P-LabourerOrientation	0.684	47.836	0.497
P-Homo economicus	-0.732	101	0.466
M-ProfitOrientation	-0.606	60	0.547
M-LabourerOrientation	-0.853	60	0.397
M-Homo economicus	0.272	60	0.786
F-ProfitOrientation	0.130	39	0.897
F-LabourerOrientation	1.734	39	0.091'
F-Homo economicus	-1.206	39	0.235

In Table 2.315, maximiser female children's parents' homo economicus attribute and dimensions scores are given with respect to their daughters' choices among Decision 2 and Decision 3.

Table 2.315 Descriptive statistics of parents' homo economicus attribute scores with respect to their daughters' choice between Decision 2 and Decision 3.

Group Statistics			
Daughter		N	Mean
P-ProfitOrientation	Decision 2	2	-0.354
	Decision 3	30	-0.333
P-LabourerOrientation	Decision 2	2	-0.291
	Decision 3	30	0.034
P-Homo economicus	Decision 2	2	-0.063
	Decision 3	30	-0.367
M-ProfitOrientation	Decision 2	2	-0.354
	Decision 3	15	-0.474
M-LabourerOrientation	Decision 2	2	-0.291
	Decision 3	15	-0.482
M-Homo economicus	Decision 2	2	-0.063
	Decision 3	15	0.008
F-ProfitOrientation	Decision 2	0	0.000
	Decision 3	15	-0.192
F-LabourerOrientation	Decision 2	0	0.000
	Decision 3	15	0.550
F-Homo economicus	Decision 2	0	0.000
	Decision 3	15	-0.742

Since there is not any father with Decision 2 supporter daughter couple in data, fathers are not compared. Moreover, there are only 2 Decision 2 supporter female children. Therefore, no significant relation can be observed (Table 2.316).

Table 2.316 t-test of parents' homo economicus attribute scores with respect to their daughters' choice between Decision 2 and Decision 3.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
P-ProfitOrientation	-0.031	30	0.975
P-LabourerOrientation	-0.349	30	0.730
P-Homo economicus	0.301	30	0.765
M-ProfitOrientation	0.239	15	0.814
M-LabourerOrientation	0.224	15	0.826
M-Homo economicus	-0.072	15	0.943

2.3.2.3.3 Son-Parent

In the last part of the analysis, parents' homo economicus scores with respect to their male children's group favouritism decisions are compared (Table 2.317).

Although fathers' homo economicus attribute score means seem rather disperse, no significant difference can be detected by one-way ANOVA (Table 2.318).

Table 2.317 Descriptive statistics of parents' homo economicus attribute scores with respect to their sons' decision.

Descriptives			
Son's GF		N	Mean
P-ProfitOrientation	Decision 1	54	-0.490
	Decision 2	4	-0.333
	Decision 3	41	-0.347
P-LabourerOrientation	Decision 1	54	-0.164
	Decision 2	4	-0.522
	Decision 3	41	-0.050
P-Homo economicus	Decision 1	54	-0.326
	Decision 2	4	0.189
	Decision 3	41	-0.297
M-ProfitOrientation	Decision 1	29	-0.427
	Decision 2	2	0.135
	Decision 3	19	-0.470
M-LabourerOrientation	Decision 1	29	-0.406
	Decision 2	2	-1.027
	Decision 3	19	-0.078
M-Homo economicus	Decision 1	29	-0.021
	Decision 2	2	1.162
	Decision 3	19	-0.393
F-ProfitOrientation	Decision 1	25	-0.5625
	Decision 2	2	-0.8015
	Decision 3	22	-0.2407
F-LabourerOrientation	Decision 1	25	0.11621
	Decision 2	2	-0.0174
	Decision 3	22	-0.026
F-Homo economicus	Decision 1	25	-0.6787
	Decision 2	2	-0.784
	Decision 3	22	-0.2146

Table 2.318 ANOVA test of parents' homo economicus attribute scores with respect to their sons' decision.

ANOVA		
Son	F	Sig.
P-ProfitOrientation	0.316	0.730
P-LabourerOrientation	0.416	0.661
P-Homo economicus	0.211	0.810
M-ProfitOrientation	0.529	0.593
M-LabourerOrientation	0.907	0.411
M-Homo economicus	1.090	0.345
F-ProfitOrientation	0.752	0.477
F-LabourerOrientation	0.129	0.880
F-Homo economicus	0.582	0.563

In maximiser sons' parents and non-maximiser sons' parents comparison, we observe that maximiser sons' parents, regardless of their gender, have higher profit orientation scores with small differences (Table 2.319).

Table 2.319 Descriptive statistics of parents' homo economicus attribute scores with respect to their sons' maximising or not decision.

Group Statistics			
Son		N	Mean
P-ProfitOrientation	Decision 2 or 3	45	-0.346
	Decision 1	54	-0.490
P-LabourerOrientation	Decision 2 or 3	45	-0.092
	Decision 1	54	-0.164
P-Homo economicus	Decision 2 or 3	45	-0.254
	Decision 1	54	-0.326
M-ProfitOrientation	Decision 2 or 3	21	-0.413
	Decision 1	29	-0.427
M-LabourerOrientation	Decision 2 or 3	21	-0.168
	Decision 1	29	-0.406
M-Homo economicus	Decision 2 or 3	21	-0.245
	Decision 1	29	-0.021
F-ProfitOrientation	Decision 2 or 3	24	-0.287
	Decision 1	25	-0.563
F-LabourerOrientation	Decision 2 or 3	24	-0.025
	Decision 1	25	0.116
F-Homo economicus	Decision 2 or 3	24	-0.262
	Decision 1	25	-0.679

The differences neither in homo economicus attribute scores nor any of dimension scores are statistically significant (Table 2.320).

Table 2.320 t-test of parents' homo economicus attribute scores with respect to their sons' maximising or not decision.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
P-ProfitOrientation	0.799	97	0.426
P-LabourerOrientation	0.342	96.974	0.733
P-Homo economicus	0.233	97	0.816
M-ProfitOrientation	0.063	48	0.950
M-LabourerOrientation	0.731	48	0.468
M-Homo economicus	-0.511	48	0.612
F-ProfitOrientation	0.967	47	0.338
F-LabourerOrientation	-0.513	47	0.611
F-Homo economicus	0.961	47	0.341

In the last part of the analysis, maximiser male children's parents are compared among themselves regarding their sons' choice between Decision 2 and Decision 3 (Table 2.321).

Table 2.321 Descriptive statistics of parents' homo economicus attribute scores with respect to their sons' choice between Decision 2 and Decision 3.

Group Statistics			
Son		N	Mean
P-ProfitOrientation	Decision 2	4	-0.333
	Decision 3	41	-0.347
P-LabourerOrientation	Decision 2	4	-0.522
	Decision 3	41	-0.050
P-Homo economicus	Decision 2	4	0.189
	Decision 3	41	-0.297
M-ProfitOrientation	Decision 2	2	0.135
	Decision 3	19	-0.470
M-LabourerOrientation	Decision 2	2	-1.027
	Decision 3	19	-0.078
M-Homo economicus	Decision 2	2	1.162
	Decision 3	19	-0.393
F-ProfitOrientation	Decision 2	2	-0.801
	Decision 3	22	-0.241
F-LabourerOrientation	Decision 2	2	-0.017
	Decision 3	22	-0.026
F-Homo economicus	Decision 2	2	-0.784
	Decision 3	22	-0.215

Since there are only 4 parents and Decision 2 supporter son couples and, moreover, the parents are two mothers and two fathers, detecting any significant relation is not possible (Table 2.322).

Table 2.322 t-test of parents' homo economicus attribute scores with respect to their sons' choice between Decision 2 and Decision 3.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
P-ProfitOrientation	0.029	43	0.977
P-LabourerOrientation	-0.956	43	0.344
P-Homo economicus	0.675	43	0.503
M-ProfitOrientation	1.513	19	0.147
M-LabourerOrientation	-1.176	19	0.254
M-Homo economicus	1.635	19	0.119
F-ProfitOrientation	-0.675	22	0.507
F-LabourerOrientation	0.014	22	0.989
F-Homo economicus	-0.533	22	0.599

2.3.2.4 Results Summary

In general results are not very strong, but still suggests some common characteristics of parents classified by their children's group favouritism responses.

The outcomes of analysis that are worth to mention are listed below;

- Trust scores of parents differ among maximiser daughters. Decision 2 supporter daughters' parents have higher trust scores than Decision 3 supporter daughters' parents. However, this relation is not substantial for fathers.
- Fathers of Decision 2 supporter daughters are significantly more positive reciprocal than fathers of Decision 3 supporter daughters. Moreover, fathers of maximiser sons have higher positive reciprocity scores than non-maximiser sons' father with low significance.
- Mothers of Decision 3 supporter sons have higher negative reciprocity scores than Decision 2 supporter sons' mothers with low significance.
- There are mixed results for inequality aversion scores of parents with respect to their children's group favouritism choices. Mothers of Decision

2 supporter children are more inequality averse than mothers of Decision 3 supporter children. This relation is substantial for mother-daughter link, but not for mother-son link. Conversely, parents of Decision 2 supporter sons have lower inequality aversion scores than Decision 3 supporter sons' parents on average.

- Decision 3 supporter children's fathers are more risk-averse than Decision 2 supporter children's fathers. Besides, this relation is substantial for daughters with lower significance.
- In the homo economicus module, the only relevant relation is that maximiser daughters' fathers have lower labourer orientation scores than non-maximiser daughters' fathers with low significance.

The summary of all results derived from the analysis of children's choice in group favouritism question and preference values of their parents matchings is given in Table 2.323.

Table 2.323 Result summary of children's group favouritism choice and parents' preferences comparison.

Link Category	Comparison	Common						2016		2017	
		Altruism	Trust	P Preciprocity	N Reciprocity	Inequality	Time	Risk	Profit	Labourer	Homo Economicus
Child Parent	All	0.691	0.384	0.497	0.342	0.475	0.836	0.502	0.963	0.483	0.732
	Maximiser vs. Non-maximiser	0.433	0.853	0.237	0.3	0.767	0.691	0.364	0.785	0.464	0.714
	Decision 2 vs. Decision 3	0.725	0.162	0.996	0.3	0.243	0.653	0.433	0.999	0.351	0.457
Child Mother	All	0.243	0.44	0.405	0.135	0.021*	0.961	0.837	0.624	0.771	0.58
	Maximiser vs. Non-maximiser	0.23	0.903	0.218	0.323	0.875	0.917	0.562	0.655	0.973	0.823
	Decision 2 vs. Decision 3	0.397	0.178	0.569	0.096'	0.024*	0.791	0.882	0.25	0.493	0.269
Child Father	All	0.324	0.807	0.847	0.777	0.514	0.88	0.068'	0.578	0.718	0.945
	Maximiser vs. Non-maximiser	0.965	0.728	0.82	0.515	0.762	0.685	0.328	0.497	0.448	0.946
	Decision 2 vs. Decision 3	0.119	0.584	0.601	0.764	0.28	0.716	0.031*	0.483	0.766	0.733
Daughter - Parent	All	0.561	0.072'	0.969	0.713	0.083'	0.771	0.612	0.972	0.69	0.734
	Maximiser vs. Non-maximiser	0.333	0.48	0.809	0.621	0.699	0.657	0.817	0.814	0.45	0.466
	Decision 2 vs. Decision 3	0.707	0.03*	0.947	0.526	0.028*	0.568	0.145	0.975	0.73	0.765
Son Parent	All	0.988	0.809	0.264	0.309	0.239	0.991	0.642	0.73	0.661	0.81
	Maximiser vs. Non-maximiser	0.975	0.523	0.108	0.175	0.357	0.939	0.351	0.426	0.733	0.816
	Decision 2 vs. Decision 3	0.883	0.892	0.754	0.461	0.036*	0.913	0.906	0.977	0.344	0.503
Daughter - Mother	All	0.459	0.175	0.259	0.472	0.014*	0.944	0.983	0.819	0.679	0.962
	Maximiser vs. Non-maximiser	0.24	0.99	0.278	0.332	0.676	0.969	0.99	0.547	0.397	0.786
	Decision 2 vs. Decision 3	0.787	0.051'	0.216	0.484	0.023*	0.733	0.846	0.814	0.826	0.943
Daughter - Father	All	0.544	0.358	0.191	0.995	0.46	0.843	0.192	0.897	0.091'	0.235
	Maximiser vs. Non-maximiser	0.828	0.315	0.279	0.92	0.212	0.652	0.594	0.897	0.091'	0.235
	Decision 2 vs. Decision 3	0.208	0.337	0.012*	0.981	0.967	0.708	0.058'	X	X	X
Son Mother	All	0.362	0.936	0.756	0.17	0.836	0.959	0.501	0.593	0.411	0.345
	Maximiser vs. Non-maximiser	0.702	0.79	0.496	0.507	0.708	0.775	0.501	0.95	0.468	0.612
	Decision 2 vs. Decision 3	0.165	0.793	0.722	0.089'	0.64	0.966	X	0.147	0.254	0.119
Son Father	All	0.704	0.834	0.158	0.485	0.098'	0.96	0.432	0.477	0.88	0.563
	Maximiser vs. Non-maximiser	0.809	0.546	0.089'	0.25	0.1	0.78	0.467	0.338	0.611	0.341
	Decision 2 vs. Decision 3	0.444	0.999	0.383	0.697	0.197	0.949	0.906	0.507	0.989	0.599

2.3.3 Results of Group Favouritism Behaviour

In this analysis, we tried to capture whether any common preference properties can be observed in children with respect to their parent's choice in group favouritism question.

As in the previous analysis, we presented the preferences in three parts; two years' common preferences, 2016 specific preferences and 2017 specific preferences. For each part, the parents' decision of group favouritism question and the stages of this decision are taken as the denominator. All possible links are analysed, and the results of the analysis are given with some descriptive statistics.

2.3.3.1 Common Preferences

Along with the group favouritism behaviour, altruism, trust, positive and negative reciprocity, inequality aversion and time preferences of the family members are tried to be measured in both years' surveys via the same question set enabling us to merge outcomes and get a rich data set.

In order to explore the intergenerational effects of group favouritism behaviour, all possible intergenerational links in participant families are tested by comparison of children's preference scores with respect to their parents' choices in group favouritism question.

2.3.3.1.1 Child-Parent

First, the largest link set, child-parent, is considered. Descriptive statistics for said preferences of children who are categorised by their parents' decision are given in Table 2.324.

Table 2.324 Descriptive statistics of children's preference scores with respect to their parents' decision.

Descriptives			
Parent's GF		N	Mean
C-Altruism	Decision 1	401	-0.067
	Decision 2	61	0.018
	Decision 3	160	-0.110
C-Trust	Decision 1	401	-0.158
	Decision 2	61	-0.356
	Decision 3	160	-0.155
C-PReciprocity	Decision 1	401	-0.121
	Decision 2	61	-0.177
	Decision 3	160	-0.288
C-NReciprocity	Decision 1	401	0.145
	Decision 2	61	0.308
	Decision 3	160	0.087
C-Inequality	Decision 1	400	1.304
	Decision 2	60	1.408
	Decision 3	157	1.127
C-Time	Decision 1	401	0.095
	Decision 2	61	-0.120
	Decision 3	160	-0.054

According to the data summary, Decision 1 supporters' children have the highest positive reciprocity and patience scores, Decision 2 supporters' children have the highest altruism, negative reciprocity, inequality aversion, lowest trust and patience scores and Decision 3 supporters' children have the highest trust scores with lowest positive and negative reciprocity, altruism and inequality aversion scores in average.

Table 2.325 ANOVA test of children's preference scores with respect to their parents' decision.

ANOVA		
	F	Sig.
C-Altruism	0.765	0.466
C-Trust	1.104	0.332
C-PReciprocity	2.936	0.054'
C-NReciprocity	2.422	0.090'
C-Inequality	2.324	0.099'
C-Time	3.557	0.029*

One-way ANOVA test (Table 2.325) yields that the differences in altruism and trust scores are insignificant where positive, negative reciprocity and inequality aversion score differences have low significance and time preference score differences are significant.

Table 2.326 Descriptive statistics of children's preference scores with respect to their parents' maximising or not decision.

Group Statistics			
Parent's GF		N	Mean
C-Altruism	Decision 2 or 3	221	-0.075
	Decision 1	401	-0.067
C-Trust	Decision 2 or 3	221	-0.211
	Decision 1	401	-0.158
C-PReciprocity	Decision 2 or 3	221	-0.258
	Decision 1	401	-0.121
C-NReciprocity	Decision 2 or 3	221	0.148
	Decision 1	401	0.145
C-Inequality	Decision 2 or 3	217	1.205
	Decision 1	400	1.304
C-Time	Decision 2 or 3	221	-0.073
	Decision 1	401	0.095

The maximiser parents' children only have higher negative reciprocity score with an insignificant difference (Table 2.326). The only significant differences are observed in positive reciprocity and time preference scores (Table 2.327), maximiser parents' children significantly less positive reciprocal and less patient.

Table 2.327 t-test of children's preference scores with respect to their parents' maximising or not decision.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
C-Altruism	-0.128	620	0.899
C-Trust	-0.629	620	0.530
C-PReciprocity	-2.208	620	0.028*
C-NReciprocity	0.064	406.86	0.949
C-Inequality	-1.150	615	0.251
C-Time	-2.722	512.763	0.007**

Table 2.328 Descriptive statistics of children's preference scores with respect to their parents' choice between Decision 2 and Decision 3.

Group Statistics			
Parent's GF		N	Mean
C-Altruism	Decision 2	61	0.018
	Decision 3	160	-0.110
C-Trust	Decision 2	61	-0.356
	Decision 3	160	-0.155
C-PReciprocity	Decision 2	61	-0.177
	Decision 3	160	-0.288
C-NReciprocity	Decision 2	61	0.308
	Decision 3	160	0.087
C-Inequality	Decision 2	60	1.408
	Decision 3	157	1.127
C-Time	Decision 2	61	-0.120
	Decision 3	160	-0.054

The comparison of maximiser parents' children among themselves reveals that Decision 2 supporter parents' children are more altruistic, more positive and negative reciprocal and more inequality averse than Decision 3 supporting parents' children in average (Table 2.328). However, only the difference of negative reciprocity scores is statistically significant (Table 2.329)

Table 2.329 t-test of children's preference scores with respect to their parents' choice between Decision 2 and Decision 3.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
C-Altruism	1.286	219	0.200
C-Trust	-1.400	219	0.163
C-PReciprocity	0.976	219	0.330
C-NReciprocity	2.041	219	0.042*
C-Inequality	1.765	93.682	0.081
C-Time	-0.630	219	0.529

2.3.3.1.2 Child-Mother

In order to capture gender specific preference relation of group favouritism behaviour within the family, all of the relevant subsets of parent-child couples are tested.

Categorising children by their mothers' group favouritism decision yields the mean preference values given in Table 2.330.

Table 2.330 Descriptive statistics of children's preference scores with respect to their mothers' decision.

Descriptives			
Mother's GF		N	Mean
C-Altruism	Decision 1	217	-0.020
	Decision 2	32	0.150
	Decision 3	85	-0.176
C-Trust	Decision 1	217	-0.122
	Decision 2	32	-0.319
	Decision 3	85	-0.330
C-PReciprocity	Decision 1	217	-0.137
	Decision 2	32	-0.176
	Decision 3	85	-0.262
C-NReciprocity	Decision 1	217	0.150
	Decision 2	32	0.341
	Decision 3	85	0.033
C-Inequality	Decision 1	217	1.318
	Decision 2	31	1.589
	Decision 3	83	1.084
C-Time	Decision 1	217	0.040
	Decision 2	32	-0.103
	Decision 3	85	-0.006

Altruism, negative reciprocity and inequality aversion scores of children disperse by their mothers' group favouritism choice with low significance (Table 2.331).

Table 2.331 ANOVA test of children's preference scores with respect to their mothers' decision.

ANOVA		
	F	Sig.
C-Altruism	2.805	0.062'
C-Trust	1.665	0.191
C-PReciprocity	0.839	0.433
C-NReciprocity	2.692	0.069'
C-Inequality	3.013	0.051'
C-Time	0.505	0.604

Checking for the maximising behaviour of mothers show that children of maximising mothers have lower values in all of the preferences calculated (Table 2.332).

Table 2.332 Descriptive statistics of children's preference scores with respect to their mothers' maximising or not decision.

Group Statistics			
Mother's GF		N	Mean
C-Altruism	Decision 2 or 3	117	-0.087
	Decision 1	217	-0.020
C-Trust	Decision 2 or 3	117	-0.327
	Decision 1	217	-0.122
C-PReciprocity	Decision 2 or 3	117	-0.238
	Decision 1	217	-0.137
C-NReciprocity	Decision 2 or 3	117	0.117
	Decision 1	217	0.150
C-Inequality	Decision 2 or 3	114	1.221
	Decision 1	217	1.318
C-Time	Decision 2 or 3	117	-0.033
	Decision 1	217	0.040

However, none of the differences is significant, except for the difference in trust values which has low significance (Table 2.333).

Table 2.333 t-test of children's preference scores with respect to their mothers' maximising or not decision.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
C-Altruism	-0.816	332	0.415
C-Trust	-1.827	332	0.069'
C-PReciprocity	-1.176	332	0.240
C-NReciprocity	-0.433	332	0.665
C-Inequality	-0.802	329	0.423
C-Time	-0.851	273.38	0.396

In the last part of the child-mother couples analysis, children of maximiser mothers are compared according to their mothers' choice among maximising options.

Table 2.334 Descriptive statistics of children's preference scores with respect to their mothers' choice between Decision 2 and Decision 3.

Group Statistics			
Mother's GF		N	Mean
C-Altruism	Decision 2	32	0.150
	Decision 3	85	-0.176
C-Trust	Decision 2	32	-0.319
	Decision 3	85	-0.330
C-PReciprocity	Decision 2	32	-0.176
	Decision 3	85	-0.262
C-NReciprocity	Decision 2	32	0.341
	Decision 3	85	0.033
C-Inequality	Decision 2	31	1.589
	Decision 3	83	1.084
C-Time	Decision 2	32	-0.103
	Decision 3	85	-0.006

Decision 2 supporting mothers have children with higher altruism, trust, positive reciprocity, negative reciprocity and inequality aversion values (Table 2.334). Moreover, the differences in altruism, negative reciprocity and inequality aversion scores are statistically significant (Table 2.335). In other words, children whose mother chose Decision 2 are more altruistic, negative reciprocal and inequality averse than the children of Decision 3 supporter mothers.

Table 2.335 t-test of children's preference scores with respect to their mothers' choice between Decision 2 and Decision 3.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
C-Altruism	2.375	115	0.019*
C-Trust	0.054	115	0.957
C-PReciprocity	0.506	115	0.614
C-NReciprocity	2.144	115	0.034*
C-Inequality	2.147	44.601	0.037*
C-Time	-0.669	115	0.505

2.3.3.1.3 Child-Father

Table 2.336 Descriptive statistics of children's preference scores with respect to their fathers' decision.

Descriptives			
Father's GF		N	Mean
C-Altruism	Decision 1	182	-0.122
	Decision 2	28	-0.137
	Decision 3	75	-0.036
C-Trust	Decision 1	182	-0.203
	Decision 2	28	-0.350
	Decision 3	75	0.043
C-PReciprocity	Decision 1	182	-0.101
	Decision 2	28	-0.204
	Decision 3	75	-0.318
C-NReciprocity	Decision 1	182	0.143
	Decision 2	28	0.280
	Decision 3	75	0.149
C-Inequality	Decision 1	181	1.297
	Decision 2	28	1.223
	Decision 3	74	1.176
C-Time	Decision 1	182	0.169
	Decision 2	28	-0.185
	Decision 3	75	-0.109

When we classify children by their fathers' group favouritism choice, we observe that Decision 1 supporter fathers' children have the highest positive reciprocity, inequality aversion, patience and the lowest negative reciprocity scores where

Decision 3 supporter fathers' children have the highest altruism and trust scores (Table 2.336).

One-way ANOVA test for the distribution shows that patience scores of children differ significantly by their fathers' group favouritism behaviour (Table 2.337). We can claim the same for positive reciprocity scores with lower significance.

Table 2.337 ANOVA test of children's preference scores with respect to their fathers' decision.

ANOVA		
	F	Sig.
C-Altruism	0.487	0.615
C-Trust	2.221	0.110
C-PReciprocity	2.446	0.088'
C-NReciprocity	0.489	0.614
C-Inequality	0.407	0.666
C-Time	5.368	0.005**

Categorising children by their fathers' maximising decision shows that maximiser fathers' children have higher altruism, trust and negative reciprocity scores on average (Table 2.338).

Table 2.338 Descriptive statistics of children's preference scores with respect to their fathers' maximising or not decision.

Group Statistics			
Father's GF		N	Mean
C-Altruism	Decision 2 or 3	103	-0.063
	Decision 1	182	-0.122
C-Trust	Decision 2 or 3	103	-0.064
	Decision 1	182	-0.203
C-PReciprocity	Decision 2 or 3	103	-0.287
	Decision 1	182	-0.101
C-NReciprocity	Decision 2 or 3	103	0.185
	Decision 1	182	0.143
C-Inequality	Decision 2 or 3	102	1.189
	Decision 1	181	1.297
C-Time	Decision 2 or 3	103	-0.130
	Decision 1	182	0.169

According to t-test equality of means results, non-maximiser fathers' children have significantly higher positive reciprocity and patience scores than maximiser fathers' children (Table 2.339).

Table 2.339 t-test of children's preference scores with respect to their fathers' maximising or not decision.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
C-Altruism	0.710	283	0.478
C-Trust	1.124	283	0.262
C-PReciprocity	-2.095	283	0.037*
C-NReciprocity	0.477	187.65	0.634
C-Inequality	-0.878	281	0.381
C-Time	-3.370	235.893	0.001**

Applying the same comparison among children of maximiser fathers, we observe mostly close preference score means (Table 2.340). Only the difference of trust scores has low significance (Table 2.341).

Table 2.340 Descriptive statistics of children's preference scores with respect to their fathers' choice between Decision 2 and Decision 3.

Group Statistics			
Father's GF		N	Mean
C-Altruism	Decision 2	28	-0.137
	Decision 3	75	-0.036
C-Trust	Decision 2	28	-0.350
	Decision 3	75	0.043
C-PReciprocity	Decision 2	28	-0.204
	Decision 3	75	-0.318
C-NReciprocity	Decision 2	28	0.280
	Decision 3	75	0.149
C-Inequality	Decision 2	28	1.223
	Decision 3	74	1.176
C-Time	Decision 2	28	-0.185
	Decision 3	75	-0.109

Table 2.341 t-test of children's preference scores with respect to their fathers' choice between Decision 2 and Decision 3.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
C-Altruism	-0.694	101	0.489
C-Trust	-1.839	101	0.069'
C-PReciprocity	0.749	101	0.456
C-NReciprocity	0.782	101	0.436
C-Inequality	0.225	100	0.822
C-Time	-0.505	101	0.614

2.3.3.1.4 Daughter-Parent

Daughters' average preference scores according to their parents' group favouritism choices are given in Table 2.342.

Table 2.342 Descriptive statistics of daughters' preference scores with respect to their parents' decision.

Descriptives			
Parent's GF		N	Mean
D-Altruism	Decision 1	235	0.076
	Decision 2	37	0.009
	Decision 3	90	0.046
D-Trust	Decision 1	235	-0.054
	Decision 2	37	-0.283
	Decision 3	90	-0.103
D-PReciprocity	Decision 1	235	-0.103
	Decision 2	37	-0.196
	Decision 3	90	-0.174
D-NReciprocity	Decision 1	235	0.066
	Decision 2	37	0.303
	Decision 3	90	-0.043
D-Inequality	Decision 1	234	1.362
	Decision 2	36	1.382
	Decision 3	89	1.199
D-Time	Decision 1	235	0.142
	Decision 2	37	-0.029
	Decision 3	90	-0.070

One-way ANOVA test yields that daughters' negative reciprocity scores are not independent of their parents' group favouritism behaviours (Table 2.343).

Table 2.343 ANOVA test of daughters' preference scores with respect to their parents' decision.

ANOVA		
	F	Sig.
D-Altruism	0.203	0.816
D-Trust	0.869	0.420
D-PReciprocity	0.492	0.612
D-NReciprocity	3.346	0.036*
D-Inequality	0.917	0.401
D-Time	2.879	0.057'

In order to test sub-stages of group favouritism question, daughters are categorized by their parents maximising decision first (Table 2.344). Non-maximiser parents' daughters have higher scores than maximiser parents' daughters in every preference. But only the difference in time preferences is statistically significant (Table 2.345).

Table 2.344 Descriptive statistics of daughters' preference scores with respect to their parents' maximising or not decision.

Group Statistics			
Parent's GF		N	Mean
D-Altruism	Decision 2 or 3	127	0.035
	Decision 1	235	0.076
D-Trust	Decision 2 or 3	127	-0.155
	Decision 1	235	-0.054
D-PReciprocity	Decision 2 or 3	127	-0.180
	Decision 1	235	-0.103
D-NReciprocity	Decision 2 or 3	127	0.058
	Decision 1	235	0.066
D-Inequality	Decision 2 or 3	125	1.252
	Decision 1	234	1.362
D-Time	Decision 2 or 3	127	-0.058
	Decision 1	235	0.142

Table 2.345 t-test of daughters' preference scores with respect to their fathers' maximising or not decision.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
D-Altruism	-0.565	360	0.572
D-Trust	-0.934	360	0.351
D-PReciprocity	-0.981	360	0.327
D-NReciprocity	-0.105	238.615	0.917
D-Inequality	-0.992	357	0.322
D-Time	-2.495	292.628	0.013*

Since the second sub-stage of group favouritism decision is to choose between Decision 2 and Decision 3, the daughters of maximiser parents are classified by their parents' decisions among Decision 2 and Decision 3 (Table 2.346).

Table 2.346 Descriptive statistics of daughters' preference scores with respect to their parents' choice between Decision 2 and Decision 3.

Group Statistics			
Parent's GF		N	Mean
D-Altruism	Decision 2	37	0.009
	Decision 3	90	0.046
D-Trust	Decision 2	37	-0.283
	Decision 3	90	-0.103
D-PReciprocity	Decision 2	37	-0.196
	Decision 3	90	-0.174
D-NReciprocity	Decision 2	37	0.303
	Decision 3	90	-0.043
D-Inequality	Decision 2	36	1.382
	Decision 3	89	1.199
D-Time	Decision 2	37	-0.029
	Decision 3	90	-0.070

The results of the relevant comparison tests indicate that only the difference between negative reciprocity scores is statistically significant (**Table 2.347**). Decision 2 supporter parents' daughters are more negative reciprocal than Decision 3 supporter parents' daughters.

Table 2.347 t-test of daughters' preference scores with respect to their parents' choice between Decision 2 and Decision 3.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
D-Altruism	-0.319	125	0.750
D-Trust	-0.927	125	0.356
D-PReciprocity	-0.160	125	0.873
D-NReciprocity	2.468	125	0.015*
D-Inequality	0.935	123	0.352
D-Time	0.303	125	0.762

2.3.3.1.5 Son-Parent

Descriptive statistics of male children's preference scores according to their parents' group favouritism choices are given in Table 2.348.

Table 2.348 Descriptive statistics of sons' preference scores with respect to their parents' decision.

Descriptives			
Parent's GF		N	Mean
S-Altruism	Decision 1	164	-0.265
	Decision 2	24	0.032
	Decision 3	69	-0.299
S-Trust	Decision 1	164	-0.305
	Decision 2	24	-0.469
	Decision 3	69	-0.243
S-PReciprocity	Decision 1	164	-0.147
	Decision 2	24	-0.149
	Decision 3	69	-0.404
S-NReciprocity	Decision 1	164	0.254
	Decision 2	24	0.316
	Decision 3	69	0.253
S-Inequality	Decision 1	164	1.194
	Decision 2	24	1.448
	Decision 3	68	1.033
S-Time	Decision 1	164	0.032
	Decision 2	24	-0.261
	Decision 3	69	-0.037

Comparison of male children's preference scores according to their parents' group favouritism choices shows that there is no statistical evidence of a relation except for the weak significance level of the test for positive reciprocity (Table 2.349).

Table 2.349 ANOVA test of sons' preference scores with respect to their parents' decision.

ANOVA		
	F	Sig.
S-Altruism	2.039	0.132
S-Trust	0.463	0.630
S-PReciprocity	2.881	0.058'
S-NReciprocity	0.110	0.896
S-Inequality	1.550	0.214
S-Time	1.512	0.222

In order to check for the effect of parents' maximising behaviour on male children's preferences, male children are grouped by their parents' maximising or not decisions (Table 2.350).

Table 2.350 Descriptive statistics of sons' preference scores with respect to their parents' maximising or not decision.

Group Statistics			
Parent's GF		N	Mean
S-Altruism	Decision 2 or 3	93	-0.214
	Decision 1	164	-0.265
S-Trust	Decision 2 or 3	93	-0.302
	Decision 1	164	-0.305
S-PReciprocity	Decision 2 or 3	93	-0.338
	Decision 1	164	-0.147
S-NReciprocity	Decision 2 or 3	93	0.270
	Decision 1	164	0.254
S-Inequality	Decision 2 or 3	92	1.141
	Decision 1	164	1.194
S-Time	Decision 2 or 3	93	-0.095
	Decision 1	164	0.032

Test results show that there is no evidence of the relation between male children's preferences and their parents' maximising decisions except for the weak significance of positive reciprocity difference (Table 2.351).

Table 2.351 t-test of sons' preference scores with respect to their parents' maximising or not decision.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
S-Altruism	0.544	255	0.587
S-Trust	0.030	215.335	0.976
S-PReciprocity	-1.934	255	0.054
S-NReciprocity	0.188	162.754	0.851
S-Inequality	-0.393	254	0.695
S-Time	-1.250	255	0.212

Similarly, the comparison the preference scores of maximiser parents' male children are grouped by their parents' choice between Decision 2 and Decision 3 (Table 2.352) no evidence of relation detected except for the weak significance of the difference in average altruism scores (Table 2.353).

Table 2.352 Descriptive statistics of sons' preference scores with respect to their parents' choice between Decision 2 and Decision 3.

Group Statistics			
Parent's GF		N	Mean
S-Altruism	Decision 2	24	0.032
	Decision 3	69	-0.299
S-Trust	Decision 2	24	-0.469
	Decision 3	69	-0.243
S-PReciprocity	Decision 2	24	-0.149
	Decision 3	69	-0.404
S-NReciprocity	Decision 2	24	0.316
	Decision 3	69	0.253
S-Inequality	Decision 2	24	1.448
	Decision 3	68	1.033
S-Time	Decision 2	24	-0.261
	Decision 3	69	-0.037

Table 2.353 t-test of sons' preference scores with respect to their parents' choice between Decision 2 and Decision 3.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
S-Altruism	1.960	91	0.053'
S-Trust	-1.065	91	0.290
S-PReciprocity	1.403	91	0.164
S-NReciprocity	0.377	91	0.707
S-Inequality	1.547	31.724	0.132
S-Time	-1.335	91	0.185

2.3.3.1.6 Daughter-Mother

The smallest subsets of parent-child links, mother-daughter, father-daughter, mother-son and father-son are also examined individually.

Daughters' preference descriptive statistics according to their mothers' choices in group favouritism question are given in Table 2.354.

Table 2.354 Descriptive statistics of daughters' preference scores with respect to their mothers' decision.

Mother's GF		N	Mean
D-Altruism	Decision 1	138	0.084
	Decision 2	22	0.144
	Decision 3	48	0.015
D-Trust	Decision 1	138	-0.021
	Decision 2	22	-0.214
	Decision 3	48	-0.337
D-PReciprocity	Decision 1	138	-0.083
	Decision 2	22	-0.227
	Decision 3	48	-0.199
D-NReciprocity	Decision 1	138	0.086
	Decision 2	22	0.261
	Decision 3	48	-0.088
D-Inequality	Decision 1	138	1.348
	Decision 2	21	1.571
	Decision 3	47	1.176
D-Time	Decision 1	138	0.109
	Decision 2	22	-0.095
	Decision 3	48	-0.056

The distributions reveal no significant relationship between daughters' preferences and their mothers' group favouritism behaviour for all preferences (Table 2.355).

Table 2.355 ANOVA test of daughters' preference scores with respect to their mothers' decision.

ANOVA		
	F	Sig.
D-Altruism	0.323	0.725
D-Trust	1.967	0.143
D-PReciprocity	0.714	0.491
D-NReciprocity	2.195	0.114
D-Inequality	1.148	0.319
D-Time	1.251	0.288

However, classifying daughters by their mothers' maximising decision (Table 2.356) yields weak significance in the difference of trust and patience scores of daughters (Table 2.357). Non-maximiser mothers' daughters have higher trust and patience scores than the daughters of maximiser mothers.

Table 2.356 Descriptive statistics of daughters' preference scores with respect to their mothers' maximising or not decision.

Group Statistics			
Mother's GF		N	Mean
D-Altruism	Decision 2 or 3	70	0.055
	Decision 1	138	0.084
D-Trust	Decision 2 or 3	70	-0.298
	Decision 1	138	-0.021
D-PReciprocity	Decision 2 or 3	70	-0.208
	Decision 1	138	-0.083
D-NReciprocity	Decision 2 or 3	70	0.022
	Decision 1	138	0.086
D-Inequality	Decision 2 or 3	68	1.298
	Decision 1	138	1.348
D-Time	Decision 2 or 3	70	-0.068
	Decision 1	138	0.109

Table 2.357 t-test of daughters' preference scores with respect to their mothers' maximising or not decision.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
D-Altruism	-0.296	206	0.767
D-Trust	-1.927	206	0.055 [*]
D-PReciprocity	-1.188	206	0.236
D-NReciprocity	-0.611	123.088	0.543
D-Inequality	-0.330	204	0.742
D-Time	-1.691	168.596	0.093

Among maximiser mothers' daughters comparison according to mothers' choice between Decision 2 and Decision 3 (Table 2.358), only weak significance of the difference in average negative reciprocity scores can be observed (Table 2.359). Decision 2 supporters mothers' daughters are more negative reciprocal than Decision 3 supporter mothers' daughters.

Table 2.358 Descriptive statistics of daughters' preference scores with respect to their mothers' choice between Decision 2 and Decision 3.

Group Statistics			
Mother's GF		N	Mean
D-Altruism	Decision 2	22	0.144
	Decision 3	48	0.015
D-Trust	Decision 2	22	-0.214
	Decision 3	48	-0.337
D-PReciprocity	Decision 2	22	-0.227
	Decision 3	48	-0.199
D-NReciprocity	Decision 2	22	0.261
	Decision 3	48	-0.088
D-Inequality	Decision 2	21	1.571
	Decision 3	47	1.176
D-Time	Decision 2	22	-0.095
	Decision 3	48	-0.056

Table 2.359 t-test of daughters' preference scores with respect to their mothers' choice between Decision 2 and Decision 3.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
D-Altruism	0.824	68	0.413
D-Trust	0.484	68	0.630
D-PReciprocity	-0.143	68	0.887
D-NReciprocity	1.845	68	0.069 [*]
D-Inequality	1.482	66	0.143
D-Time	-0.234	68	0.816

2.3.3.1.7 Daughter-Father

For father-daughter link analysis, daughters are grouped regarding their fathers' choice in group favouritism question (Table 2.360).

Table 2.360 Descriptive statistics of daughters' preference scores with respect to their fathers' decision.

Descriptives			
Father's GF		N	Mean
D-Altruism	Decision 1	96	0.053
	Decision 2	14	-0.212
	Decision 3	42	0.082
D-Trust	Decision 1	96	-0.115
	Decision 2	14	-0.289
	Decision 3	42	0.164
D-PReciprocity	Decision 1	96	-0.136
	Decision 2	14	-0.199
	Decision 3	42	-0.145
D-NReciprocity	Decision 1	96	0.043
	Decision 2	14	0.385
	Decision 3	42	0.009
D-Inequality	Decision 1	95	1.389
	Decision 2	14	1.125
	Decision 3	42	1.226
D-Time	Decision 1	96	0.194
	Decision 2	14	-0.010
	Decision 3	42	-0.086

Despite the scattered values of preference averages, no significant difference can be explored (Table 2.361).

Table 2.361 ANOVA test of daughters' preference scores with respect to their fathers' decision.

ANOVA		
	F	Sig.
D-Altruism	1.343	0.264
D-Trust	1.623	0.201
D-PReciprocity	0.047	0.954
D-NReciprocity	1.660	0.194
D-Inequality	0.698	0.499
D-Time	2.179	0.117

On the other hand, comparison of daughters' preference values according to their fathers' maximising decisions (Table 2.362) showed that non-maximiser fathers' daughters are significantly more patient than daughters of maximiser fathers (Table 2.363).

Table 2.362 Descriptive statistics of daughters' preference scores with respect to their fathers' maximising or not decision.

Group Statistics			
Father's GF		N	Mean
D-Altruism	Decision 2 or 3	56	0.009
	Decision 1	96	0.053
D-Trust	Decision 2 or 3	56	0.051
	Decision 1	96	-0.115
D-PReciprocity	Decision 2 or 3	56	-0.158
	Decision 1	96	-0.136
D-NReciprocity	Decision 2 or 3	56	0.103
	Decision 1	96	0.043
D-Inequality	Decision 2 or 3	56	1.201
	Decision 1	95	1.389
D-Time	Decision 2 or 3	56	-0.067
	Decision 1	96	0.194

Table 2.363 t-test of daughters' preference scores with respect to their fathers' maximising or not decision.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
D-Altruism	-0.434	150	0.665
D-Trust	0.998	150	0.320
D-PReciprocity	-0.183	150	0.855
D-NReciprocity	0.515	150	0.607
D-Inequality	-1.138	149	0.257
D-Time	-2.068	150	0.040*

In the comparison of Decision 2 supporters fathers' daughters with Decision 3 supporter fathers', latter have higher scores in altruism, trust, positive reciprocity and inequality aversion (Table 2.364).

Table 2.364 Descriptive statistics of daughters' preference scores with respect to their fathers' choice between Decision 2 and Decision 3.

Group Statistics			
Father's GF		N	Mean
D-Altruism	Decision 2	14	-0.212
	Decision 3	42	0.082
D-Trust	Decision 2	14	-0.289
	Decision 3	42	0.164
D-PReciprocity	Decision 2	14	-0.199
	Decision 3	42	-0.145
D-NReciprocity	Decision 2	14	0.385
	Decision 3	42	0.009
D-Inequality	Decision 2	14	1.125
	Decision 3	42	1.226
D-Time	Decision 2	14	-0.010
	Decision 3	42	-0.086

The differences are insignificant except for the weak significance of negative reciprocity scores' difference (Table 2.365).

Table 2.365 t-test of daughters' preference scores with respect to their fathers' choice between Decision 2 and Decision 3.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
D-Altruism	-1.653	54	0.104
D-Trust	-1.527	54	0.133
D-PReciprocity	-0.265	54	0.792
D-NReciprocity	1.722	54	0.091'
D-Inequality	-0.341	54	0.734
D-Time	0.341	54	0.735

2.3.3.1.8 Son-Mother

In mother-son link analysis (Table 2.366) we observe that Decision 2 supporter mothers' sons have the highest altruism, positive reciprocity, negative reciprocity and inequality aversion scores with the lowest trust and patience.

Table 2.366 Descriptive statistics of sons' preference scores with respect to their mothers' decision.

Descriptives			
Mother's GF		N	Mean
S-Altruism	Decision 1	78	-0.196
	Decision 2	10	0.165
	Decision 3	37	-0.423
S-Trust	Decision 1	78	-0.298
	Decision 2	10	-0.551
	Decision 3	37	-0.321
S-PReciprocity	Decision 1	78	-0.233
	Decision 2	10	-0.065
	Decision 3	37	-0.343
S-NReciprocity	Decision 1	78	0.258
	Decision 2	10	0.515
	Decision 3	37	0.190
S-Inequality	Decision 1	78	1.237
	Decision 2	10	1.625
	Decision 3	36	0.965
S-Time	Decision 1	78	-0.080
	Decision 2	10	-0.121
	Decision 3	37	0.058

The distributions, except for the weak significance of altruism, appear to be insignificant (Table 2.367).

Table 2.367 ANOVA test of sons' preference scores with respect to their mothers' decision.

ANOVA		
	F	Sig.
S-Altruism	2.826	0.063 [*]
S-Trust	0.302	0.740
S-PReciprocity	0.519	0.596
S-NReciprocity	1.220	0.299
S-Inequality	1.768	0.175
S-Time	0.414	0.662

Son's preferences scores according to their mothers' maximising decisions show that maximising mothers' sons have lower scores in prosocial behaviours as altruism, trust, positive reciprocity and inequality aversion (Table 2.368).

Table 2.368 Descriptive statistics of sons' preference scores with respect to their mothers' maximising or not decision.

Group Statistics			
Mother's GF		N	Mean
S-Altruism	Decision 2 or 3	47	-0.298
	Decision 1	78	-0.196
S-Trust	Decision 2 or 3	47	-0.370
	Decision 1	78	-0.298
S-PReciprocity	Decision 2 or 3	47	-0.284
	Decision 1	78	-0.233
S-NReciprocity	Decision 2 or 3	47	0.259
	Decision 1	78	0.258
S-Inequality	Decision 2 or 3	46	1.109
	Decision 1	78	1.237
S-Time	Decision 2 or 3	47	0.020
	Decision 1	78	-0.080

Nonetheless, the differences are not statistically significant for any of the preferences (Table 2.369).

Table 2.369 t-test of sons' preference scores with respect to their mothers' maximising or not decision.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
S-Altruism	-0.741	123	0.460
S-Trust	-0.426	113.366	0.671
S-PReciprocity	-0.340	123	0.735
S-NReciprocity	0.007	123	0.995
S-Inequality	-0.654	122	0.514
S-Time	0.668	123	0.506

Decision 2 and Decision 3 supporter mothers' sons have dispersed preference scores as presented in Table 2.370.

Table 2.370 Descriptive statistics of sons' preference scores with respect to their mothers' choice between Decision 2 and Decision 3.

Group Statistics			
Mother's GF		N	Mean
S-Altruism	Decision 2	10	0.165
	Decision 3	37	-0.423
S-Trust	Decision 2	10	-0.551
	Decision 3	37	-0.321
S-PReciprocity	Decision 2	10	-0.065
	Decision 3	37	-0.343
S-NReciprocity	Decision 2	10	0.515
	Decision 3	37	0.190
S-Inequality	Decision 2	10	1.625
	Decision 3	36	0.965
S-Time	Decision 2	10	-0.121
	Decision 3	37	0.058

Statistical test results indicate that Decision 2 supporter mothers' sons are significantly more altruistic and negative reciprocal than sons of Decision 3 supporter mothers (Table 2.371).

Table 2.371 t-test of sons' preference scores with respect to their mothers' choice between Decision 2 and Decision 3.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
S-Altruism	2.397	45	0.021*
S-Trust	-0.770	45	0.445
S-PReciprocity	0.868	45	0.390
S-NReciprocity	2.338	36.145	0.025*
S-Inequality	1.449	11.079	0.175
S-Time	-0.654	45	0.516

2.3.3.1.9 Son-Father

Lastly, male children's preference values are compared according to their fathers' choices in group favouritism question (Table 2.372).

Table 2.372 Descriptive statistics of sons' preference scores with respect to their fathers' decision.

Descriptives			
Father's GF		N	Mean
S-Altruism	Decision 1	85	-0.313
	Decision 2	14	-0.062
	Decision 3	32	-0.156
S-Trust	Decision 1	85	-0.300
	Decision 2	14	-0.410
	Decision 3	32	-0.154
S-PReciprocity	Decision 1	85	-0.060
	Decision 2	14	-0.208
	Decision 3	32	-0.474
S-NReciprocity	Decision 1	85	0.252
	Decision 2	14	0.174
	Decision 3	32	0.327
S-Inequality	Decision 1	85	1.168
	Decision 2	14	1.321
	Decision 3	32	1.109
S-Time	Decision 1	85	0.146
	Decision 2	14	-0.361
	Decision 3	32	-0.147

One-way ANOVA test reveals that male children's positive reciprocity and patience scores differ significantly by their fathers' decision in group favouritism question (Table 2.373).

Table 2.373 ANOVA test of sons' preference scores with respect to their fathers' decision.

ANOVA		
	F	Sig.
S-Altruism	1.138	0.324
S-Trust	0.379	0.686
S-PReciprocity	3.988	0.021*
S-NReciprocity	0.280	0.756
S-Inequality	0.222	0.802
S-Time	3.811	0.025

The preference values of male children according to their fathers' maximising decision is presented in Table 2.374.

Table 2.374 Descriptive statistics of sons' preference scores with respect to their fathers' maximising or not decision.

Group Statistics			
Father's GF		N	Mean
S-Altruism	Decision 2 or 3	46	-0.128
	Decision 1	85	-0.313
S-Trust	Decision 2 or 3	46	-0.232
	Decision 1	85	-0.300
S-PReciprocity	Decision 2 or 3	46	-0.393
	Decision 1	85	-0.060
S-NReciprocity	Decision 2 or 3	46	0.280
	Decision 1	85	0.252
S-Inequality	Decision 2 or 3	46	1.174
	Decision 1	85	1.168
S-Time	Decision 2 or 3	46	-0.212
	Decision 1	85	0.146

According to the comparison, maximiser fathers' sons have significantly lower scores in positive reciprocity and time preferences (Table 2.375).

Table 2.375 t-test of sons' preference scores with respect to their fathers' maximising or not decision.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
S-Altruism	1.455	129	0.148
S-Trust	0.366	129	0.715
S-PReciprocity	-2.566	129	0.011*
S-NReciprocity	0.212	72.261	0.833
S-Inequality	0.034	129	0.973
S-Time	-2.792	110.745	0.006**

In the comparison of Decision 2 and Decision 3 supporter fathers' sons, we faced with closer average values with smaller sample sizes (Table 2.376).

Table 2.376 Descriptive statistics of sons' preference scores with respect to their fathers' choice between Decision 2 and Decision 3.

Group Statistics			
Father's GF		N	Mean
S-Altruism	Decision 2	14	-0.062
	Decision 3	32	-0.156
S-Trust	Decision 2	14	-0.410
	Decision 3	32	-0.154
S-PReciprocity	Decision 2	14	-0.208
	Decision 3	32	-0.474
S-NReciprocity	Decision 2	14	0.174
	Decision 3	32	0.327
S-Inequality	Decision 2	14	1.321
	Decision 3	32	1.109
S-Time	Decision 2	14	-0.361
	Decision 3	32	-0.147

Therefore, there is not any evidence of difference among maximiser fathers' sons' preferences (Table 2.377).

Table 2.377 t-test of sons' preference scores with respect to their fathers' choice between Decision 2 and Decision 3.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
S-Altruism	0.399	44	0.691
S-Trust	-0.834	44	0.409
S-PReciprocity	1.341	44	0.187
S-NReciprocity	-0.595	44	0.555
S-Inequality	0.694	44	0.492
S-Time	-1.044	44	0.302

2.3.3.2 2016 specific preferences (Risk preference)

In this part, the effect of parents' group favouritism behaviour on their children's risk attitude is tried to be observed. For this purpose, children are grouped according to their parents' choice in group favouritism question of 2016 survey and tested for differences. The analysis is presented in three parts comparison with parents' choices, with only mothers' choices and with only fathers' choices. Also, in each part, the values for all children, for only daughters and only sons are calculated to check for gender-specific effects. Moreover, each part consists of overall analysis, comparison of maximisers and non-maximisers and maximisers among themselves, namely comparison of Decision 2 and 3 supporters' children.

2.3.3.2.1 Child-Parent

Table 2.378 Descriptive statistics of children's risk preference scores with respect to their parents' decision.

Descriptives			
Parent's GF		N	Mean
C-Risk	Decision 1	230	-0.124
	Decision 2	33	-0.071
	Decision 3	93	-0.134
D-Risk	Decision 1	145	-0.002
	Decision 2	21	-0.108
	Decision 3	55	0.092
S-Risk	Decision 1	83	-0.325
	Decision 2	12	-0.005
	Decision 3	37	-0.442

First, children's risk scores with respect to their parents' group favouritism choices are compared (Table 2.238, Table 2.378).

Table 2.379 ANOVA test of children's risk preference scores with respect to their parents' decision.

ANOVA		
Parent's GF	F	Sig.
C-Risk	0.126	0.882
D-Risk	1.032	0.358
S-Risk	2.001	0.139

One-way ANOVA test reveals that there is not any significant difference among average risk scores of the children by their parents' choices (Table 2.379). Even for the sub-groups, there is no significant difference as well.

Table 2.380 Descriptive statistics of children's risk preference scores with respect to their parents' maximising or not decision.

Group Statistics			
Parent's GF		N	Mean
C-Risk	Decision 2 or 3	126	-0.117
	Decision 1	230	-0.124
D-Risk	Decision 2 or 3	76	0.037
	Decision 1	145	-0.002
S-Risk	Decision 2 or 3	49	-0.335
	Decision 1	83	-0.325

In the comparison of maximiser and non-maximiser parents' children, we face with very close average scores (Table 2.380). Hence, the differences are not significant (Table 2.381).

Table 2.381 t-test of children's risk preference scores with respect to their parents' maximising or not decision.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
C-Risk	0.098	354	0.922
D-Risk	0.476	219	0.635
S-Risk	-0.087	130	0.931

Table 2.382 Descriptive statistics of children's risk preference scores with respect to their parents' choice between Decision 2 and Decision 3.

Group Statistics			
Parent's GF		N	Mean
C-Risk	Decision 2	33	-0.071
	Decision 3	93	-0.134
D-Risk	Decision 2	21	-0.108
	Decision 3	55	0.092
S-Risk	Decision 2	12	-0.005
	Decision 3	37	-0.442

Decision 2 and Decision 3 supporter parents' children comparison indicates differences in opposite directions for daughters and sons which resets each other in total children comparison (Table 2.382).

Table 2.383 t-test of children's risk preference scores with respect to their parents' choice between Decision 2 and Decision 3.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
C-Risk	0.499	124	0.619
D-Risk	-1.447	74	0.152
S-Risk	2.050	47	0.046*

However, only the difference of male children's risk scores is statistically significant (Table 2.383), Decision 2 supporter parents' sons have significantly higher risk scores than Decision 3 supporter parents' sons.

2.3.3.2.2 Child-Mother

Table 2.384 Descriptive statistics of children's risk preference scores with respect to their mothers' decision.

Descriptives			
Mother's GF		N	Mean
C-Risk	Decision 1	119	-0.076
	Decision 2	15	-0.018
	Decision 3	53	-0.158
D-Risk	Decision 1	82	0.028
	Decision 2	12	-0.058
	Decision 3	32	0.056
S-Risk	Decision 1	36	-0.298
	Decision 2	3	0.145
	Decision 3	21	-0.483

Categorising children by their mothers' group favouritism choices reveals close average values except for the sons who have a small number of observations for Decision 2 supporter mothers (Table 2.384).

Table 2.385 ANOVA test of children's risk preference scores with respect to their mothers' decision.

ANOVA		
Mother's GF	F	Sig.
C-Risk	0.398	0.672
D-Risk	0.162	0.850
S-Risk	1.182	0.314

Therefore, one-way ANOVA test shows that the distributions are not significant (Table 2.385).

Table 2.386 Descriptive statistics of children's risk preference scores with respect to their mothers' maximising or not decision.

Group Statistics			
Mother's GF		N	Mean
C-Risk	Decision 2 or 3	68	-0.127
	Decision 1	119	-0.076
D-Risk	Decision 2 or 3	44	0.025
	Decision 1	82	0.028
S-Risk	Decision 2 or 3	24	-0.404
	Decision 1	36	-0.298

In grouping by maximising or not decision of mothers, the children's average risk scores do not differ much as can be seen in Table 2.386.

Table 2.387 t-test of children's risk preference scores with respect to their mothers' maximising or not decision.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
C-Risk	-0.512	185	0.609
D-Risk	-0.032	124	0.975
S-Risk	-0.562	58	0.576

Consequently, t-test for equality of means results in insignificant differences between children of maximiser and non-maximiser mothers' children regardless of their gender (Table 2.387).

Table 2.388 Descriptive statistics of children's risk preference scores with respect to their mothers' choice between Decision 2 and Decision 3.

Group Statistics			
Mother's GF		N	Mean
C-Risk	Decision 2	15	-0.018
	Decision 3	53	-0.158
D-Risk	Decision 2	12	-0.058
	Decision 3	32	0.056
S-Risk	Decision 2	3	0.145
	Decision 3	21	-0.483

Comparing maximiser mothers' children among themselves with respect to their mothers' choice between Decision 2 and Decision 3 shows close average scores for daughters and children in total (Table 2.388).

Table 2.389 t-test of children's risk preference scores with respect to their mothers' choice between Decision 2 and Decision 3.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
C-Risk	0.762	66	0.449
D-Risk	-0.608	42	0.546
S-Risk	1.557	22	0.134

Although the difference of average risk scores seems high for sons of Decision 2 and Decision 3 supporter mothers, it is not statistically significant (Table 2.389).

2.3.3.2.3 Child-Father

Table 2.390 Descriptive statistics of children's risk preference scores with respect to their fathers' decision.

Descriptives			
Father's GF		N	Mean
C-Risk	Decision 1	109	-0.173
	Decision 2	17	-0.134
	Decision 3	40	-0.102
D-Risk	Decision 1	62	-0.055
	Decision 2	8	-0.222
	Decision 3	23	0.142
S-Risk	Decision 1	46	-0.322
	Decision 2	9	-0.055
	Decision 3	16	-0.389

Lastly, children are grouped by their fathers' group favouritism choices, and the groups' average risk preference scores are compared (Table 2.390).

Table 2.391 ANOVA test of children's risk preference scores with respect to their fathers' decision.

ANOVA		
Father's GF	F	Sig.
C-Risk	0.213	0.808
D-Risk	1.642	0.199
S-Risk	0.913	0.406

One-way ANOVA test results show that groups are not significantly different neither for daughters or sons nor for all children (Table 2.391).

Table 2.392 Descriptive statistics of children's risk preference scores with respect to their fathers' maximising or not decision.

Group Statistics			
Father's GF		N	Mean
C-Risk	Decision 2 or 3	57	-0.111
	Decision 1	109	-0.173
D-Risk	Decision 2 or 3	31	0.048
	Decision 1	62	-0.055
S-Risk	Decision 2 or 3	25	-0.269
	Decision 1	46	-0.322

The maximizing decision of father classification reveals very close average risk scores for children regardless of their gender (Table 2.392). Hence, the differences are insignificant as expected (Table 2.393).

Table 2.393 t-test of children's risk preference scores with respect to their fathers' maximising or not decision.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
C-Risk	0.628	164	0.531
D-Risk	0.841	91	0.403
S-Risk	0.345	69	0.731

Table 2.394 Descriptive statistics of children's risk preference scores with respect to their fathers' choice between Decision 2 and Decision 3.

Group Statistics			
Father's GF		N	Mean
C-Risk	Decision 2	17	-0.134
	Decision 3	40	-0.102
D-Risk	Decision 2	8	-0.222
	Decision 3	23	0.142
S-Risk	Decision 2	9	-0.055
	Decision 3	16	-0.389

The comparison of maximiser fathers' children according to their fathers' choice between Decision 2 and Decision 3 brings more disperse risk score average distributions (Table 2.394).

Table 2.395 t-test of children's risk preference scores with respect to their fathers' choice between Decision 2 and Decision 3.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
C-Risk	-0.175	55	0.862
D-Risk	-1.667	29	0.106
S-Risk	1.227	23	0.232

However, since the sample sizes are reduced, none of the differences between average risk scores are significant (Table 2.395).

2.3.3.3 2017 specific preferences (Homo economicus module)

In this part, the effect of parents' group favouritism behaviour on their children's homo economicus attribute scores is tried to be understood. For this purpose, children are categorized according to their parents' choice in group favouritism question, and the homo economicus attribute scores with profit orientation and labourer orientation scores of the categories are compared. Moreover, the lower steps of the decision and all sub-sets of parent-child links are considered.

2.3.3.3.1 Child-Parent

In Table 2.396, the descriptive statistics of children's homo economicus scores are given with respect to their parents' group favouritism decision.

Table 2.396 Descriptive statistics of children's homo economicus attribute scores with respect to their parents' decision.

Descriptives			
Parent's GF		N	Mean
C-ProfitOrientation	Decision 1	147	0.224
	Decision 2	22	0.693
	Decision 3	52	0.441
C-LabourerOrientation	Decision 1	147	0.023
	Decision 2	22	0.324
	Decision 3	52	-0.026
C-Homo economicus	Decision 1	147	0.201
	Decision 2	22	0.369
	Decision 3	52	0.467
D-ProfitOrientation	Decision 1	77	-0.025
	Decision 2	13	0.416
	Decision 3	25	0.205
D-LabourerOrientation	Decision 1	77	0.034
	Decision 2	13	0.423
	Decision 3	25	0.188
D-Homo economicus	Decision 1	77	-0.059
	Decision 2	13	-0.008
	Decision 3	25	0.017
S-ProfitOrientation	Decision 1	70	0.498
	Decision 2	9	1.092
	Decision 3	27	0.659
S-LabourerOrientation	Decision 1	70	0.012
	Decision 2	9	0.180
	Decision 3	27	-0.225
S-Homo economicus	Decision 1	70	0.487
	Decision 2	9	0.912
	Decision 3	27	0.888

Table 2.397 ANOVA test of children's homo economicus attribute scores with respect to their parents' decision.

ANOVA		
Parent	F	Sig.
C-ProfitOrientation	2.773	0.065 [*]
C-LabourerOrientation	1.195	0.305
C-Homo economicus	0.782	0.459
D-ProfitOrientation	1.683	0.190
D-LabourerOrientation	1.364	0.260
D-Homo economicus	0.036	0.965
S-ProfitOrientation	1.575	0.212
S-LabourerOrientation	0.745	0.477
S-Homo economicus	1.047	0.355

One-way ANOVA test yields that profit orientation scores of children vary with respect to their parents' group favouritism decision with low significance (Table 2.397). Except this, there is no evidence of relation in neither labourer orientation nor homo economicus attribution scores. Also, even the difference of profit orientation scores vanishes when parent-daughter and parent-son links are analysed separately.

Table 2.398 Descriptive statistics of children's homo economicus attribute scores with respect to their parents' maximising or not decision.

Group Statistics			
Parent		N	Mean
C-ProfitOrientation	Decision 2 or 3	74	0.515
	Decision 1	147	0.224
C-LabourerOrientation	Decision 2 or 3	74	0.078
	Decision 1	147	0.023
C-Homo economicus	Decision 2 or 3	74	0.438
	Decision 1	147	0.201
D-ProfitOrientation	Decision 2 or 3	38	0.277
	Decision 1	77	-0.025
D-LabourerOrientation	Decision 2 or 3	38	0.269
	Decision 1	77	0.034
D-Homo economicus	Decision 2 or 3	38	0.008
	Decision 1	77	-0.059
S-ProfitOrientation	Decision 2 or 3	36	0.767
	Decision 1	70	0.498
S-LabourerOrientation	Decision 2 or 3	36	-0.124
	Decision 1	70	0.012
S-Homo economicus	Decision 2 or 3	36	0.891
	Decision 1	70	0.487

Grouping children with respect to their parents' maximising decision show that maximiser parents' children have higher profit orientation and homo economicus attribute scores (Table 2.398). Interestingly, except for parent-son link, the same relation is observable for labourer orientation scores.

Table 2.399 t-test of children's homo economicus attribute scores with respect to their parents' maximising or not decision.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
C-ProfitOrientation	2.262	174.323	0.025*
C-LabourerOrientation	0.411	219	0.682
C-Homo economicus	1.221	219	0.224
D-ProfitOrientation	1.705	113	0.091'
D-LabourerOrientation	1.430	113	0.155
D-Homo economicus	0.264	113	0.792
S-ProfitOrientation	1.344	104	0.182
S-LabourerOrientation	-0.649	104	0.518
S-Homo economicus	1.453	104	0.149

The results of t-test for equality of means show that maximiser parents children are significantly more profit-oriented than non-maximiser parents' children (Table 2.399). This relation is valid for daughters with lower significance level, where it is not significant for son-parents link.

Table 2.400 Descriptive statistics of children's homo economicus attribute scores with respect to their parents' choice between Decision 2 and Decision 3.

Group Statistics			
Parent		N	Mean
C-ProfitOrientation	Decision 2	22	0.693
	Decision 3	52	0.441
C-LabourerOrientation	Decision 2	22	0.324
	Decision 3	52	-0.026
C-Homo economicus	Decision 2	22	0.369
	Decision 3	52	0.467
D-ProfitOrientation	Decision 2	13	0.416
	Decision 3	25	0.205
D-LabourerOrientation	Decision 2	13	0.423
	Decision 3	25	0.188
D-Homo economicus	Decision 2	13	-0.008
	Decision 3	25	0.017
S-ProfitOrientation	Decision 2	9	1.092
	Decision 3	27	0.659
S-LabourerOrientation	Decision 2	9	0.180
	Decision 3	27	-0.225
S-Homo economicus	Decision 2	9	0.912
	Decision 3	27	0.884

Decision 2 and Decision 3 supporters parents' children comparison show that Decision 2 supporter parents children have higher profit orientation and labourer orientation scores than Decision 3 supporter parents' children (Table 2.400).

Table 2.401 t-test of children's homo economicus attribute scores with respect to their parents' choice between Decision 2 and Decision 3.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
C-ProfitOrientation	1.185	72	0.240
C-LabourerOrientation	1.467	72	0.147
C-Homo economicus	-0.301	72	0.765
D-ProfitOrientation	0.770	36	0.446
D-LabourerOrientation	0.889	36	0.380
D-Homo economicus	-0.061	36	0.952
S-ProfitOrientation	1.396	34	0.172
S-LabourerOrientation	0.978	34	0.335
S-Homo economicus	0.058	34	0.954

However, the relations are not statistically significant for any of the links examined (Table 2.401).

2.3.3.3.2 Child-Mother

In Table 2.402, children's homo economicus attribute score statistics are given with respect to their mothers' choices in group favouritism question. Decision 1 supporter mothers' children have the lowest labourer orientation scores where Decision 2 supporter mothers' children have the highest profit orientation scores.

Table 2.402 Descriptive statistics of children's homo economicus attribute scores with respect to their mothers' decision.

Descriptives			
Mother's GF		N	Mean
C-ProfitOrientation	Decision 1	86	0.171
	Decision 2	13	0.804
	Decision 3	25	0.431
C-LabourerOrientation	Decision 1	86	-0.109
	Decision 2	13	0.182
	Decision 3	25	0.086
C-Homo economicus	Decision 1	86	0.280
	Decision 2	13	0.621
	Decision 3	25	0.345
D-ProfitOrientation	Decision 1	50	-0.015
	Decision 2	7	0.671
	Decision 3	12	0.054
D-LabourerOrientation	Decision 1	50	-0.095
	Decision 2	7	0.218
	Decision 3	12	0.293
D-Homo economicus	Decision 1	50	0.080
	Decision 2	7	0.453
	Decision 3	12	-0.239
S-ProfitOrientation	Decision 1	36	0.429
	Decision 2	6	0.958
	Decision 3	13	0.779
S-LabourerOrientation	Decision 1	36	-0.129
	Decision 2	6	0.141
	Decision 3	13	-0.105
S-Homo economicus	Decision 1	36	0.558
	Decision 2	6	0.818
	Decision 3	13	0.884

Table 2.403 ANOVA test of children's homo economicus attribute scores with respect to their mothers' decision.

ANOVA		
Mother	F	Sig.
C-ProfitOrientation	2.732	0.069'
C-LabourerOrientation	0.788	0.457
C-Homo economicus	0.336	0.716
D-ProfitOrientation	1.635	0.203
D-LabourerOrientation	1.190	0.311
D-Homo economicus	0.572	0.567
S-ProfitOrientation	1.188	0.313
S-LabourerOrientation	0.163	0.850
S-Homo economicus	0.307	0.737

According to one-way ANOVA results, only profit orientation scores of children can be related to their mothers' choices in group favouritism question with low significance (Table 2.403). Additionally, in subsets of mother-child links, the significance vanishes.

Table 2.404 Descriptive statistics of children's homo economicus attribute scores with respect to their mothers' maximising or not decision.

Group Statistics			
Mother		N	Mean
C-ProfitOrientation	Decision 2 or 3	38	0.558
	Decision 1	86	0.171
C-LabourerOrientation	Decision 2 or 3	38	0.119
	Decision 1	86	-0.109
C-Homo economicus	Decision 2 or 3	38	0.439
	Decision 1	86	0.280
D-ProfitOrientation	Decision 2 or 3	19	0.281
	Decision 1	50	-0.015
D-LabourerOrientation	Decision 2 or 3	19	0.265
	Decision 1	50	-0.095
D-Homo economicus	Decision 2 or 3	19	0.016
	Decision 1	50	0.080
S-ProfitOrientation	Decision 2 or 3	19	0.836
	Decision 1	36	0.429
S-LabourerOrientation	Decision 2 or 3	19	-0.027
	Decision 1	36	-0.129
S-Homo economicus	Decision 2 or 3	19	0.863
	Decision 1	36	0.558

Classifying children by their mothers' maximising decision shows that maximiser mothers' children have higher profit orientation and labourer orientation scores on average (Table 2.404).

Table 2.405 t-test of children's homo economicus attribute scores with respect to their mothers' maximising or not decision.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
C-ProfitOrientation	2.047	122	0.043*
C-LabourerOrientation	1.225	122	0.223
C-Homo economicus	0.583	122	0.561
D-ProfitOrientation	1.160	67	0.250
D-LabourerOrientation	1.543	67	0.128
D-Homo economicus	-0.173	67	0.863
S-ProfitOrientation	1.506	53	0.138
S-LabourerOrientation	0.336	53	0.738
S-Homo economicus	0.785	53	0.436

The corresponding statistical tests indicate that only profit orientation score difference in mother-child matchings is statistically significant (Table 2.405). The significance is lost in subsets.

Table 2.406 Descriptive statistics of children's homo economicus attribute scores with respect to their mothers' choice between Decision 2 and Decision 3.

Group Statistics			
Mother		N	Mean
C-ProfitOrientation	Decision 2	13	0.804
	Decision 3	25	0.431
C-LabourerOrientation	Decision 2	13	0.182
	Decision 3	25	0.086
C-Homo economicus	Decision 2	13	0.621
	Decision 3	25	0.345
D-ProfitOrientation	Decision 2	7	0.671
	Decision 3	12	0.054
D-LabourerOrientation	Decision 2	7	0.218
	Decision 3	12	0.293
D-Homo economicus	Decision 2	7	0.453
	Decision 3	12	-0.239
S-ProfitOrientation	Decision 2	6	0.958
	Decision 3	13	0.779
S-LabourerOrientation	Decision 2	6	0.141
	Decision 3	13	-0.105
S-Homo economicus	Decision 2	6	0.818
	Decision 3	13	0.884

In the comparison of Decision 2 and Decision 3 supporter mothers' children, we observe that Decision 2 supporter mothers' children including the gender subsets have higher profit orientation scores on average (Table 2.406).

Table 2.407 t-test of children's homo economicus attribute scores with respect to their mothers' choice between Decision 2 and Decision 3.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
C-ProfitOrientation	1.300	36	0.202
C-LabourerOrientation	0.293	36	0.771
C-Homo economicus	0.654	36	0.517
D-ProfitOrientation	1.609	17	0.126
D-LabourerOrientation	-0.208	17	0.838
D-Homo economicus	1.221	17	0.239
S-ProfitOrientation	0.458	17	0.653
S-LabourerOrientation	0.434	17	0.670
S-Homo economicus	-0.116	17	0.909

However, the differences are not statistically significant (Table 2.407), there is no evidence of the relation between children's homo economicus attribute and their maximiser mothers' choice between Decision 2 and Decision 3.

2.3.3.3.3 Child-Father

In the last part of the analysis, children's' homo economicus attribute scores are compared according to their fathers' group favouritism choices (Table 2.408).

Interestingly, Decision 2 supporter fathers' children have the highest labourer orientation scores as well.

Table 2.408 Descriptive statistics of children's homo economicus attribute scores with respect to their fathers' decision.

Descriptives			
Father's GF		N	Mean
C-ProfitOrientation	Decision 1	61	0.299
	Decision 2	9	0.532
	Decision 3	27	0.450
C-LabourerOrientation	Decision 1	61	0.211
	Decision 2	9	0.529
	Decision 3	27	-0.130
C-Homo economicus	Decision 1	61	0.088
	Decision 2	9	0.003
	Decision 3	27	0.580
D-ProfitOrientation	Decision 1	27	-0.045
	Decision 2	6	0.118
	Decision 3	13	0.345
D-LabourerOrientation	Decision 1	27	0.273
	Decision 2	6	0.664
	Decision 3	13	0.092
D-Homo economicus	Decision 1	27	-0.319
	Decision 2	6	-0.545
	Decision 3	13	0.253
S-ProfitOrientation	Decision 1	34	0.572
	Decision 2	3	1.360
	Decision 3	14	0.547
S-LabourerOrientation	Decision 1	34	0.161
	Decision 2	3	0.259
	Decision 3	14	-0.337
S-Homo economicus	Decision 1	34	0.411
	Decision 2	3	1.101
	Decision 3	14	0.884

Table 2.409 ANOVA test of children's homo economicus attribute scores with respect to their fathers' decision.

ANOVA		
Father	F	Sig.
C-ProfitOrientation	0.380	0.685
C-LabourerOrientation	2.445	0.092'
C-Homo economicus	1.423	0.246
D-ProfitOrientation	0.952	0.394
D-LabourerOrientation	1.233	0.301
D-Homo economicus	1.414	0.254
S-ProfitOrientation	0.883	0.420
S-LabourerOrientation	1.407	0.255
S-Homo economicus	0.808	0.452

One-way ANOVA test yields that only labourer orientation scores of children can be related to their fathers' group favouritism decision with low significance (Table 2.409). However, the significance disappears in lower subsets.

Table 2.410 Descriptive statistics of children's homo economicus attribute scores with respect to their fathers' maximising or not decision.

Group Statistics			
Father		N	Mean
C-ProfitOrientation	Decision 2 or 3	36	0.470
	Decision 1	61	0.299
C-LabourerOrientation	Decision 2 or 3	36	0.034
	Decision 1	61	0.211
C-Homo economicus	Decision 2 or 3	36	0.436
	Decision 1	61	0.088
D-ProfitOrientation	Decision 2 or 3	19	0.273
	Decision 1	27	-0.045
D-LabourerOrientation	Decision 2 or 3	19	0.272
	Decision 1	27	0.273
D-Homo economicus	Decision 2 or 3	19	0.001
	Decision 1	27	-0.319
S-ProfitOrientation	Decision 2 or 3	17	0.691
	Decision 1	34	0.572
S-LabourerOrientation	Decision 2 or 3	17	-0.231
	Decision 1	34	0.161
S-Homo economicus	Decision 2 or 3	17	0.922
	Decision 1	34	0.411

When we compare children's homo economicus scores according to their fathers' maximising decisions, we observe that maximiser fathers' children, regardless of their gender, have higher profit orientation and homo economicus attribute scores and lower labourer orientation scores (Table 2.410).

Table 2.411 t-test of children's homo economicus attribute scores with respect to their fathers' maximising or not decision.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
C-ProfitOrientation	0.848	95	0.399
C-LabourerOrientation	-0.958	95	0.340
C-Homo economicus	1.249	95	0.215
D-ProfitOrientation	1.277	44	0.208
D-LabourerOrientation	-0.004	44	0.996
D-Homo economicus	0.916	44	0.365
S-ProfitOrientation	0.395	49	0.695
S-LabourerOrientation	-1.370	49	0.177
S-Homo economicus	1.259	49	0.214

However, the relations are not statistically significant neither for all children nor any subset (Table 2.411).

Table 2.412 Descriptive statistics of children's homo economicus attribute scores with respect to their fathers' choice between Decision 2 and Decision 3.

Group Statistics			
Father		N	Mean
C-ProfitOrientation	Decision 2	9	0.532
	Decision 3	27	0.450
C-LabourerOrientation	Decision 2	9	0.529
	Decision 3	27	-0.130
C-Homo economicus	Decision 2	9	0.003
	Decision 3	27	0.580
D-ProfitOrientation	Decision 2	6	0.118
	Decision 3	13	0.345
D-LabourerOrientation	Decision 2	6	0.664
	Decision 3	13	0.092
D-Homo economicus	Decision 2	6	-0.545
	Decision 3	13	0.253
S-ProfitOrientation	Decision 2	3	1.360
	Decision 3	14	0.547
S-LabourerOrientation	Decision 2	3	0.259
	Decision 3	14	-0.337
S-Homo economicus	Decision 2	3	1.101
	Decision 3	14	0.884

The comparison among maximising fathers' children according to their fathers' choices between Decision 2 and Decision 3 shows that Decision 2 supporter fathers' children have higher labourer orientation scores than Decision 3 supporter fathers' children in average regardless of their gender (Table 2.412). Yet the difference is statistically significant for only father-child link (Table 2.413).

Table 2.413 t-test of children's homo economicus attribute scores with respect to their fathers' choice between Decision 2 and Decision 3.

Independent Samples Test			
	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
C-ProfitOrientation	0.252	34	0.803
C-LabourerOrientation	2.288	21.493	0.032*
C-Homo economicus	-1.116	34	0.272
D-ProfitOrientation	-0.584	17	0.567
D-LabourerOrientation	1.450	17	0.165
D-Homo economicus	-1.452	17	0.165
S-ProfitOrientation	1.510	15	0.152
S-LabourerOrientation	0.889	15	0.388
S-Homo economicus	0.234	15	0.818

2.3.4 Results Summary

The probability values summary of all results extracted from this analysis can be found in Table 2.414.

The main findings of the analysis are listed below;

- Among maximiser mothers, Decision 2 supporter mothers have more altruistic children than Decision 3 supporter mothers. However, the significance of this relation is substantial for only male children.
- There is weak evidence suggesting that non-maximiser mothers' daughters have higher trust scores than maximiser mothers' daughters, and Decision 3 supporter fathers' children have higher trust scores than Decision 2 supporter fathers' children.

		Common						2016	2017		
Link Category	Comparison	Altruism	Trust	P Reciprocity	N Reciprocity	Inequality	Time	Risk	Profit	Labourer	Homo Economicus
Child Parent	All	0.466	0.332	0.054'	0.09'	0.099'	0.029*	0.882	0.065'	0.305	0.459
	Maximiser vs. Non-maximiser	0.899	0.53	0.028*	0.949	0.251	0.007**	0.922	0.025*	0.682	0.224
	Decision 2 vs. Decision 3	0.2	0.163	0.33	0.042*	0.081'	0.529	0.619	0.24	0.147	0.765
Child Mother	All	0.062'	0.191	0.433	0.069'	0.051'	0.604	0.672	0.069'	0.457	0.716
	Maximiser vs. Non-maximiser	0.415	0.069'	0.24	0.665	0.423	0.396	0.609	0.043*	0.223	0.561
	Decision 2 vs. Decision 3	0.019*	0.957	0.614	0.034*	0.037*	0.505	0.449	0.202	0.771	0.517
Child Father	All	0.615	0.11	0.088'	0.614	0.666	0.005**	0.808	0.685	0.092'	0.246
	Maximiser vs. Non-maximiser	0.478	0.262	0.037*	0.634	0.381	0.001**	0.531	0.399	0.34	0.215
	Decision 2 vs. Decision 3	0.489	0.069'	0.456	0.436	0.822	0.614	0.862	0.803	0.032*	0.272
Daughter - Parent	All	0.816	0.42	0.612	0.036*	0.401	0.057'	0.358	0.19	0.26	0.965
	Maximiser vs. Non-maximiser	0.572	0.351	0.327	0.917	0.322	0.013*	0.635	0.091'	0.155	0.792
	Decision 2 vs. Decision 3	0.75	0.356	0.873	0.015*	0.352	0.762	0.152	0.446	0.38	0.952
Son Parent	All	0.132	0.63	0.058'	0.896	0.214	0.222	0.139	0.212	0.477	0.355
	Maximiser vs. Non-maximiser	0.587	0.976	0.054'	0.851	0.695	0.212	0.931	0.182	0.518	0.149
	Decision 2 vs. Decision 3	0.053'	0.29	0.164	0.707	0.132	0.185	0.046*	0.172	0.335	0.954
Daughter - Mother	All	0.725	0.143	0.491	0.114	0.319	0.288	0.85	0.203	0.311	0.567
	Maximiser vs. Non-maximiser	0.767	0.055'	0.236	0.543	0.742	0.093'	0.975	0.25	0.128	0.863
	Decision 2 vs. Decision 3	0.413	0.63	0.887	0.069'	0.143	0.816	0.546	0.126	0.838	0.239
Daughter - Father	All	0.264	0.201	0.954	0.194	0.499	0.117	0.199	0.394	0.301	0.254
	Maximiser vs. Non-maximiser	0.665	0.32	0.855	0.607	0.257	0.04*	0.403	0.208	0.996	0.365
	Decision 2 vs. Decision 3	0.104	0.133	0.792	0.091'	0.734	0.735	0.106	0.567	0.165	0.165
Son Mother	All	0.063'	0.74	0.596	0.299	0.175	0.662	0.314	0.313	0.85	0.737
	Maximiser vs. Non-maximiser	0.46	0.671	0.735	0.995	0.514	0.506	0.576	0.138	0.738	0.436
	Decision 2 vs. Decision 3	0.021*	0.445	0.39	0.025*	0.175	0.516	0.134	0.653	0.67	0.909
Son Father	All	0.324	0.686	0.021*	0.756	0.802	0.025*	0.406	0.42	0.255	0.452
	Maximiser vs. Non-maximiser	0.148	0.715	0.011*	0.833	0.973	0.006**	0.731	0.695	0.177	0.214
	Decision 2 vs. Decision 3	0.691	0.409	0.187	0.555	0.492	0.302	0.232	0.152	0.388	0.818

Table 2.414 The probability values results extracted from the analysis

- Non-maximiser parents, especially fathers, have significantly more positive reciprocal children, especially sons, than maximiser parents.

- Decision 2 supporter parents' children have significantly higher negative reciprocity scores than Decision 3 supporter parents. This relation is substantial for mothers with sons and daughters. However fathers' choice between Decision 2 and Decision 3 is only related to their daughters' negative reciprocity scores.
- Decision 2 supporter mothers' children have significantly higher inequality aversion scores than Decision 3 supporter mother' children. The relation is valid for all parents with weak significance.
- There are very significant results in time preference analysis of children with respect to their parents' group favouritism choices suggesting that group favouritism choices of parents affect children's time preferences. Non-maximiser parents' children have significantly higher time preference scores than maximiser parents' children. This relation is substantial especially for fathers and for daughters.
- Decision 3 supporter parents' male children are more risk-averse than Decision 2 supporter parents' sons.
- Maximiser parents' children have significantly higher profit orientation scores than non-maximiser parents' children. This relation is also observed in mother-child links and, with weak significance, in daughter-parent links.
- Decision 2 supporter fathers' children have significantly higher labourer orientation scores than Decision 3 supporter fathers' children.

2.4 RESULTS COMPARISON

As the main result of experiment work, it must be mentioned that group favouritism behaviour is explicitly observable in all treatments. However, it is important to state that favouritism declines in Treatment 3 and Treatment 5 which indicate that larger changes in parameter values have a diminishing effect on it.

Another point is that maximise or not decision distribution differs significantly from control treatment only in Treatment 2. This outcome is important as it states when the inefficiency rate (cost of transfer) is high enough, people avoid maximising in an environment without groups. However, at the grouped environment the inefficiency rate becomes ineffective.

Additionally, another point worth to mention, the second stage of decisions outcomes, the choice between Decision 2 and Decision 3, differ significantly in all of the treatments.

Moreover, decision change analysis indicates that control treatment participants change their first-period decision more often in the second period when compared to group treatment participants. On the other hand, Decision 3 choosers of group treatments keep their decision unchanged more often than Decision 1 and 2 supporters. Further on this subject, an important finding is that the first period's implemented decision is significantly effective on decision change frequency in the second period. The decision change rate is significantly higher when the first stage implemented decision is a maximiser decision.

The experiment outcomes are not only the results given above, but the questionnaire results are also worth to mention. In demographics analysis, the relation of experience in maximising or not decision is found significant. Furthermore, parents' education level is significantly effective in the choice between Decision 2 and Decision 3. This finding is in line with the study of Kolstad & Wiig (2011) which is saying that in group favouritism detected to be increasing with the education level. Gender of the participants is found weakly significant in explaining

maximiser decision distributions (Decision 2 and 3). Female participants are observed being prone to select Decision 3 than Decision 2 when compared to male participants.

In the logistic regression models that are built for predicting maximizing or not decision and Decision 2 or Decision 3 choice among maximisers and multinomial regression models predicting choice among all decision alternatives, inequality outcomes of the treatments, dummy variable for group and control, and specific to second stages, first period's implemented decision variables are found significant at before questionnaire models. When the questionnaire variables like inequality aversion, trust, profit orientation scores, experience and education level of the father are introduced, the models' explanation power increased.

Lastly, the important finding to be underlined is the explanations of the participants on their reason for the decision they made. In group treatments, Decision 3 choosers generally (with 75% support) advocate themselves with the phrases like "maximising group", "caring group", and "avoid harming group".

2.4.1 Altruism

Decision 1 supporters are significantly more altruistic than Decision 2 and 3 supporters which is substantial for all age categories and matches with the findings in group treatments and total treatment results. After transmission analysis, it is found that; among maximiser mothers, Decision 2 supporter mothers have more altruistic children than Decision 3 supporter mothers. However, this relation is substantial for only male children.

2.4.2 Trust

Decision 1 supporters are significantly more trustful than Decision 2 and 3 supporters, but this relation exists for only younger participants. This finding is in line with the experimental findings which underlines the same results with even higher significance. There is no significant evidence of a difference between Decision 2 and Decision 3 supporters. In transmission analysis, it is observed that maximiser daughters' parents and mothers have higher trust scores but the same could not be observed in the daughter-father relationship. Moreover, there are weak evidence suggesting that non-maximiser mothers' daughters have higher trust scores than maximiser mothers' daughters, and Decision 3 supporter fathers' children have higher trust scores than Decision 2 supporter fathers' children.

2.4.3 Positive Reciprocity

The individual analysis provides us with the information that Decision 1 supporters are significantly more positive reciprocal than Decision 2 and Decision 3 supporters, but no statistical evidence of the difference is observed between Decision 2 and 3 supporters. The experiment results reflect Decision 1 supporters to be more positive reciprocal and additionally in group treatments; among maximisers, Decision 3 supporters have significantly high positive reciprocity scores when compared to Decision 2 supporters. The second result does not exist in control treatments. In transmission analysis, fathers of Decision 2 supporter daughters are found significantly more positive reciprocal than fathers of Decision 3 supporter daughters. Moreover, fathers of maximiser sons have higher positive reciprocity scores than non-maximiser sons' father with low significance. Lastly, it is detected that non-maximiser parents, especially fathers, have significantly more positive reciprocal children, especially sons, than maximiser parents.

2.4.4 Negative Reciprocity

Decision 1 supporters are significantly less negative reciprocal than Decision 2 and 3 supporters, but there is no statistical evidence of a difference between Decision 2 and 3 supporters. This relation is substantial for all age categories and in line with the experiments. In transmission analysis, mothers of Decision 3 supporter children are found having higher negative reciprocity scores than Decision 2 supporter children's mothers with a low significance which can be observed in mother-son relationships strongly but not in mother-daughter relationships. Moreover, Decision 2 supporter parents' children have significantly higher negative reciprocity scores than Decision 3 supporter parents. This finding exists in both mother-son and mother-daughter relationships; however, fathers' choice between Decision 2 and Decision 3 is only related to their daughters' negative reciprocity scores.

2.4.5 Inequality Aversion

Decision 1 supporters have significantly lower inequality aversion scores than Decision 2 and 3 supporters. Moreover, among Decision 2 and 3 supporters, Decision 2 supporters significantly higher inequality aversion scores. Even experiment results support these evidence, the best logistic regression model in estimating the maximiser choices includes the inequality aversion score with significance. Decision 2 supporter mothers' children have significantly higher inequality aversion scores than Decision 3 supporter mother' children. The relation is valid for all parents with weak significance.

2.4.6 Time Preference

There is no statistical evidence of a difference in time scores of the participants with respect to their choices in group favouritism question neither in total nor in any of the age categories. However, there are very significant results in time preference analysis of children with respect to their parents' group favouritism choices suggesting that group favouritism choices of parents affect children's time preferences. Non-maximiser parents' children have significantly higher time preference scores than maximiser parents' children. This relation is substantial especially for fathers and for daughters.

2.4.7 Risk Preference

When checked individually, no statistical evidence of a difference in risk preference scores of the participants with respect to their choices in group favouritism question neither in total nor in any of the age categories is observed. When it is checked in intergenerational links, Decision 3 supporter children's fathers show more risk-averse behaviour than Decision 2 supporter children's fathers which is observed with lower significance for daughters. In addition, Decision 3 supporter parents' male children are more risk-averse than Decision 2 supporter parents' sons.

2.4.8 Profit Orientation

Decision 1 supporters are less profit-oriented than Decision 2 and Decision 3 supporters. However, this relation is substantial for younger participants only. The experiment is conducted on university students, and the results are in line with the argument with low significance in control treatments and high significance in group treatments. There is no statistical evidence of a difference between Decision 2 and

Decision 3 supporters. In the transmission side, children of maximiser parents are detected having significantly higher profit orientation scores than children of non-maximiser parents. This relation is also observed in mother-child links and, with weak significance, in daughter-parent links.

2.4.9 Labourer Orientation

There is no statistical evidence of a difference in labour orientation scores between maximiser and non-maximiser participants which matches the experimental findings. However, especially in younger participants, Decision 2 supporters are less labourer oriented than Decision 3 supporters. In addition, transmission analysis shows that Decision 2 supporter fathers' children have significantly higher labourer orientation scores than Decision 3 supporter fathers' children. Also, the other relevant relation is that maximiser daughters' fathers have higher labourer orientation scores than non-maximiser daughters' fathers with low significance.

2.4.10 Homo Economicus Attribute

Non-maximiser participants have significantly lower homo economicus attribute scores than maximiser participants. However, this relation is statistically significant for younger participants only. Although the experimental results support this argument in total and in group treatments, there is weaker evidence for control treatments. Moreover, among younger Decision 2 and Decision 3 supporters, Decision 2 supporters have significantly higher homo economicus attribute scores.

CONCLUSION

Şevket Pamuk (2014) underlines the harm of favouritism in Turkish economic history by mentioning the cycle of the political parties favouring the corporations which share their political views. By cycles he means that, as soon as a political party comes to power, they provide incentives to the corporations and organizations that are close to their ideology. He underlines that government incentives played a major role in the development of countries in the 20th century. However, in Turkey, it became a norm for a political party to create its own rich community during its ruling period. This leads the corporations to spend their resources more on staying close to ruling group instead of investing them more productively, like in research and development. He concludes that growth attained by these corporations will be limited.

Similarly, Acemoğlu and Robinson (2012) state that fair competition and meritorious constitutional structure are essential for construction of sustainable inclusive constitutions. However, group favouritism behaviour may have destructive side effects on internal merit ratings of citizens in recruitment processes and causes exclusive institutions arise as can be observed in our current environment.

This study points out socially harmful group favouritism and aims to understand the behaviour via a set of experiments and surveys. The experiments are based on the parametric experimental design of Çağlayan and Giritligil (2016) by which the existence of the socially harmful group favouritism behaviour could be clearly demonstrated, and the surveys consists of a set of experimentally validated preference measuring questions, some other well-known survey questions from economics literature and an illustration of the experiment's baseline treatment.

The experiments, primarily, search for robustness of the behaviour against alternative social outcomes. In the other saying, the conditions that induce the behaviour or, conversely, the conditions that suppress the behaviour are tried to be

identified via various treatments. In each treatment, participants are asked to choose between three alternative endowment distributions; one does not maximise decision maker's payoff yet maximise social efficiency, and other two yields equal payoffs for the decision maker, however, one of them brings harm to society more to favour decision maker's group. Moreover, for each treatment, group-free sessions along the same decision options and same parameter values, namely control sessions, are conducted. Statistically significant difference between decision distributions of group and control treatments is accepted as substantial evidence showing group favouritism existence.

Although group effect was weakened in some treatments, none of them succeeded in overcoming group favouritism behaviour. Even under most detrimental conditions, the groups were still favoured against social welfare. In total, experiment results suggest that participants react to the social outcome, especially to inequality, however, the existence of the group, even in minimal group design, is a strong motivator to overcome social efficiency concerns. Moreover, decision changes analysis indicates that significantly least changed decision is the group favouring option.

To explain the reasoning behind this behaviour, social identity theory and bounded generalised reciprocity approaches are suggested by many studies. In their meta-analysis, Balliet et al. (Balliet, Wu, & De Deru, 2014) examine existing experimental literature on group favouritism in cooperation context for comparison of these approaches and state that both approaches have some support in their analysis. Needless to say, having no strategic component, our study stands out with its unique design which does not carry any reputation concerns or any kind of (direct or indirect) reciprocity expectations. Despite the fact a random dictator's choice on reallocation is implemented, the design diverse from dictator game by the absence of payoff interdependence.

Although mixed evidence appears to be on minimal group usage, even claim that minimal groups can cause higher group -bias than naturally formed groups (Lane, 2016), observing consistent group favouritism behaviour in lack of any group

identity building exercise still stands as a compelling outcome. Considering the strength of the behaviour with sole labelling, we can easily claim that convincing people to favour social efficiency against their groups in the real world, in naturally formed groups, would bring a stiff challenge.

On the other hand, surveys are being referenced to identify the common characteristics of people who favour their group against social welfare. Although decision distributions of surveys diverse from experiment results, it would not be wrong in saying that the illustration of experimental design is partially successful in categorising people suggesting that some specific characteristics indicate group favouritism behaviour. According to the analysis, the participants who choose the non-maximising option in group favouritism question have higher preference scores in prosocial behaviours except for inequality aversion score. Maximiser participants are significantly more inequality averse and profit oriented. Furthermore, among maximiser participants, supporters of the socially more desirable option are significantly more inequality averse than group favouring option's supporters. Additionally, they are closer to the rational man assumption of classical economic theory.

Since the surveys are conducted to families, in-family interactions of group favouritism behaviour are also examined. However, because of the non-maximising bias of survey decision distribution, the chance of observing significant preference relations becomes limited in the analysis of in-family links. Therefore, no direct transmission of group favouritism behaviour is detected in data, yet some significant relations are reported between children's group favouritism behaviour and their parents' social preferences and the other way around.

According to the analysis, among maximiser children, the group favouring option supporters' fathers are more risk-averse, and mothers are more negative reciprocal and less inequality averse than other maximiser children's parents. Also, female children who support group favouring option have less positive reciprocal fathers and less trustful parents than supporters of the socially more desirable option.

On the other hand, non-maximiser parents' children are significantly more patient, more positive reciprocal and less profit oriented. Among maximiser parents, the group favouring option supporter parents have less negative reciprocal children and more risk averse sons. Also, the group favouring option supporter mothers' children are less inequality averse and less altruistic than socially more desirable option supporter maximiser mothers' children.

However, the weaknesses of the data should be kept in mind in evaluation of the results. Since the surveys are conducted with families who came to İstanbul Bilgi University for their children's or relatives' registration, considering that the university is a private one, we can assume our sample consists of relatively wealthy individuals. Moreover, the composition of family units indicates that there are more female family members (mothers and daughters) that can be explained by the greater proportion of housewife mothers who can take the time to register on work days and the tradition of over-protection of girls. Along with the usual survey biases like voluntary participation bias or response bias, the representiveness problem should be taken into account in interpreting the outcomes.

The analysis of the results reveals essential side outcomes along with significant answers to our main questions. First, comparing experimental results with surveys' shows that the distributions are significantly different. However, focusing only on maximiser decision options exposes that the decision distributions among maximisers are almost identical for younger participants of surveys who are closer to the experiment subjects.

The results suggest the conclusion that deciding for group favouritism question consists of two decision stages; first participants decide to maximise or not, then, if first stage outcome is to maximise, decide between the socially better option and the group favouring option. Moreover, the first stage's decision, maximising or not depends on the temptation of maximising, yet in the second stage, alternative payoffs of decision maker are equal. Thus, the decision is independent of payoffs. In laboratory experiments, the monetary incentives resulted in participants maximise more often than surveys' hypothetical incentives. Hence, the difference

between distributions arose although the second stage of decision was almost the same for experiment and survey participants.

Nevertheless, the second step of the decision-making process brings the crucial information for our question, and survey design of the experiment is robust in the second decision step. Besides, this result can help to collect data at a lower cost. Moreover, a survey question, excluding non-maximiser option and, instead, asking participants to choose between two maximising options, has been added to the 2018 survey which may be considered as an improvement.

Secondly, the differences between the age categories should be mentioned. Since the surveys are conducted to families who were visiting İstanbul Bilgi University during registration days, most of the participants belong to one of two categories, younger people who are just registered to university and their parents or elder relatives yielding bimodal age distribution. Therefore, the data is split into two age categories, and the outcomes are compared. For most of the variables, the distributions are significantly different; older participants have a higher prosocial preference and lower anti-social preference scores in average with significantly lower variance.

Three potential explanations are discussed for this difference; age, generation or social status. People can become more altruistic, trustful, positive reciprocal and inequality averse as they get older. The generation difference may be another explanation suggesting that people who grew in 70s 80s are more prosocial as an outcome of the era. Finally, the social status of older participants comes out as a possible explanation. Since older participants have a status as parents or relatives of students of the university, they can have representation concerns and try to respond with politically correct answers.

Additionally, homo economicus module analysis of survey brings out valuable insight to link behaviours and preferences. Two dimensions, profit orientation and labourer (labour) orientation, are offered to calculate homo economicus attribute scores, and some significant results are presented. This module, with some

methodological improvement, can be useful to further analyse decision mechanisms.

Another interesting outcome of this study appears to be the irrelevance of “KnowAnybody” and high relevance of “Experience” variables of laboratory experiment’s questionnaire. “KnowAnybody” variable aims to detect participants who know any of the participants in the session, assuming that their decisions can be affected in favour of social efficiency because of a familiar person who can get harm by their decisions. However, decision distributions are highly similar to distinguish any effect. On the other hand, “Experience” variable is included to check the robustness of decision to previous laboratory experiment experience. Nonetheless, analysis of “Experience” variable shows very high dependence in the first step of the decision, “maximise or not”, revealing that participants with laboratory experiment experience decide to maximise more often. The outcome is unexpected but, also, irrelevant for the analysis because the second step of decision is crucial for our question and robust to this variable. Moreover, if the aim of controlled laboratory experiments is to simulate real-life conditions, we can claim that, as in real life, the experience of participants should be evaluated as a necessity, instead of an undesirable externality. Since this is a continuous practice in real life, treatment with iterated choice periods can be designed to see the evolution of the choice distribution.

While useful in terms of lightening the direction of new research questions, a comprehensive model cannot be constructed due to lack of representative sample in our survey.

Also, the high correlation of social preference scores and the difficulty of modelling with highly correlated variables point out the need for combined variables that form independent dimensions of characteristics.

Overall, this study establishes the claim that the laboratory experiments and the surveys are successful in gathering relations and understand some of the dynamics behind the socially harmful group favouritism behaviour. Yet, the conditions under

which social efficiency concerns overcome the behaviour of group favouritism are explicit inquiries that need further research. Considering the findings of experiments indicating that the behaviour only reacts to more extensive changes in parameter values, and the findings of surveys revealing the relationship of the behaviour with inequality aversion and homo economicus attribute scores, an enhanced research plan can be proposed to answer this question.

Above all, experimentally derived social preferences can be added through a combined experimental design to back our results with solid relation structure which may rule out possible methodological concerns. Next in order, a cross-cultural study should be designed to explore the mechanism of cultural differences for socially harmful group favouritism behaviour, since the cultural dependence of group-bias is recently shown by Fisher and Derham's meta-analysis (2016). We can investigate the cultural component of behaviour or the component of the behaviour that is influenced by the institutional structure based on the position of those countries in different indices by applying cross-cultural analysis. Additionally, the relationship between social efficiency concerns and group favouritism is a social issue addressing the constitutional structure. Therefore, the social choice problem of societies, especially social choice preference concerning their group-bias on social efficiency can be examined.

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APPENDIX

Appendix A / Instructions for experiments

A1 Instructions of group treatment

INSTRUCTIONS

This is a decision-making experiment and a part of a scientific project.

You are prohibited from communicating with other participants until you left the laboratory after completing the experiment. If you have questions or concerns at any stage of the experiment, please raise your hand and wait for an official to come. Do not ask your questions aloud and hesitate to make any action that may distract other participants' attention.

What you'll gain in this experiment depends on the decisions you'll make and the instructions you'll get have a clear explanation on how your earning will be determined. Therefore, it is important to read carefully and understand the instructions. The earnings you'll gain will be paid to you immediately in cash at the end of this session. The other participants will not be informed about your earning. The decisions and the answers of you are completely anonymous and are not paired with any credential.

This experiment consists of two steps. You'll be informed about the second step right after the completion of the first step. After two steps are completed, your points will be multiplied by 0.2 TL as stated in the instruction and paid to you in cash at the end of the experiment.

Currently the participants in this laboratory are randomly grouped and three trio groups are formed. The group names are X, Y and Z. Each participant falls into a same group with another two participants. Through the first screen you'll encounter

at the beginning of the experiment, you will be notified about the group name that you are going to connect with during the experiment.

Each participant will be given 100 points when the experiment begins. Then one of the nine participants in the laboratory will be randomly (by a computer-drawn lottery) selected as "decision maker". The decision maker will be given 10 bonus points and will be entitled to make changes in the points given to the participants.

Before the decision-maker selection, each participants will be asked about their decision on their preference of which of the below decisions to be implemented in case of being selected as the decision-maker.

Keep the distribution of points fixed

In consequence of this decision, the decision maker will have 110 points along with the 10 bonus points while other participants' points will remain fixed as 100 points.

Transfer some of the endowments of my group's members to me

In consequence of this decision; 10 points from each of decision maker's group member will be transferred to decision-maker after deduction of 50%. Thereby, the decision-maker will have 120 points along with the 10 bonus points while the decision maker's group members will have 90 for each. The participants who are out of decision maker's group will keep their points as 100.

Transfer some of the endowments of the other groups' members to me and my group members

In consequence of this decision, 10 points from each participants who are not connected with decision maker's group will be transferred to decision maker's group members (including the decision-maker) after deduction of 50%. Thereby, the decision-maker will have 120 points along with the 10 bonus points while the decision maker's group members will have 110 for each. The points of the participants who are not connected with decision maker's group will remain as 90.

A2 Instructions of control treatment

INSTRUCTIONS

This is a decision-making experiment and a part of a scientific project.

You are prohibited from communicating with other participants until you left the laboratory after completing the experiment. If you have questions or concerns at any stage of the experiment, please raise your hand and wait for an official to come. Do not ask your questions aloud and hesitate to make any action that may distract other participants' attention.

What you'll gain in this experiment depends on the decisions you'll make and the instructions you'll get have a clear explanation on how your earning will be determined. Therefore, it is important to read carefully and understand the instructions. The earnings you'll gain will be paid to you immediately in cash at the end of this session. The other participants will not be informed about your earning.

The decisions and the answers of you are completely anonymous and are not paired with any credential.

This experiment consists of two steps. You'll be informed about the second step right after the completion of the first step. After two steps are completed, your points will be multiplied by 0.2 TL as stated in the instruction and paid to you in cash at the end of the experiment.

Currently the participants in this laboratory are randomly distributed the numbers from 1 to 9. Through the first screen you'll encounter at the beginning of the experiment, you will be notified about your participant number you'll have during the experiment.

Each participant will be given 100 points when the experiment begins. Then one of the nine participants in the laboratory will be randomly (by a computer-drawn

lottery) selected as "decision maker". The decision maker will be given 10 bonus points and will be entitled to make changes in the points given to the participants.

Before the decision-maker selection, each participants will be asked about their decision on their preference of which of the below decisions to be implemented in case of being selected as the decision-maker.

Keep the distribution of points fixed

In consequence of this decision, the decision maker will have 110 points along with the 10 bonus points while other participants' points will remain fixed as 100 points.

Transfer some of the endowments of random two participants to me

In consequence of this decision, 10 points from each randomly selected two participants will be transferred to decision maker after deduction of 50%. Thereby, the decision-maker will have 120 points along with the 10 bonus points while the randomly selected two participants will have 90 for each. Rest of the participants' points will not change and remain as 100.

Transfer some of the endowments of random six participants to me and the remainder two participants

In consequence of this decision, 10 points from each randomly selected six participants will be transferred to decision maker and the remainder two participants after deduction of 50%. Thereby, the decision maker will have 120 points along with the 10 bonus points while the randomly selected six participants will have 90 for each. The remainder two participants' points will be 110.

Appendix B / Surveys

B1 2016 Surveys

B1.1 2016 Survey Child Booklet

B1.2 2016 Survey Parent Booklet

B2 2017 Surveys

B2.1 2017 Survey Child Question Set

B2.2 2017 Survey Parent Question Set

Appendix C / Tests of Two Years' Data

C1 Altruism Scores

Table C1.1 Test for altruism scores in age categories.

Tests for Altruism					
Type	# (2016)	Mean (2016)	# (2017)	Mean (2017)	p-Value
Young	363	-0.064691185	326	-0.031860607	0.549589192
Adult	369	0.089055629	284	0.035031784	0.384460538
All	756	-2.54471E-16	616	-0.001956656	0.961955064

Table C1.2 Test for altruism scores in family.

Tests for Altruism					
Type	# (2016)	Mean (2016)	# (2017)	Mean (2017)	p-Value
Daughter	207	0.043181618	146	0.052868177	0.89813769
Son	133	-0.272625263	148	-0.18826951	0.330470542
Mother	195	0.087154487	147	0.150970867	0.434134165
Father	167	0.064224706	122	-0.109647216	0.078526361
Child	343	-0.085441294	294	-0.068520862	0.765793422
Parent	368	0.066666503	269	0.032772331	0.594067535

C2 Trust Scores

Table C2.1 Test for trust scores in age categories.

Tests for Trust					
Type	# (2016)	Mean (2016)	# (2017)	Mean (2017)	p-Value
Young	363	-0.145994634	326	-0.154533398	0.910656325
Adult	364	0.155807298	284	0.166845407	0.886643857
All	751	2.04066E-16	618	-0.003562625	0.947750034

Table C2.2 Test for trust scores in family.

Tests for Trust					
Type	# (2016)	Mean (2016)	# (2017)	Mean (2017)	p-Value
Daughter	207	-0.079916537	146	-0.071268761	0.935703126
Son	133	-0.251505279	148	-0.318766644	0.573681183
Mother	193	0.142696231	146	0.182580447	0.708752404
Father	164	0.144456113	125	0.161025885	0.886306704
Child	343	-0.147226266	294	-0.195859532	0.543362962
Parent	363	0.130222541	271	0.172638306	0.587492425

C3 Positive Reciprocity Scores

Table C3.1 Test for positive reciprocity scores in age categories.

Tests for Positive Reciprocity					
Type	# (2016)	Mean (2016)	# (2017)	Mean (2017)	p-Value
Young	363	-0.118691585	326	-0.154735307	0.521662147
Adult	367	0.159812704	285	0.171295981	0.839527438
All	755	1.17207E-16	619	-0.00149568	0.970674338

Table C3.2 Test for positive reciprocity scores in family.

Tests for Positive Reciprocity					
Type	# (2016)	Mean (2016)	# (2017)	Mean (2017)	p-Value
Daughter	207	-0.088948665	146	-0.205282272	0.13799668
Son	133	-0.16763896	148	-0.165162787	0.978031931
Mother	194	0.067403637	147	0.14364288	0.332178762
Father	167	0.19531383	125	0.224670133	0.731431579
Child	343	-0.132418416	294	-0.185086069	0.375807054
Parent	367	0.120006641	272	0.180879669	0.292498361

C4 Negative Reciprocity Scores

Table C4.1 Test for negative reciprocity scores in age categories.

Tests for Negative Reciprocity					
Type	# (2016)	Mean (2016)	# (2017)	Mean (2017)	p-Value
Young	363	0.144283982	326	0.142094507	0.964701325
Adult	366	-0.146569292	285	-0.153063418	0.90408274
All	753	-6.03237E-17	619	-0.0001025	0.99777372

Table C4.2 Test for negative reciprocity scores in family.

Tests for Negative Reciprocity					
Type	# (2016)	Mean (2016)	# (2017)	Mean (2017)	p-Value
Daughter	207	0.094495065	146	0.023928694	0.315155352
Son	133	0.263210655	148	0.259153648	0.956107289
Mother	195	-0.164525	147	-0.205155199	0.572030346
Father	164	-0.097078638	125	-0.087993963	0.911540312
Child	343	0.162255053	294	0.142341256	0.695434989
Parent	365	-0.13377359	272	-0.151312719	0.744143728

C5 Inequality Aversion Scores

Table C5.1 Test for inequality aversion scores in age categories.

Tests for Inequality Aversion					
Type	# (2016)	Mean (2016)	# (2017)	Mean (2017)	p-Value
Young	360	1.23125	326	1.356595092	0.112788008
Adult	363	1.116391185	283	1.189929329	0.392517099
All	738	1.202235772	617	1.273905997	0.219129895

Table C0.23 Test for inequality aversion scores in family.

Tests for Inequality Aversion					
Type	# (2016)	Mean (2016)	# (2017)	Mean (2017)	p-Value
Daughter	205	1.323170732	146	1.339041096	0.882744159
Son	132	1.130681818	148	1.336148649	0.099100053
Mother	189	1.287037037	147	1.350340136	0.60960829
Father	161	0.98757764	124	1.014112903	0.832322613
Child	339	1.252949853	294	1.337585034	0.300348151
Parent	355	1.161267606	271	1.196494465	0.692930435

C6 Patience Scores

Table C6.4 Test for patience scores in age categories.

Tests for Patience					
Type	# (2016)	Mean (2016)	# (2017)	Mean (2017)	p-Value
Young	363	0.00044969	326	0.045936972	0.435098357
Adult	368	-0.013986844	285	-0.047719122	0.601226508
All	757	-0.001124295	619	0.000386538	0.971927715

Table C6.5 Test for patience scores in family.

Tests for Patience					
Type	# (2016)	Mean (2016)	# (2017)	Mean (2017)	p-Value
Daughter	207	-0.017261345	146	0.079001304	0.239436593
Son	133	0.079917915	148	-0.002578268	0.379073721
Mother	196	-0.008016765	147	-0.106678277	0.242176729
Father	166	0.023977752	125	0.023266011	0.994494434
Child	343	0.018773947	294	0.037934037	0.752082988
Parent	369	0.005269409	272	-0.046961233	0.42457167

Appendix D / Tables

D1 Tables for Group Favouritism and Other Preferences Analysis

D2 Tables for Sources of Group Favouritism Analysis

D3 Tables for Results of Group Favouritism Analysis