A THESIS SUBMITTED IN PARTIAL FULFILMENT OF THE
REQUIREMENTS FOR THE DEGREE OF

MASTER OF SCIENCE
In Economics and Business Economics

An Empirical Research: Cognitive Dissonance as an Instrument for Intergroup Discrimination Reduction

Bryan Surya Lumadjeng
365454

Thesis Supervisor:
Georg D. Granic

First Reader:
H. Bleichrodt

17th August, 2017

Abstract

An Empirical Research: Cognitive Dissonance as an Instrument for Intergroup Discrimination Reduction

Discrimination and intolerance remains to be one of our main challenges as a modern society. Social identity theory and group formation might be the key driver that creates out-group discrimination and in-group favouritism. This thesis attempts to moderate this negative behaviour by utilizing cognitive dissonance. To measure this effect, a simple economic experiment (dictator game) is used to study whether cognitive dissonance can change the behaviour of the participants. To simulate the discrimination between groups, this thesis examines the difference in the altruistic behaviour of smokers towards smokers and towards non-smokers. A sample of 160 participants is gathered and allocated randomly into four treatments. The findings suggest that cognitive dissonance does influence the behaviour of the participants in becoming more altruistic in general. However, there is insufficient evidence that out-group discrimination exists. One explanation is that some group identities have a stronger effect than others.

Contents

1 Introduction

"There should be no discrimination against languages people speak, skin colour,
or religion"
Malala Yousafzai (2014) – Nobel Prize Laureate

The topic of discrimination has been persistently debated today among politicians, social scientists, and economists. Social discrimination has many different manifestations, whether it is gender, sexual orientation, racial, or religion discrimination. Many in our society have experienced some form of discrimination in their lifetime. The gender wage gap is proven to be significant and systematic around the world and it is still a part of ongoing debate today. Women are believed to earn less compared to their male counterparts for the same job qualifications (Weichselbaumer & Ebmer, 2005). Moreover, campaigns such as *'Black Lives Matter'* that was formed in 2013 and trending in the late 2016 attempts to raise awareness about police brutality towards African-American minorities in the US (Day, 2015). These phenomena suggest that there is a tendency for us as human beings to treat people differently based on some characteristics. As members of society, it is important for us to understand and to attempt to reduce this negative behaviour of discrimination.

Contemporary economic literature, that studies the social preference of the economic agents is often faced with social dilemmas where individuals are willing to maximize the social welfare of their own social group identity. Social preference is a form of preference observed in behaviour economist to express altruism, fairness, and inequality aversion of economic agents (Charness & Rabin, 2002). Social identity theory that was advocated by a social psychologist argues that social identity is a person knowledge that he or she belongs to a social category or a certain group (Stets & Burke, 2000). Moreover, when the social group formation stage is fulfilled, one might go through a process of social comparison. An individual determines whether their peers can be categorized as inner-group based on the similar characteristics that they possess. These main concepts are the foundation of this thesis.

One implication, of the group formation is that, often a group identity that is assigned to someone increases the sense of belonging of an individual in a social group. Consequently, people might behave differently to their inner and outer group in terms of their social preferences (Coq, Tremewan, & Wagner, 2015). One study that focuses on social identity theory suggests that certain discrimination and favouritism exist when people are given an arbitrary social identity label. The study

concludes that when an individual is given a group label, they tend to be more altruistic to their inner-group peers compared to their outer-group peers (Turner, Brown, & Tajfel, 1979). These findings have their social relevance in the modern world. Many real-world occurrences such as blatant racism, tribalism, and nativism that happened in the past and still occur in the present, can be partly explained by the social identity theorem.

One attempt to reduce the between group discrimination is to individualize the outer group. It is predicted that the more de-individuated a person is, the more likely one might behave inappropriately. Therefore, individualizing a social group might reduce the intergroup discrimination (Wilder, 1978). Even though this approach seemingly succeeds to reduce the discrimination between the groups, it does not fully provide a robust solution to the problem. One caveat of this approach is that the experiment provides a feedback session between the inner and outer group to have a cooperative or an uncooperative interaction between the groups. Therefore, the interaction might dilute the result, as the participants might change their judgements to their opposite group.

This research will test whether cognitive dissonance can be used an instrument to reduce intergroup discrimination. One way to understand cognitive dissonance is to understand the underlying concept of cognition. Cognition is a state where someone has any piece of knowledge. This knowledge can be anything, from a knowledge about a certain behaviour, about someone's attitude (judgement), or the state of the world. In short, cognition is a psychological representation of a certain set of attributes. Hence, cognitive dissonance occurs when two psychological representations are inconsistent with each other. The result of cognitive dissonance is that one might feel discomfort (Cooper, 2007).

One concrete example of cognitive dissonance is the behaviour of people who are addicted to smoking. If someone likes the idea of smoking and they still smoke this can be considered as one cognition. Besides the initial cognition, one might also know that smoking leads to adverse health effects, this is considered as another cognition. These two cognitions are considered an inconsistent psychological representation, known as cognitive dissonance. Cognitive dissonance should create discomfort, but the question remains why do people still behave differently? Often people remove the dissonance aspects of their beliefs by rationalizing and adapting their beliefs.

From the illustration about the cognitive dissonance, one prediction is that when people adapt their beliefs about some inconsistent psychological representation, people might change their initial judgement or beliefs on a certain

group and ultimately change their behaviour in evaluating their social preference. Hence the research question can be formulated as:

Can cognitive dissonance be used to moderate discrimination between groups?

This thesis includes an experiment to test whether cognitive dissonance can be used as an instrument to lessen the magnitude of discrimination between groups. The experiment stresses on measuring the change in the altruistic behaviour between groups through an economic game (the dictator game which is explained in section 2). In the following sections, the review of the relevant literatures and the formulation of the hypotheses to answer the research question is provided. Moreover, a detailed description on how the experiment is conducted is described in section 3. Lastly, the results of the experiment, discussion and conclusion of the research is described.

2   Literature Review

In this section, we review the literatures on altruistic behaviour, social identity, group formation, and cognitive dissonance respectively.

The first section contains the literature on the altruistic behaviour against the standard economic model's assumption of self-interest. This will be the background for understanding whether an individual care about the payoffs of others or not. Moreover, the concept of group formation and social identity theory will be provided to learn about how an individual behaves in a group setting. Lastly, information about cognitive dissonance will be provided to understand whether exposure to cognitive dissonance changes the altruistic behaviour of an individual.

2.1   Altruistic Behaviour versus Self-Interest

Standard neoclassical economic axiom of rationality predicts that a rational economic agent maximizes their utility based on their self-interest (Force, 2003). Many interpret the pursuit of self-interest as the only thing that a rational economic agent does, anything else can be considered irrational behaviour. In the real world, this translates to an individual always prefer more rather than less for themselves (Bolton, Katok, & Zwick, 1998). However, in many instances, people also cares about the utility of others. This is further advocated by behaviour economists, that predicts that people do not only care about their own payoff but also the payoff of others (Charness & Rabin, 2002).[1] This phenomenon is known as altruistic behaviour (positive) or spite (negative).

Often economic games are used to learn the behaviour of economic agents in evaluating their payoffs in a social preference setup. Economic experiments such as the dictator game and ultimatum game successfully challenged the standard economic models which argues that individuals solely act based on self-interest (Guala & Mittone, 2010).

Nevertheless, economic experiments that tests the generosity does not go without flaws. One argues that in an ultimatum game setup, one might be more generous due to strategic reasons (Eckel & Grossman, 1996). Contrary, dictator games eliminate the strategic reasoning of someone being generous. The dictator game setup is simply as follows; two players are allocated a sum of money given by

---

[1] Other research also shows that gender bias also exists when measuring the altruistic behavior of economic agents (Ortmann & Tichy, 1999).

the experimenter. Then the first player (proposer), offers a certain amount of money to the second player (responder). This amount of money can be anything equal or larger than zero but limited to the sum of money that was initially given by the experimenter. In a dictator game's setup, the responder has no influence whatsoever to the amount that is given. This implies that the responder is going to accept any amount of money proposed.

Standard economic model predicts that the solely selfish proposer should not offer any part of the initial endowment given by the experimenter. Strikingly, empirical evidence suggests that on average people are more lenient to give an equal split of their endowment.[2] This clearly violates the standard economic model's argument that people are fully rational and serve their self-interest.

This phenomenon is further depicted by many behavioural economists, one argues that an individual does not only care about their own payoff, but also the payoff of others (Rabin & Charness, 2002). This includes several factors, for instance, one might dislike inequality, and therefore one tries to minimize the difference between their payoffs and the payoffs of the other player. Another reason, can be that people behave based on reciprocity, meaning that people feel obliged to reciprocate kind behaviour with kind behaviour and vice versa.

Charness and Rabin (2002), illustrate the utility of an individual in a simple social preference setup as follows; imagine a state where there are two players'; A and B. The payoff of player A is depicted by π_A and player B as π_B. Moreover, the utility function of each player is as follows:

$$U_B(\pi_A, \pi_B) = (\rho r + \sigma s + \theta q)\pi_A + (1 - \rho r - \sigma s - \theta q)\pi_b \qquad (1)$$

Where:

$r = 1$ if $\pi_b \geq \pi_a$ and $r = 0$ otherwise;

$s = 1$ if $\pi_b < \pi_a$ and $s = 0$ otherwise;

$q = -1$ if A has misbehaved and $q = 0$ otherwise.

Equation 1 portrays the utility of person B as a weighted sum of his payoff and the payoff of person A. The parameters ρ, σ, and θ expresses the weight of the differences in the payoff and on whether person A has behaved fairly (unfairly). From equation 1, we can see that people often also looks at several factors when

---

[2] Research shows that approximately 53% of dictators give nothing to the receivers (Eckel & Grossman, 1996).

determining their social preferences. Factors, such as fairness, social welfare, and difference aversion plays an important role that shapes their preferences.

Based on these arguments we can formulate our first hypothesis as follows:

H1: In a dictator game, on average, people will allocate an amount of money larger than zero.

2.2   Social Identity and Group Formation

Social identity is best described as a sense of belonging of an individual that is derived from a perceived membership in a social group. Social identity has been believed to be the fundamental platform to explain phenomena such as racial conflicts, gender discrimination, political conflicts, and the formation of human capital (McDermott, 2009).

Some of the findings from an experiment that was conducted in the field of Social psychology shows that there are three components to group formation process that an individual goes through. The categorization process is when someone classifies an individual including their own based on their personal traits. The second component is when an individual identifies themselves with a certain group. The last component is the comparison process, during this process we compare ourselves with the other groups, therefore developing a bias (discrimination or favouritism) towards the group which we belong to (Chen & Li, 2009).

2.2.1   Priming natural group formation

There are two main group formation methods that are widely recognized within the social identity research.

First, priming natural group formation technique is described as a group formation that is based on natural clauses, such as gender and ethnicity. Sometimes, these primed group identities affect the behaviour attitudes of the participants. However, there is still a persistent debate whether the natural group formation creates in-group favouritism. One experiment concluded that when gender induced public goods game are performed, members of the same gender group tend to be more cooperative than the opposite gender group (Croson, Marks, & Snyder, 2998). On the other hand, some also suggest that although the degree of contribution between the gender group formations slightly differs, the magnitude of the gender effect is not significant (Kruse & Hummels, 1993).

Although seemingly that natural group formation has an ambiguous effect, in some cases where variables such as ethnicity or tribe are introduced, the favouritism effect rises significantly (Tanaka & Camerer, 2009). One argument that can explain this phenomenon is that the degree of sense of belonging differs within the variables. Therefore, in a natural group formation process the strength of the variables (i.e. judgements of people about their natural traits) is one of the key explaining factor for the in-group favouritism and discrimination.

2.2.2   Minimal Group Paradigm

Secondly, an artificial group identity formation technique relies on induced group identities. One popular approach is known as the minimal group paradigm; whereby groups are created by using arbitrary labels that are given to an individual through a meaningless task. There are certain criteria needed for the minimal group paradigm to satisfy. First, the subjects should be randomly assigned to no overlapping groups based on some trivial task. Second, there should be no social interaction taking place between the subjects (i.e. no face to face interaction and technology-mediated interactions). Third, the group membership is anonymous. Lastly, the decision task requires no link between a chooser's self-interest and their choices. However, the last criterion of the minimal group paradigm is often violated. Some suggests that being identified to a specific social group is insufficient to overcome self-interest (Eckel & Grossman, 2005). Some attempt to increase the sense of belonging within the group is to perform various team identity enhancing tasks, such as, problem solving task within groups. This method is proven to reduce free rider problem within a team (Chen & Li, 2009).

The experiment design that was used in the minimal group paradigm approach is as follows; a sample of 48 participants are initially separated into three groups. After they were allocated to the different groups, the participant is given a set of paintings (by Klee and Kandinsky) and are asked to evaluate their paintings based on their preferences. Furthermore, the researchers then label the boys as someone who preferred the painting by Klee or Kandinsky respectively. This gives an impression for the participant that they were allocated to a group based on their preferences, however, the group formation was completely random (Tajfel, 1970). At the latest stage, the researchers gave the participant a reward allocation tasks. Each participant is asked to give a reward point to their inner group and their outer group (the participant does not personally know who the other participants within and between the groups). One of the main finding from the experiment suggests that the group formation leads to in-group favouritism and discrimination against the out-group.

Another replication study that also uses the minimal group paradigm as the foundation of their research concludes that the participant reciprocity preferences are significantly different between the two groups. They argued that the participants are more likely to reward an in-group member compared to the outgroup member for good behaviour (Chen & Li, 2009). Moreover, it is also evident that the participant is also more forgiving towards misbehaviour to their in-group counterparts.

In contrast, another study also suggests that due to the violation of the fourth assumption of the minimal group paradigm (in many experiment), in-group favouritism is not evident with the minimal groups. Meaning that there is some link between the chooser's self-interest and their choices. This is especially true when direct reciprocity in a sequential game (where every participant is the first mover) is possible. Therefore, they concluded that in-group favouritism is created only if the participants play a simultaneous move game (Yamagishi & Kiyonari, 2000).

These theories on social identity and group formation suggests that there is some correlation between sense of belonging and their social preference i.e. favouritism towards their in-group members. However, many are sceptic whether a causal relationship exists in the change of social preference of an individual based on the group identity assigned to an individual. Hence, this leaves room for further research. This research utilizes the findings of the aforementioned literatures as the underlying motivation of this research. Hence we can formulate our second hypothesis such as:

H2: Artificial group formation will create favouritism towards their in-group members.

2.3   Cognitive Dissonance

Cognitive dissonance in a nutshell is a situation that involves conflicting attitudes, beliefs or behaviour. The theory of cognitive dissonance was first introduced by Festinger (1957) in his book "a Theory of Cognitive Dissonance". The author argued that people have a tendency to stick to their own attitudes and beliefs in harmony to avoid dissonance. People hold many cognitions about our surroundings and ourselves, and when the beliefs are inconsistent, an inner tension would rise. The inconsistency between to initial beliefs may create an uncomfortable feeling. This phenomenon is known as cognitive dissonance.

To remedy the discomfort people might adapt their beliefs by rationalizing their inconsistent belief (Festinger, 1957). Often cognitive dissonance is an important tool for an individual to shed a positive self image to justify their actions. More often than not when people adapt their beliefs and rationalize their behaviour, people might deviate from the optimal decision making from an economic stand point. There are many applications of cognitive dissonance that can explain the irrational actions of people. From overconfidence in financial investors to irresponsible actions of politician, cognitive dissonance a useful tool to understand the divergent behaviour (Chang , Solomon, & Westerfield, 2016).

One argues that the effort in the tension reduction mechanism that someone goes through, reduces the self interest behaviour and/or engaging in some kind of deceptive behaviour (Konow, 2000). If an individual remedies the unpleasant inner tensions by reducing their self interest, this would mean that the degree of generosity or altruism might enhance. Hence the following hypothesis is formulated:

H3: Exposure to cognitive dissonance will reduce self-interest behaviour.

One recent example that potrays the effect of cognitive dissonance is the recent involvement of the US in the Iraq war. George W. Bush, the commander in chief at the time had his own disturbing beliefs about the capabilities of Iraq to develop weapon of mass destruction (WMD). However, when he consulted with many foreign ministers, he gained new information that Iraq had little to no capabilities to develop such weapons. One of the caveats is that he had little knowledge about foreign policy in the Middle East, hence he failed to take rational action not to commence invading Iraq (Urbanovich, 2012). When the United Nations (U.N.) conducted their research in Iraq about their capabilities of developing WMD, they concluded that there was no proof of the development of such thing (Borger, 2004). This left the general public outraged and to alleviate his cognitive inconsistency, the Bush administration created other theories to justify their action invading Iraq.

It is evident that people have the tendency to prefer supporting information rather than conflicting. The preference for supporting information and the neglection of conflicting information has led to bias in decision making. This phenomenon is also prevalent in a decision making process in group formation (Hardt, Frey, Lüthgens, & Moscovici, 2000). This bias for preferred information can have many manifestations in the real world group social interactions. Problems such as confirmation biases can intensify group stereotyping, prejudice, and intolerance (Curseu, Stoop, & Schalk, 2007).

On the other hand, cognitive dissonance can be used as a mean to reduce the intergroup tensions. Resistance to diversity can be due to the initial dissonant beliefs of an individual towards other groups. When people encounter with others that belong to a social group that comes from different backgrounds, one might feel vulnerable and afraid about their own social identity and emotions (McFalls & Roberts, 2001). Hence, some might try to avoid interactions with other social groups and ultimately increase the intolerance towards others. One study that utilizes cognitive dissonance as a mean to reduce the resistance to diversity concludes that when people are exposed to some new inconsistent beliefs about their opposing social groups, some are aware about their state of mental discomfort. One of the benefits of the awareness is that people will try to remove the discomfort by adapting their beliefs, therefore, becoming more accepting new discrepant information. Hence, it prevents the initial rejection and encourages critical thinking about their initial beliefs (McFalls & Roberts, 2001). However, this effect is sometimes limited to the magnitude of the dissonance. Based on these findings, we can argue that cognitive dissonance can serve as a catalyst to encourage critical thinking and ultimately increases tolerance on diversity. Hence the following hypotheses is formulated as such:

H4: Exposure to cognitive dissonance can decrease ingroup favouritism and intergroup discrimination.

3   Experimental Design

In this section, the procedure of the experiment will be explained. In the second subsection, the descriptive statistics and the demographics of the respondents will be given.

3.1   Experimental Procedure

To examine whether cognitive dissonance moderates discrimination between groups, an artefactual field experiment is conducted. 160 smokers were recruited to partake in the experiment. The participants are asked to perform a dictator game. There are four experimental treatments to which the participants are allocated randomly. The experimental conditions vary in whether the receiver of the dictator game is a smoker or not, and in whether the dictator must go through a dissonance evoking task.

A dictator game is chosen to isolate other strategic motivations of the individuals and to purely capture the generosity of the respondents (Eckel & Grossman, 1996). The experiment is performed in an artefactual lab experimental design. This means that the subjects are heterogeneous and capture various backgrounds. This is to have a more externally valid result compared to homogenous subjects.

The experiment is performed in the city centre of Rotterdam, the Netherlands during weekdays at around noon (12pm-6pm). None of the subjects are informed about the content and the purpose of the experiment. The participants are chosen at random and asked if they are willing to participate in the experiment. Each subject is allowed to participate in the experiment only once. During each experiment, to reduce confusion, the experimenter reads the instructions out loud to the participant.

In the experiment form, questions such as gender, age, and education are also asked to formulate the control variables for the analysis. These questions are asked at the end of the experiment to avoid distraction of their attention for the experiment. Also, some questions about their smoking behaviour (how long they have been smoking and how many cigarettes they smoke per day) are asked at the beginning of the experiment.

To test whether there is in-group favouritism, a natural group formation technique is used. This means that the group formation is based on the lifestyle habit i.e. smoker and a non-smoker. Therefore, some of the receivers of the dictator

game are categorized as smokers and non-smokers. In total, there are four different experimental setups (N=40 in each setup) and the participants are randomly assigned to one of the four categories.[3]

The setup contains two control groups and two treatment groups. In the control group, the participants are first asked about their smoking habits. Afterwards they are informed about the receiver of the dictator game. In this section the participants will either allocate the sum of money to a smoker or to a non-smoker. After the participant has completed the money allocation process, they will answer basic personal information such as age, gender, and education.

In the treatment group, the participants are exposed to cognitive dissonance. To expose the participants to cognitive dissonance, each participant in the treatment group is asked to list 3 adverse health effects that are caused by smoking. This question is asked before they are asked to allocate the sum of money. To illustrate the design, a 2 by 2 matrix is drawn below (table 1).

Table 1. Experiment Design

	Control	Treatment
In-Group (Receiver: Smoker)	X (N=40)	Y (N=40)
Out-Group (Receiver: Non-Smoker)	S (N=40)	T (N=40)

To have a controlled experiment, there are some assumptions that need to be satisfied. First, the subjects should be able to exert enough effort when performing the experiment. This is done by creating incentive for the participants of the experiment. The incentive is based on a random lottery. When the subjects are willing to participate in the experiment, they are given a set of forms (same setup). Each form has a unique number which corresponds to the lottery that they can win based on the payoff they state during the experiment.

Every participant is informed about the possibility to win the lottery before the experiment started. The participants always have a choice of minimal of two forms that they can choose to fill.[4] Moreover, for this experiment to be more salient, by the end of the experiment, if the responder has the winning form, the proceeds

---

[3] The categories are among; (1) OutGroup-NoDissonance, (2) InGroup-NoDissonance, (3) OutGroup-Dissonance, (4) InGroup-Dissonance.

[4] For each group, there are N+1 forms available.

of the allocation is given to a random person in the area that fulfils the criteria (smoker or non-smoker).

The possible wealth allocation ranges between 0 and 5 euros for each experiment with 50 cents increments. This setup allows the participants to have an equal split allocation. The possibility to have an equal split is chosen because it will give a more realistic allocation procedure. Moreover, not allowing the participants to have an equal split, forces them to create group favourability which might deteriorate the effect that we are interested in.

The data will be analysed using statistical methods including non-parametric tests[5] to measure the difference of payoffs between groups. Moreover, an OLS[6] regression analysis is also provided to add control to the model.

3.2   Descriptive Statistics

The sample consists a total of 160 observation, which are divided equally among each group. 41.88% of the sample consists of female smokers and the average age of the respondents is 29 years old with the oldest participant being 82 years old. On average the respondents have been smoking for 10 years and smoked 11 cigarettes a day. Lastly, 49% of the respondents are university graduates, 29% of them have finished secondary school, and 21% of them completed primary school (Appendix 1).

On average, the dictators allocate 2.54 euros to the receivers.[7] Female dictators are more generous compared to male dictators. The average payoffs for female dictators is 2.8 euros and for male dictators is 2.4 euros (Table 2). It is also evident that the percentage of female dictators that allocates money to the receiver is higher compared to males (82% vs 70%). This finding is also in line with other findings, that show gender differences in altruistic behaviour (Ortmann & Tichy, 1999).

From Table 2 and Figure 1, it is evident that there is a slight difference between the groups. It seems that the treatment has a positive effect on the money allocated by the dictator. This effect will be further discussed in the results section.

---

[5] The non-parametric test is conducted using a two-sample Mann-Whitney test.

[6] Simple Ordinary Least Squared method using robust estimator is used in the regression analysis.

[7] The results are consistent with other findings which suggest that people are not purely selfish (Eckel & Grossman, 1996).

Table 2. Descriptive Statistics by Group

	N	Average Transfer (€)	% of Transfer > €0
InGroup-NoDissonance	40	€ 2.200	77.50%
OutGroup-NoDissonance	40	€ 2.063	72.50%
InGroup-Dissonance	40	€ 3.038	75.00%
OutGroup-Dissonance	40	€ 2.875	77.50%

Table 3. Descriptive Statistics by Gender

	N	Average Transfer (€)	% of Transfer > €0
Male	93	€ 2.370	70.97%
Female	67	€ 2.783	82.09%

Figure 1. Distribution Transfers by Group
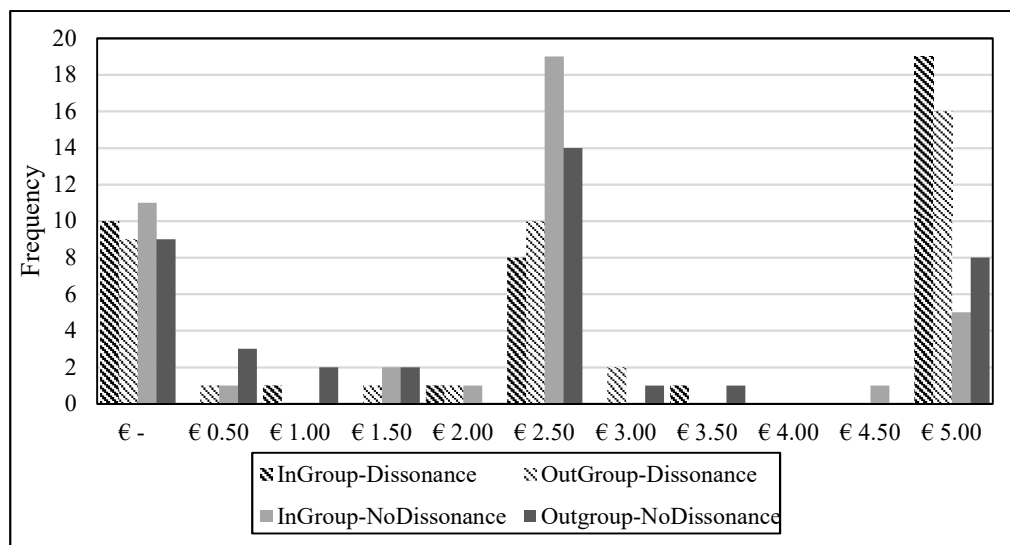
To determine the causal relationship whether in group favouritism exists and if this effect could be decreased by using cognitive dissonance, an OLS regression analysis is performed. The model will be estimated by using the following parameters:

$$Transfer = \alpha + \beta_1 Between + \beta_2\ Treatment + \beta_3\ Between \\ * Treatment + \beta_4\ Duration + \beta_5\ Quantity\ + \beta_6\ Age \\ + \beta_7\ Female + \beta_8\ Education + \epsilon \tag{2}$$

The parameter α indicates the amount of money transferred by the dictator in the InGroup-NoDissonance group. The parameter β_1 indicates the difference in the money transferred by the dictator that belongs in the OutGroup-NoDissonance and the InGroup-NoDissonance. Moreover, the parameter β_2 indicates the difference in the amount of money transferred by the dictator that belongs in the InGroup-NoDissonance and the InGroup-Dissonance. Furthermore, the parameter β_3 measures the difference between the effect of the treatment between the InGroup and OutGroup. Additionally, $\beta_4, \beta_5, \beta_6, \beta_7$, and β_8 is the added control variable that controls for the duration of smoking (years), quantity of cigarettes smoked (per day), age, gender, and education level respectively.

Besides the OLS regression, we would also estimate a Logit model to estimate the likelihood of the dictator transferring an amount of money to the receiver (i.e. transfer > 0). The variable *donate* will be used as our dependent variable. The model will be estimated by using the following parameters.

$$Donate = \alpha + \beta_1 Between + \beta_2\ Treatment + \beta_3\ Between \\ * Treatment + \beta_4\ Duration + \beta_5\ Quantity\ + \beta_6\ Age \\ + \beta_7\ Female + \beta_8\ Education + \epsilon \tag{3}$$

Lastly, another logit model that predicts the probability of the dictator transferring the money equally is also predicted. The model will be estimated using the following specification:

$$EqualSplit = \alpha + \beta_1 Between + \beta_2\ Treatment + \beta_3\ Between \\ * Treatment + \beta_4\ Duration + \beta_5\ Quantity\ + \beta_6\ Age \\ + \beta_7\ Female + \beta_8\ Education + \epsilon \tag{4}$$

4 Result

In this section, we will discuss the results of the experiment. To answer the hypotheses, first a non-parametric test is used to estimate the differences in the distributions between the groups. In the latter section, a regression analysis will be performed. In the regression analysis, the dependent variable *Transfer* is used to estimate whether in-group favouritism exists.

4.1 Altruism vs. Self-interest

Examining the dictator decisions in general, the average transfer that was made is 2.54 euros. The average transfer that was made by the dictator significantly differs from zero (p = .000).[8] This means that the dictators that are gathered from the sample are not purely selfish. From the analysis, we can conclude that we cannot reject our first hypothesis.

Additionally, from the logistic regression analysis it is also evident that women are more likely to transfer a sum of money compared to men (appendix 4). It is evident that being a woman increases the probability of allocating a sum of money compared to a man by 11 percentage points on average, ceteris paribus. This effect is significant at 10% significance level.

4.2 Intergroup Discrimination

To answer the second hypothesis, we need to analyse the difference in the amount of money transferred by the dictator if the dictator were to allocate the money to a smoker and to a non-smoker. Examining the dictator decisions across the two conditions (between group and within group), the average transfer is 0.137 cents higher if the dictator transfers amount of money to a smoker compared to a non-smoker (in the control group). From the average transfer that was made, it is in line with our prediction that the dictators have some degree of favouritism for their in-group members. However, this effect is not significant at any reasonable significance level (p = .6498).[9] Therefore, we can conclude that there is not enough statistical evidence that in-group favouritism exists.

Moreover, in the treatment group, the average transfer that was made by the dictator was 0.245 cents higher if the dictator transfers the money to a smoker

---

[8] Statistical test was used using a Wilcoxon Signed-Rank Sum non-parametric test. The null hypothesis is H0: $\mu = 0$.

[9] Two tailed non-parametric (Mann-Whitney) test with 95% confidence interval was used.

compared to a non-smoker. The finding is in line with our prediction that in-group favouritism exists. However, this effect is also not significant at any reasonable significance level (p = .7252).

Looking at the regression analysis in table 4, the independent variable *between* shows a negative effect on the dependent variable *transfer*. This is in line with our prediction that argues that the dictator becomes less altruistic when they must deal with their out-group party. However, it is evident that the independent variable *between* does not have a significant effect on the dependent variable *transfer* in any model. This result further justifies that there is not enough statistical evidence that in group favouritism exists. Hence we can conclude that we reject our second hypothesis. This means that there is no sufficient evidence that there is in-group favouritism.

Also from the table 4, we can conclude that the following control variables; the duration of smoking, the quantity of cigarettes smoked a day, gender and education do not have enough statistical evidence to explain the dependent variable *transfer* at any estimated model. On the other hand, the variable age does have some explanatory power to the dependent variable in the predicted model 1, 2 and 3. In all the models, the control variable age shows a positive coefficient. This means that age has a positive influence on the amount of money transferred by the dictator to the responder.

All in all, we can conclude that the results show that people are not more altruistic towards their in-group members. This means that we can reject our second hypothesis. This effect might be explained by the intensity of the group label that was assigned to the participants. As mentioned in the second section, the sense of belonging towards a label has a significant influence towards the behaviour of an individual in a social identity framework.

Table 4. OLS Regression Analysis

	Model 1	Model 2	Model 3	Model 4	Model 5
Dependent Variable: Transfer					
Constant	2.175***	1.840***	1.633***	1.827***	2.200***
	(.576)	(.468)	(.417)	(.412)	(.280)
Between	-.2339	-.2351	-.2263	-.2318	-.1375
	(.425)	(.396)	(.420)	(.395)	(.379)
Treatment	.9176**	.8435**	.8492**	.8234**	.8125**
	(.429)	(.417)	(.412)	(.411)	(.407)
Between * Treatment	-.1811	-.1366	-.1055	-.0606	-.0250
	(.600)	(.594)	(.594)	(.594)	(.596)
Duration	-.0218	-.0240	-.0312		
	(.024)	(.021)	(.021)		
Quantity	-.0256	-.0234			
	(.021)	(.021)			
Females	.3713	.3633	.4373	.4110	
	(.307)	(.307)	(.295)	(.294)	
Age	.0252	.0274**	.0261*	.0089	
	(.016)	(.014)	(0.14)	(.010)	
Education					
Secondary	-.3427				
	(.429)				
University	-.4022				
	(.397)				
N	160	160	160	160	160
R-Squared	0.0890	0.0825	0.0747	0.0640	0.0483
Adj. R-Squared	0.0397	0.0403	0.0384	0.0336	0.0300

Note: Coefficients and Robust Standard Errors (in parentheses). *, **, and *** indicates significance at 10%, 5%, and 1% level respectively.

4.3   Exposure to Cognitive Dissonance

From regression analysis in table 4, the independent variable treatment is significant at 5% significance level in all the estimated models. This means that on average if the dictator is exposed to cognitive dissonance, the amount of money transferred increases with 81.25 cents (model 5), ceteris paribus. This result indicates that the third hypothesis cannot be rejected. This means that there is

enough statistical evidence that on average being exposed to cognitive dissonance, changes the social preference of the dictator becoming more altruistic.

On the other hand, the interaction effect β_3 does not show any significant explanatory power to the dependent variable *treatment*. This means that even though the dictator is exposed to cognitive dissonance, there is no difference in the money allocated by the dictator towards their in-group or out-group. This concludes our fourth hypothesis, arguing that being exposed to cognitive dissonance decreases the in-group favouritism. We can conclude that; cognitive dissonance does not affect the level of favouritism and discrimination between groups.

Table 5. Logistic Regression Analysis

	Model 6	Model 7	Model 8
Dependent Variable: Donate			
Constant	1.453*	.754	1.272***
	(.796)	(.607)	(.423)
Between	-.323	-.305	-.265
	(.538)	(.523)	(.531)
Treatment	.451	.365	.358
	(.548)	(.494)	(.530)
Between * Treatment	-.625	-.539	-.480
	(.768)	(.758)	(.753)
Duration	-.052	-.063*	-.029*
	(.034)	(.033)	(.017)
Quantity	-.031		
	(.025)		
Female	.642	.737	.699*
	(.417)	(.404)	(.400)
Age	.029	.030	
	(.025)	(.026)	
Education			
Secondary	-.380		
	(.566)		
University	-.498		
	(.531)		
N	160	160	160
Log Likelihood	-83.918	-85.037	-85.864

Note: Coefficients and Standard Errors (in parentheses). *, **, and *** indicates significance at 10%, 5%, and 1% level respectively.

Furthermore, when analysing whether cognitive dissonance increases the probability of someone allocating a sum of money to the responder, it is evident that none of the scenarios significantly affect the probability of someone allocating the sum of money. Moreover, there is a slight positive effect if the dictators are exposed to cognitive dissonance. This translates to; when the dictator is exposed to cognitive dissonance, the probability that he/she allocates a sum of money

increases, ceteris paribus. This effect is not significant at any reasonable significance level. On the other hand, the independent variable *between* shows a negative value. This means that, if the dictator is asked to allocate a sum of money to a member of the out-group, the probability of the dictator allocating a sum of money decreases, ceteris paribus. This is in line with our prediction, which expects in-group favouritism. This effect is also not significant at any reasonable significance level.

In appendix 5, it is evident that the treatment shows a significant negative effect on the dependent variable *Equal Split*. This translates to; if the dictators are exposed to cognitive dissonance, the probability of the dictator allocating the money equally decreases, ceteris paribus. This effect is significant at 1% significance level. This finding, explains the shift in the average money transferred by the dictator when they are exposed to cognitive dissonance in the previous section. Besides the treatment effect, the independent variable *Female* also shows a positive significant effect at 10% significance level. This means, being a female dictator, increases the probability that she will allocate the money equally.

Based on these findings, we can partially conclude that we cannot reject our third hypothesis. This means that there is enough evidence that being exposed to cognitive dissonance changes the social preference of the dictator so that he/she becomes more altruistic in general. However, we reject our fourth hypothesis that argues, being exposed to cognitive dissonance decreases in-group favouritism. There is simply not enough evidence that ingroup favouritism exists in the first place.

5   Discussion and Conclusion

The intention of this research is to justify the use of cognitive dissonance to reduce intergroup discrimination. The results show that there is not enough significant evidence that intergroup discrimination exists, however, cognitive dissonance does influence the social preference of an individual. This research adopts various insights from previous literatures in the field of psychology, economics, and behavioural economics.

Regardless of the results, this research is not without its limitations. For an experiment to have a controlled economic environment, there are five precepts that need to be satisfied (List, 2007). This includes giving sufficient incentive to the participants of the experiment. Due to budget constraints, this experiment applies the random lottery incentive meaning that the people are faced with a certain probability that they can win the payoff. Many literatures have pointed out that people often have difficulties to understand chances and probabilities in a lottery (Borovcnik & Bentz, 1991). Despite the fact that each participant is well informed about the probability to win a lottery. This might deteriorate the effort of the participant when participating the experiments.

Moreover, the design of the payoff of the dictator game ranges from zero to five euros with 50 cents increments. Behavioural economics argues that people behave differently when faced with monetary lotteries with different stakes. Meaning that the utility that people get from monetary gains are not linear. It is evident that people are more risk seeking when low stakes are introduced and more risk averse when larger stakes are involved (Cox & Sadiraj, 2006). Therefore, if the incentive were a larger amount, for instance 50 euros or 100 euros, people might behave differently.

Another element that might influence the result of this research is the choice that is presented to the participant allowing for an equal-split (50:50). There is some evidence that there is indeed a bias towards equality of the payoff. If the design of the choice list does not allow for an equal-split, this forces the participants to show favouritism to their in- or out-group. This might allow us to capture the effect more prominently. This approach can be used for further research to see whether this design influences the results.

The results indicate that there is not enough statistical evidence that in-group favouritism exists. One explanation is that the choice to distinguish the in-group and out-group member by their smoking habit might not be significant enough to develop favouritism. During the field experiment, some of the

respondents argued that it simply does not matter whether the receiver is a smoker or not. Moreover, others argued that they do not want to allocate any amount of money to a smoker because they do not want them to buy more cigarettes with the money. Therefore, these intrinsic motivations that the participants have might distort the underlying effect that we want to measure. Perhaps, for further research another artificial group can be used to measure the favouritism/discrimination effect. For instance, the use of educational background (medicine student vs. economic student) or even comparing the social preference of different members within and between student fraternities might help us to have a better understanding about the effect.

Lastly, due to time constraint, the number of participants is limited to 160 observations divided equally among four groups. this number of observation is far below the optimum number of observation. According to the G-Power test with 5% significance level, the optimal number of observation for each group amounts to 92 observations. Moreover, the culture, attitude, and behaviour of individuals is highly dependent on the geographic location of the field experiment. The fact that the experiment was solely conducted in the city centre of Rotterdam might impose problems such as external validity. Meaning that the results of this experiment might differ when the participants have different backgrounds.

In this thesis, we examine whether cognitive dissonance changes the social preference of an individual in an intergroup setting. It is known that intragroup discrimination exists in our modern society. Social conflicts such as racism, hate groups, and social injustice are still an ongoing debate across the world. This thesis attempts to introduce a new tool that allow us to promote tolerance through creating discomfort in the initial belief of an individual.

This research utilizes statistical methods including non-parametric tests, OLS regression, and Logit regression to help us understand whether there is sufficient evidence of intergroup discrimination and changes in social preference. One of the main findings through this experimental design is that we cannot justify that there is intergroup discrimination or favouritism in this setup. However, exposure to cognitive dissonance, on average, changes the social preferences of an individual. External factors such as age, education, and the smoking habit of an individual do not have a significant effect towards changes in social preference. All in all, we can conclude that, exposure to dissonance factors seemingly changes peoples' attitude, becoming more altruistic towards others.

6   References

Bolton, G. E., Katok, E., & Zwick, R. (1998). Dictator game giving: Rules of fairness versus acts of kindness. *International Journal of Game Theory*, 269-299.

Borger, J. (2004, October 7). *There were no weapons of mass destruction in Iraq.* Retrieved from The Guardian: https://www.theguardian.com/world/2004/oct/07/usa.iraq1

Borovcnik, M., & Bentz, H. J. (1991). Empirical Reserach in Understanding Probability. *Chance Encounters: Probability in Education*, 73-105.

Chang , T. Y., Solomon, D. H., & Westerfield, M. M. (2016). Looking for someone to blame: Delegation, cognitive dissonance, and the disposition effect. *The Journal of Finance*, 267-302.

Charness, G., & Rabin, M. (2002). Understanding Social Preferences with Simple Tests. *The Quarterly Journal of Economics*, 817-869.

Chen, Y., & Li, S. X. (2009). Group Identity and Social Preferences. *The American Economic Review*, 431-457.

Cooper, J. (2007). *Cognitive Dissonance: 50 Years of Classic Theory.* SAGE.

Coq, C. L., Tremewan, J., & Wagner, A. K. (2015). On the effects of group identity in strategic environments. *European Economic Review*, 239-252.

Cox, J. C., & Sadiraj, V. (2006). Small- and large-stakes risk aversion: Implications of concavity calibration for decision theory. *Games and Economic Behavior*, 45-60.

Croson, R., Marks, M., & Snyder, J. (2998). Groups work for women: Gender and group identity in social dilemmas. *Negotiation Journal*, 411-427.

Curseu, P. L., Stoop, R., & Schalk, R. (2007). Prejudice toward immigrant workers among Dutch employees: integrated threat theory revisited. *European Journal of Social Psychology*, 125-140.

Day, E. (2015, July 19). *#BlackLivesMatter: the birth of a new civil rights movement.* Retrieved from The Guardian: http://theguardian.com/world/2015/jul/19/blacklivesmatter-birth-civil-rights-movement

Eckel, C. C., & Grossman, P. J. (1996). Altruism in Anonymous Dictator Games. *Games and Economic Behavior, 16*, 181-192.

Eckel, C. C., & Grossman, P. J. (2005). Managing diversity by creating team identity. *Journal of Economic Behavior & Organization*, 371-392.

Festinger, L. (1957). *A Theory of Cognitive Dissonance.* Peterson Row.

Force, P. (2003). *Self-Interest before Adam Smith: A genalogy of economic scienve* (Vol. 68). Cambridge University Press.

Guala, F., & Mittone, L. (2010). Paradigmatic experiments: The Dictator Game. *The Journal of Socio Economics*, 578-584.

Hardt, S. S., Frey, D., Lüthgens, C., & Moscovici, S. (2000). Biased information search in group decision making. *Journal of Personality and Social Psychology, 78*(4), 655-669.

Konow, J. (2000). Fair Shares: Accountability and Cognitive Dissonance in Allocation Decisions. *The American Economic Review*, 1072-1091.

Kruse, J. B., & Hummels, D. (1993). Gender effects in laboratory public goods contribution: Do individuals put their money where their mouth is? *Journal of Economic Behavior and Organization, 22*, 255-267.

List, J. A. (2007). Field Experiments: A Bridge between Lab and Naturally Occuring Data. *The B.E. Journal of Economic Analysis & Policy*.

McDermott, R. (2009). Psychological Approaches to Identity: Experimentation and Application. In *Measuring Identity: A Guide for Social Scientist* (pp. 345-368).

McFalls, E. L., & Roberts, D. C. (2001, April). Reducing Resistance to Diversity Through Cognitive Dissonance Instruction. *Journal of Teacher Education, 52*(2), 164-172.

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

Rabin, M., & Charness, G. (2002). Understanding social preferences with simple tests. *The Quarterly Journal of Ecoomics*, 817-869.

Stets, J. E., & Burke, P. J. (2000). Identity Theory and Social Identity Theory. *Social Psychology Quarterly, 63*(3), 224-237.

Tajfel, H. (1970). Experiments in intergroup discrimination. *Scientific american*, 96-102.

Tanaka, T., & Camerer, C. F. (2009). Status and Ethicity in Vietnam: Evidence from Experiemental Games. *Social Computing and Behavioral Modeling*, 1-2.

Turner, J. C., Brown, R. J., & Tajfel, H. (1979, April). Social comparison and group interest in ingroup favouritism. *European Journal of Social Psychology, 9*(2), 187-2014.

Urbanovich, S. (2012). Cognitive theory a qualitative comparison of the George W. Bush administration and Barrack H. Obama administration. 1990-2015.

Weichselbaumer, D., & Ebmer, R. W. (2005). A Meta-Analysis of the International Gender Wage Gap. *Journal of Economic Surveys*, 489-511.

Wilder, D. A. (1978). Reduction of Intergroup Discrimination Through Individuation of the Out-Group. *Journal of Personality and Social Psychology*, 1361-1374.

Yamagishi, T., & Kiyonari, T. (2000). The Group as the Container of Generalized Reciprocity. *Journal of Social Psychology Quarterly*, 116-132.

7 Appendix

7.1 Appendix 1: Descriptive Statistics

		N	Mean	Std. Dev	Min	Max
Transfer		160	2.543	1.914	0	5
Age		160	29.4	14.259	15	82
Duration		160	10.44	10.138	1	50
Quantity		160	11.73	8.292	1	50
Gender						
	Male	93				
	Female	67				
Education						
	Primary	35				
	Secondary	46				
	University	79				

7.2 Appendix 2: Correlation Matrix

	Transfer	Duration	Quantity	Female	Age	Treatment	Between	Donate	Equal-split
Transfer	1.000								
Duration	0.005	1.000							
Quantity	-0.100	0.437**	1.000						
Female	0.106	0.060	-0.166*	1.000					
Age	0.085	0.778**	0.378**	0.024	1.000				
Treatment	0.216*	0.087	-0.014	0.013	0.105	1.000			
Between Group	0.003	0.019	-0.039	0.063	0.067	0.000	1.000		
Donate	0.756**	-0.126	-0.163*	0.128	-0.044	0.015	-0.044	1.000	
Equal-split	-0.016	-0.119*	-0.033	0.126	-0.104	-0.201*	0.040	0.388**	1.000

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

The correlation matrix above shows the Pearson correlation coefficients between all the variables that is used in the model. The variable Age and Duration of smoking shows a significant positive correlation. This means that being older is in line with the duration of someone smoking. Moreover, the variable Age is also shows a significant positive correlation with the variable quantity. This means that

being older, the quantity of cigarettes smoked per day is also higher. Lastly, it also shows that being a female, decreases the quantity of cigarettes smoked a day.

7.3   Appendix 3: Histogram Age
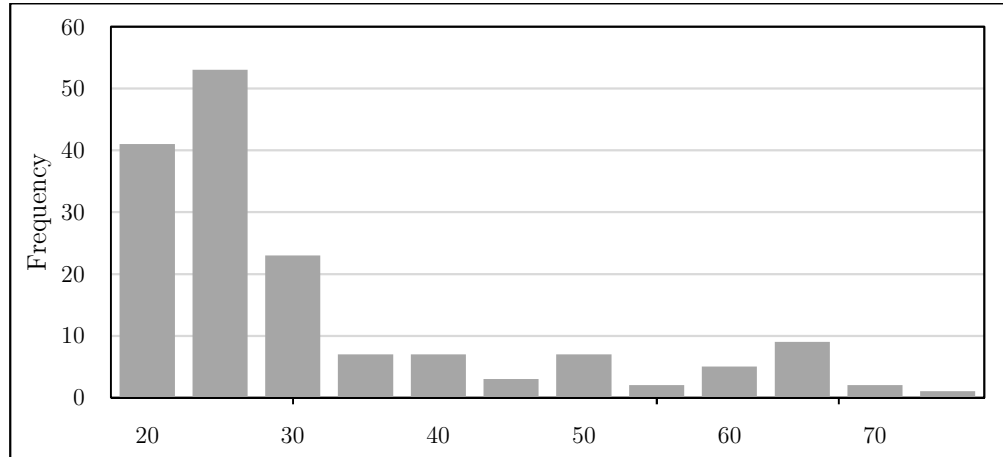
The histogram represents the age distribution of the sample. It can be seen that the majority of the respondents lies between 20 and 30 years old.

7.4   Appendix 4: Logistic Regression (Female)

Logistic Regression (Dependent Variable: Donate)

Log Likelihood   -87.519

	Coefficient	Std. Error	Z	P>|z|	95% CI Lower Bound	Upper Bound
Female	0.628	0.392	1.6	0.10	-0.139	1.397
Constant	0.893	0.228	3.91	0.00	0.446	1.341

Conditional Marginal Effects

	dy/dx	Std. Error	Z	P>|z|	95% CI Lower Bound	Upper Bound
Female	0.1111	0.0664	1.67	0.094	-0.0189	0.2413

From the table above, we can conclude that being a female increases the probability of transferring an amount of money to the responder by approximately 11%, ceteris paribus.

7.5   Appendix 5: Logistic Regression (Equal Split)

	Model 9	Model 10	Model 11
Dependent Variable: Equal Split			
Constant	-.936	-.573	-.585
	(.695)	(.516)	(.390)
Between	.562	.553	.552
	(.476)	(.472)	(.472)
Treatment	-1.001**	-.971***	-.971***
	(.503)	(.492)	(.492)
Between * Treatment	.284	.198	.195
	(.732)	(.724)	(.719)
Duration	-.038	-.031	-.032
	(.031)	(.030)	(.020)
Quantity	.014		
	(.026)		
Female	.618*	.589*	.589*
	(.369)	(.358)	(.358)
Age	-.000	-.000	
	(.020)	(.020)	
Education			
Secondary	.458		
	(.514)		
University	.198		
	(.481)		
N	160	160	160
Log Likelihood	-92.937	-93.477	-93.478

Note: Coefficients and Standard Errors (in parentheses). *, **, and *** indicates significance at 10%, 5%, and 1% level respectively.

The table above represents the logistic regression with Equal Split as the dependent variable. It is evident that being exposed to cognitive dissonance decreases the probability of someone transfers an amount of money equally. This supports the hypothesis that argues that people will becomes more altruistic.

Moreover, being a woman increases the probability to allocate the sum of money equally, ceteris paribus. Lastly, the additional control variable duration of smoking, quantity of cigarettes smoked, age, and education does not significantly influence the probability of the dictator allocating a sum amount of money equally to the responders.

7.6 Appendix 6: Questionnaire Design (OutGroup-NoDissonance)

Master Thesis: M.Sc. Behaviour Economics
Erasmus University Rotterdam

BEHEC0001

1. How long have you been smoking?

2. How many cigarettes do you smoke a day?

Money Allocation Sheet
Receiver: **Non-Smoker**
Assume that you won the lottery. Now you have 5 euros at your disposal. You can decide to share your 5 euro with someone else who **does not smoke**. **Please mark (x) in the following column how much you want to give to that person.**

0	
0.50	
1	
1.50	
2	
2.50	
3	
3.50	
4	
4.50	
5	

1. Gender:
a. Male
b. Female

2. Age: ...

3. Education:
a. Primary School
b. Secondary School
c. University

7.7   Appendix 7: Questionnaire Design (InGroup-NoDissonance)

<div align="center">

Master Thesis: M.Sc. Behaviour Economics
Erasmus University Rotterdam

BEHEC3001

</div>

1. How long have you been smoking?

2. How many cigarettes do you smoke a day?

<div align="center">

Money Allocation Sheet
Receiver: **Smoker**

</div>

Assume that you won the lottery. Now you have 5 euros at your disposal. You can decide to share your 5 euro with someone else who **smokes. Please mark (x) in the following column how much you want to give to that person.**

0	
0.50	
1	
1.50	
2	
2.50	
3	
3.50	
4	
4.50	
5	

1. Gender:
a. Male
b. Female

2. Age: ...

3. Education:
a. Primary School
b. Secondary School
c. University

7.8   Appendix 8: Questionnaire Design (OutGroup-Dissonance)

<div align="center">

Master Thesis: M.Sc. Behaviour Economics
Erasmus University Rotterdam

BEHEC2001

</div>

1. How long have you been smoking?

...

2. How many cigarettes do you smoke a day?

...

3. List 3 adverse health affects you get from smoking"

     1. ...

     2. ...

     3. ...

<div align="center">

Money Allocation Sheet

Receiver: **Non-Smoker**

</div>

Assume that you won the lottery. Now you have 5 euros at your disposal. You can decide to share your 5 euro with someone else who **does not smoke**. **Please mark (x) in the following column how much you want to give to that person.**

0	
0.50	
1	
1.50	
2	
2.50	
3	
3.50	
4	
4.50	
5	

1. Gender:

a. Male

b. Female

2. Age: ...

3. Education:

a. Primary School

b. Secondary School

c. University

7.9 Appendix 9: Questionnaire Design (InGroup-Dissonance)

Master Thesis: M.Sc. Behaviour Economics
Erasmus University Rotterdam

BEHEC1001

1. How long have you been smoking?

...

2. How many cigarettes do you smoke a day?

...

3. List 3 adverse health affects you get from smoking"

    1. ...

    2. ...

    3. ...

Money Allocation Sheet

Receiver: **Smoker**

Assume that you won the lottery. Now you have 5 euros at your disposal. You can decide to share your 5 euro with someone else who **smokes**. **Please mark (x) in the following column how much you want to give to that person.**

0	
0.50	
1	
1.50	
2	
2.50	
3	
3.50	
4	
4.50	
5	

1. Gender:

a. Male

b. Female

2. Age: ...

3. Education:

a. Primary School

b. Secondary School

c. University