Doctoral Thesis
School of Social Sciences
UNIVERSITY OF TRENTO

Decision-making In Different Cultures: Essays In Experimental Economics

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A thesis submitted in partial fulfilment of the requirements for the degree of Doctor of Philosophy in Economics and Management

October, 2019

Abstract

People interact with each other rationally and irrationally. Standard economic theories assume that people act rationally, yet, behavioral economic theories indicate that sometimes people act irrationally because of the specific situation, their character, and many other factors.

Culture plays a role in shaping people's preferences, values, personalities, norms, and beliefs. That being the case, it is important to shed some light on the effect of different types of cultures on people's decision-making behavior, in order to better understand human nature with regard to economic decisions.

The ultimate goal of this thesis is to define how people from various cultures behave differently while making economic decisions, and to provide a better understanding for the motives behind people's preferences towards decision-making.

The first and second chapters of this thesis consider studies in experimental economics about the effect of introducing *effort* to the ultimatum game. The first chapter provides evidence that people's decisions are driven by either hierarchy or property rights by comparing the results of three different cultures. The second chapter shows the impact of proposers' effort in the ultimatum game, in which, culturally driven phenomenon impact on the proposers' behavior. The third chapter investigates the impact of the Islam religion on experimental studies with regard to decision making and it shows that religious beliefs play an important role in shaping people's preferences.

Keywords: behavioral economics; experimental economics; ultimatum game; fairness; effort; culture; hierarchy; property rights; Islam.

Dedication

To my mom and dad, who have constantly given me support, unconditional love, and encouragement.

To my wife, who has sacrificed her time, given me her endless support and kindness, and accepted to join me in our life overseas in order to accomplish my goals.

To my siblings: Bander, Lamya, Amal, and Lina, who have always encouraged me on my Ph.D. journey.

To Abdullah, my beautiful son, who puts a smile on my face every morning.

To my true friends, Bandar Alashab, Prof. Abdullah Alberaidi, Dr. Ahmad Alkubair, Abdulaziz Altowaijri, Dr. Adnan Alobiad, and Saleh Alkhidhr, who have kept urging me to complete my thesis.

To my employer, Majmaah University, who gave me the opportunity and supported me with the scholarship that covered my studies and my living costs during all the years that I have spent in Italy.

ACKNOWLEDGEMENTS

This amazing and unique Ph.D. journey that I have gone through would not have happened without the endless support, advice, and enthusiasm from my advisors Prof. Luigi Mittone and Prof. Matteo Ploner, who will both remain in my thoughts and will be remembered forever in my memory. Their great effort, guidance, and encouragement have changed my life, sharpened my critical thinking, and enhanced my research abilities. I am grateful for the knowledge they have transferred to me, and for answering my repeated questions without any hesitation or delay. Both of them have put their valuable knowledge, experience, and wisdom at my disposal at any time.

My sincere thanks to my employer, Majmaah University, who gave me the opportunity and supported me financially to accomplish my Ph.D. abroad in a highly respected university, the University of Trento.

I extend my thanks to the referees, Prof. Luca Corazzini, and Prof. Dirar E. E. Ahmed, who both spent their priceless time in reviewing and providing me with their valuable feedback about my thesis. From their notes, I have learnt and enhanced my knowledge regarding academic ways of writing and reporting. I will owe them for my life regarding their inputs that reshaped my research ability to be in a better place.

I also extend my gratitude to my course mates, who took part in their own Ph.D. journey alongside me, Ali Seyhun Saral, and Tatiana Balmus, who never stopped supporting and encouraging me to finalize my thesis. My thanks also to the genius and talented programmer Marco Tecilla, who helped me in developing the necessary codes to launch my experiments successfully.

Finally, this Ph.D. thesis would not have been completed without the welcome I received from the University of Xiamen in China, especially professor Yun Wang, who allowed me to use the FEEL lab to conduct my experiments. I am also grateful to the Dean of the College of Ghat at Majmaah University, professor Omar Alomar, and his team members, who helped me to run my experiments in their labs.

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Introduction

Humans are born in different cultures and are exposed to different types of norms, education levels, philosophies, experiences, and beliefs. Some are driven by individualistic preferences and others are driven by collectivism. Some are shaped by hierarchy and others are property rights' seekers. Examining cross-cultural differences especially in the current technological era, in the field of experimental economics, is an essential step towards discovering the nature and real motives of the human decision-making processes to better understand why and how a decision is made. The standard economics theories assume that all humans make their economic decisions rationally, and share the same approach of maximizing self-interest. Yet, behavioral economic studies show that humans are not always rational, in fact, they are acting according to a bounded rationality, for instance, Herbert A. Simon (1955, 1979) argued that decisions are made to gain self-satisfaction rather than maximizing self-interest. Furthermore, some decisions are made to punish or compete with others even if such decisions can lead to losing gains. Since beginning to investigate human motives towards certain types of decisions, economists have been studying the impact of real-life factors that may or may not affect the process of decision-making. Age, gender, education, and other demographic variables have been used to identify human preferences more precisely and to put forward theories about economic drivers.

In this thesis, the main goal is to shed some light on the difference in decision-making preferences between three different cultures, which are Italian, Chinese, and Saudi Arabian, all of them being members of the G20. In order to measure the differences, the *effort* factor was employed, as a tool, which been used in the literature of experimental economics as a proxy to understand the reasons behind choosing a specific option, and to mimic real life situations. The

effort component is focused on in the two first chapters, by introducing it in the Ultimatum Game (UG), which is one of the most famous experimental games in the field. Results of these experiments varied significantly based on how people perceive endowments and the country they come from. Furthermore, several variants were identified as influencing their decisions.

This research aims to provide behavioral insights for researchers, above all, enabling them to take into consideration cultural differences when they design their experimental studies, especially, when experiments conducted in a society that may be driven by a hierarchy structure like Saudi Arabia and China, or in a society where people seek to extend their property rights such as Italy. The first chapter examines the impact of introducing effort to the responders in the UG. By adapting this method, this study was able to detect how participants perceive the allocated endowment and to what extent the endowment was perceived by people from all these different cultures. Effort was also used as a proxy in the second chapter to analyze subjects' behavior when effort was exerted by proposers and to what extent those proposers' decisions differed culturally. The third chapter of this thesis discusses the impact of belief in Islam on people's preferences in Saudi Arabia, regarding decision-making. This chapter was written as a response to the first two chapters, where unprecedented results were seen in the effort component in identifying why and how participants from a society like Saudi Arabia, which is a well-known as a conservative Islamic country, would act towards experimental studies, i.e. experimental economics studies. An online questionnaire was used to analyze peoples' preferences and willingness to participate in experimental economics trials. The three chapters all show how important it is for a researcher to recognize the impact of cultural differences in reaction to experimental economic studies and give a wider angle on people's decision-making motives.

Chapter 1

The Effect of Effort in The Ultimatum Game:

A Cross-Cultural Analysis

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April 2019

Abstract

The Ultimatum Game (UG) has been used as a constructive experimental tool for understanding human behavior in terms of decision making as well as certain other aspects, for instance, rationality, and also issues related to fairness and punishment. This study examines the impact of effort on subjects' behavior in the UG. More precisely, it analyzes not only the impact of responders' effort on proposers' decisions but also the effect on responders' decisions themselves. For this purpose, two lab experiments were run in Italy, China, and Saudi Arabia. In the first experiment, responders had to exert a certain amount of effort to be able to *claim* an amount of the endowment while responders in the second experiment had an option to claim a proportion without exerting effort. The latter experiment was used as a control group for the first experiment. These experiments were used to observe the extent to which hierarchy or property rights have an impact on subjects' behavior. This study found that when Italian responders exert effort, they significantly reject low offers more than when effort is not exerted. It also concluded that endowments in the Italian experiments were observed as property rights, while Saudis were influenced by hierarchy. On the other hand, the Chinese experiments revealed an approach towards endowments which lay mid-way between the approach in Italy and in Saudi Arabia. The study also found that when Italian responders exert effort, proposers significantly lower their offers more than when effort is not exerted. The latter behavior was not detected in the Chinese and Saudi experiments.

Keywords: experimental economics; Ultimatum Game; effort; culture; hierarchy; property rights.

1.1. Introduction

In the Ultimatum Game, proposers are given the opportunity to decide a proportion of an endowment to be offered to responders, who have the power to accept or reject that offered proportion. If a responder rejects the offer both parties will receive nothing, whereas the endowment will be shared according to the proposed offer if the responder accepts (Guth et al, 1982). Research has documented various studies addressing various effects observed during the UG. For instance, the UG has been implemented in experimental studies from a range of perspectives, and results have varied depending on the emotional, demographic, age, or gender variables on which each study focused. To mention a few, Kagel and Moser (1996) investigated fairness in the UG, Bornstein and Yaniv (1998) examined individual and group behaviors in the UG, Solnick and Schweitzer (1999) studied the impact of physical attractiveness and gender on UG decisions, Weber et al., (2004) explored timing and virtual observability, Oosterbeek et al., (2004) looked at cultural differences in UG studies. However, in this paper, this study only concentrates on utilizing UG as an effective tool for predicting human economic behavior regarding decision-making. More specifically, the first experiment group addresses the role of responders' effort in increasing (or decreasing) the proposers' offers, as well as its effect on responders' decisions toward accepting or rejecting offers. By collecting data from three different countries this study concluded whether the endowments were perceived as representing ownership rights or hierarchy in a cross-cultural perspective.

Most UG studies have concluded that responders tend to "take costly actions that express their concerns for fairness by rejecting positive offers" (Carr & Mellizo, 2013). This suggests that responders in behavioral economic games take fairness into account. Therefore, a proposer should strike a balance to ensure this fairness by raising the proportion of the amount offered to

the responder. Fairness should also be present in proposers' offers when responders exert effort. Guth and Kocher (2014) provide another logic for rejections in that "responders do not only care about their own monetary payoff but compare their payoff with that of the proposer and become frustrated when their share is much lower". In this study, effort is used as a tool for examining proposers' and responders' decisions.

Since there is a lack of research addressing the role of responders' efforts in affecting their decisions, this paper aims not only to bridge a gap in the literature of behavioral economics, but also to study perceptions of endowments from the point of view of different cultures and discover whether culture plays a significant role in the UG or not. More precisely, to what extent are endowments perceived as property rights, or as a matter of hierarchy in the light of exerting effort?

The differences in perceiving the experiments' endowments in three countries of three different cultures (Europe, Asia, and Middle East) were studied in this paper. The findings related to these countries, namely Italy, China and Saudi Arabia, can be generalized to other countries or at least be considered as a reliable source of understanding of the effect of cultural differences.

1.2. Literature Review

Since its introduction by Güth et al. (1982) the UG has been discussed extensively in literature in the field of economics, especially, in behavioral economics. The game rejections made by the responders to low offers has shed some light on ignored aspects of human behavior involved in decision making, fairness, punishment, cultural effects, self-control, and so on. For instance, responders' acceptance of any offer is greatly influenced by their sense of not being taken advantage of, or as what the literature called *fairness* (Fehr et al., 1993; Burrows & Loomes,

1994; Forsythe et al., 1994; Kagel et al., 1996; Fahr & Irlenbusch, 2000; Camerer, 2003). To ensure that this sense of fairness persuades responders to accept the proposed offers, this study relies on responders' efforts to clarify the effects of effort on proposers' offers and whether effort plays a role in responders' decisions or not. One noteworthy issue which arises from this experimental study involve other related variables, more precisely, social value orientations (SVO), the main focus, being on the effort variable in the experiment group.

By introducing effort to the UG, the researchers in this study were able to correlate efforts to the offered proportions, in which responders exerted some amount of effort to be able to claim a certain proportion. However, subjects in the experiment adjusted their behavior according to the effort exerted thus showing how effort plays an important role in the UG decisions for both parties, proposers and responders. Since effort has not been extensively examined in the UG, it is useful to analyze how effort has been investigated in other similar games. Several previous studies have emphasized the impact of making considerable effort to accomplish bargaining tasks. Most of these studies have concentrated on the way endowments are obtained by responders, who are impacted by proposers' spent effort. In one notable study, Burrows and Loomes (1994: p. 203) concluded that, in reciprocity games, "differentials in payoffs are deserved, and are, therefore, fair if they correlate positively with the amount of effort involved in obtaining them". In the same vein, Fahr and Irlenbusch (2000) noticed that responders in trust games were willing to accept offers when effort was exerted by proposers. This therefore suggests that effort, regardless of what form of effort is spent, plays a vital role in increasing or decreasing the likelihood of responders' willingness to accept or reject an offer. Similarly, Gintis et al., (2003) found some evidence demonstrating that, in an employer-employee game, the more the employee role-player provides effort (*e*), the more the employer

role-player will raise the wage (w). In other words, Gintis et al., (2003) noticed that effort in behavioral economic games is a key to affecting bargaining rates. Moreover, in the moonlighting game, Abbink, Irlenbusch, and Renner (2000) examined the effect of effort on enhancing a moonlighter (responder)'s acceptance of an offered endowment. They pointed out that effort contributes to increasing responders' trust in proposers, and thereby reaching successful deals with them. A study by Fehr & Schmidt (2001) examined the effect of effort exerted by responders in the Gift Exchange Game on the proposers' decisions. Carr and Mellizo (2013) utilized the UG to identify some factors that impact responders' acceptance or rejections to offers other than the distribution of endowments. They concluded that the source of endowments has an impact on the proportions of acceptance and/or rejections. In their study, they provided different endowments based on the proposers' efforts. A paper by Bland et al (2017) mentioned that "*In real life, however, people's propensity to engage in cooperative behavior depends on their effort and contribution; factors that are well known to affect perceptions of fairness.*". Carr and Mellizo (2017) found that the probability of rejecting an endowment is lower by more than 44% when endowment is generated by responders' effort than when endowment was exogenous. In this study, as mentioned earlier, the endowment was fixed, but the proportion a responder could claim was linked to some amount of effort. This procedure ensures a direct relation between the exerted effort, the proportion claimed, proposers' offers, and responders' final decisions.

This paper examines the effect of the responders' claiming option and whether that claim was done with effort or without, and how it impacted on the participants' decisions. Using this option has helped us to understand the different kinds of perceptions of endowments more fully and whether they are perceived as property rights or there is a hierarchy effect on participants' decisions.

1.3. Research Gap

There has been little research addressing the role of responders' effort in persuading proposers to modify their offers in the UG. Linking efforts to the claimed proportions gives us a more realistic interpretation of human behavior; whereas the addition of claiming options has enabled us to identify the motives of responders' decisions and give clearer interpretations about endowments, regarding the extent to which they were perceived as property rights or as a matter of hierarchy among the different cultures. The central objective of this study is to observe the players' perspectives and understand the real motives behind certain decisions. In this way it will contribute to the literature, thus bridging the research gap in this field. Therefore, the differences between three countries from Asia, Middle East, and Europe, were studied to be able to generalize the findings and to have a wider consideration about different cultures on behavioral decisions that are related to fairness.

1.4. Target Population:

This study was run in three different countries, as mentioned earlier, for two main reasons. The first reason is that the target population represents some similarities and some differences regarding their backgrounds, financial systems, languages, and three other aspects as follows: Firstly, all the three countries are members of the G20 (Group of Twenty) which is an international forum to discuss global economies by the top economy countries. Secondly, People from all the three countries belong to or affected by different religions, i.e. in Italy, which has the Vatican City within its borders, most people are influenced by Christianity, mainly the Catholic Church, while in China most of the population are either atheists or Buddhists, whereas people of Saudi Arabia are all considered Muslims except some of non-Saudi workers who are working in Saudi Arabia with a working-visas. The country also has the two holiest mosques of Islam,

Makkah and Madinah, and the direction of all Muslims around the world when they want to pray or perform Hajj, which is the fifth pillar of Islam. Thirdly, all people from the three countries speak different languages, namely, Italian, Chinese, and Arabic. Fourthly, Italy, China and Saudi Arabia are all known for being ancient nations. Although the country of Saudi Arabia got its current name in 1932 as the Kingdom of Saudi Arabia its roots go back up to 130,000 years ago (Armitage et al., 2011). Fifthly, each country represents different location and different financial system, which both have an impact on people's lives. For instance, Italy represents a western country that is mainly run by capitalism, while China represents as an eastern country that is transforming in its financial systems, and Saudi Arabia as a Middle-Eastern country that is run by Islamic financial system. Sixthly, all the three countries have different dimensions in the Hofstede Model, more precisely, the Power Distance dimension (PDI). The Hofstede Model proposes six different dimensions, which represent the effect of culture on individuals' value (Hofstede, 2011). The targeted population in this study is compared according the PDI dimension, which is defined by the author as "*the extent to which the less powerful members of institutions and organisations within a country expect and accept that power is distributed unequally*". Table 1 summarizes the first reason behind the motives of choosing the three countries:

Table 1

Differences between the three chosen countries

	Italy	China	Saudi Arabia
G20 Ranking	9th	3rd	17th
Religion Influence	Christianity - Catholic	Atheists (non-religious)	Islam - Sunni
Language	Italian	Chinese	Arabic
Heritage	Ancient	Ancient	Ancient
Location & Financial System	Western - Capitalism	Eastern - Transforming	Middle Eastern - Islamic Financial
Hofstede's PDI	50	80	95

From the table above, it can be seen that each country represents a unique population that shapes people's choices and may lead people to make decisions in different ways. For instance, the PDI in the Hofstede Model shows that Saudi Arabia's score is 95, which is a very high score, exemplifies how less powerful people are willing to accept unequally distribution of power. This score also tells us that people of Saudi Arabia are such of hierarchy oriented, centralization is accepted and those less power people are expected to accept what they are told to do. In contrary, Italy's score represents unbalanced levels of PDI, that is, people from the northern part of Italy comparing to the southern part prefer to have decentralization and equally distribution of power more than those of the southern (Hofstede, 2011). Furthermore, Chinese people tend to accept inequalities amongst people. According to Hofstede's interpretation, Chinese people are "*influenced by formal authority and sanctions and are in general optimistic about people's capacity for leadership and initiative.*".

The second reason is that the target population characterizes different point of views about exerting effort. Firstly, according to Statista (2017), Chinese people ranked at the top of the average number of steps people took per day with 6,189 steps per day. Whereas the average Italians steps per day was 5,296. Both Chinese and Italians people spend higher amount of physical activity comparing to Saudi Arabian people whom average number of steps took per day was only 3,807. Secondly, according to WHO's Insufficient Physical Activity Index (2018) China has a score of 14.1% as an insufficient physical activity amongst people who are older than 18 years old which puts Chinese people at the top in the list as active people, while Italy has a score of 41.4% which means that Italians are not as active as Chinese people but they are much better than Saudis, who are in bottom of the list with a score of 53.1%. Furthermore, there is a difference between the southern and northern Italians regarding productivity, in which, the

northern Italians productivity is higher than southern Italians (Giunta, Nifo & Scalera, 2012) and this study was conducted in the northern part. While China's rapidly developing and changing systems are pushing towards exerting more effort to meet those changings it is reported that Chinese are working more than the legal standard hours per week (Zeng, *et al*. 2005). However, exerting effort in Saudi Arabia is seen as a not a favorable thing to do. A study by Al-Hazza (2007) concluded that the majority of Saudis were inactive regarding exerting physical efforts and that more than 72% of his sample did not engage in any physical activity that last only for 10 minutes.

To sum up, here are the two experiments:

1- *UGT*: treatment group in which responders must exert a certain effort to be able to claim a certain proportion of the endowment.
2- *UGC*: control group in which responders can claim a proportion without exerting effort.

1.5. Research Questions

This study's main research question is: Do subjects from different cultures perceive endowments as property rights or as a matter of hierarchy?

In order to answer the primary research question, analyzing the two following secondary questions was needed:

1- Does the UG with effort plus the claiming option have a larger influence on the number of rejected offers in the UG compared to just the claiming option? More precisely, would low offers that are usually rejected in the UG with effort, including the claiming option, be accepted in the situation with only the claiming option (without effort)?

2- By knowing that responders have exerted effort to be able to claim certain proportions, would proposers offer a lower proportion to responders than they would without responders' efforts? (Since responders have exerted efforts, they might not want to lose that effort so they might accept lower offers).

1.6. Methodology

This study was conducted experimentally in three different countries. In Europe, the experiments were run in Italy, at the CEEL lab at the Universita' di Trento. In Asia, the experiments were run in China, at the FEEL lab at Xiamen University and in the Middle East, the experiments were run in Saudi Arabia, at Majmaah University. The study includes two different experiments. Firstly, the UGT (with the effort component plus claiming option) was used as an experiment group. Secondly, the UGC (with only the claiming option and without exerting effort) was used as a control group. A binary regression analysis as well as an independent-samples t-test analysis were used to detect the significance of each variable in both experiments.

1.7. Hypotheses:

Hypothesis 1: Claims with exerted effort by responders (UGT) significantly and negatively influence proposers' decisions about the offered size of the proportion of the endowment in the UG.

The first hypothesis states that having both effort and the claiming option significantly and negatively influence proposers' offers compared to having just the claiming option. To test this hypothesis, an independent-samples t-test analysis was drawn to detect the offers mean differences between the UGT and UGC.

Hypothesis 2: In the UG with responders' effort plus claiming option (UGT), in societies with stronger hierarchical structure – i.e., lower impact of property rights – low offers are more likely to be accepted.

The second hypothesis states that there is a significant and positive relationship between accepting low offers and cultures that are based on hierarchy in the UGT. To test this hypothesis, a binary logistic regression was conducted using the data from the two experiments (UGT and UGC). The dependent variable was the acceptance of offers and the independent variables were the proposed offer, claim-offer difference, and gender.

1.8. Experimental Design

1.8.1 Data Collection

Data was collected by recruiting 308 subjects randomly from the three countries (Italy: 140; China: 52; Saudi Arabia: 116) as shown in Table 2 below:

Table 2

Number of participants from each country

	UGT		UGC		UGT Total	UGC Total	Total
	Male	Female	Male	Female			
Italy	49	39	22	30	88	52	140
China	17	19	7	9	36	16	52
Saudi Arabia	48	12	49	7	60	56	116
Total	114	70	78	46	184	124	308

These subjects were mostly university students from different majoring fields, thus ensuring to have different backgrounds in our data. A show-up fee of 3 Euros was given to each Italian participant as encouragement to participate in the study, and an endowment of 10 Euros was given for bargaining. Subjects from China and Saudi Arabia were given the same value based on

the Big Mac Index. The total budget of the six experiments (3 treatments and 3 control groups) was approximately 2,470.00 Euros[1].

1.8.2 Laboratory Environment

Prior to conducting the study, the participants in all experiments had to read detailed instructions about the study rules including the 10 Euros endowment (or its equivalent in other currencies based on countries' purchase power of Big Mac Index), how this amount is bargained, how efforts are made, when deals are made, and when both players lose the entire endowment. The instructions were read before the start of the game and were shown on the computers that the subjects used. For instance, each participant read that if the responder accepted the offer, the endowment would be shared out according to the agreed proportion. However, if the responder rejected the offer, both bargainers would lose the whole endowment. To make sure there were no other effects, all offers were made under conditions of anonymity. In other words, proposers did not know the identity of the responders they were matched with and vice versa. To implement this method effectively, proposers and responders did not know about their roles until they read the instructions on their computer screens when their roles popped up. Moreover, the participants' performance was monitored by providing them with feedback or help whenever needed. Furthermore, the experiments were originally written in English then translated into 3 different languages: Italian, Mandarin, and Arabic then all those three translated experiments were translated back into English by other translators to ensure that there was no ambiguity in the words being used in the experiments. During the setup of laboratories, there was no issues in both the Italian and Chinese experiments, but in Saudi Arabia there was a problem having males

[1] This does not include other expenses such as travel expenses, printing documents, assistance fees, and other lab expenses.

and females to present together in the same laboratory. The education system in Saudi Arabia is mainly forcibly segregated by gender from the elementary school to graduate studies (Alsuwaida, 2016) with some few exceptions like King Abdullah University of Science and Technology (KAUST) and in some majors in other universities like medicine. With the current reforming in the country, some graduate programs have started to eliminate such segregation. In this study, it was impossible to recruit participants in the same laboratory, instead, males participants were placed in a lab while female participants were placed in another one in the females section. With this type of restriction it was not easy to recruit as many females as males and that caused an unbalanced number of participants among the Saudi participants. All games were developed and implemented by using the Otree platform, which is an open-source software platform used for laboratories, online, and fieldwork (Chen, Schonger & Wickens, 2016).

1.8.3 Procedures

Subjects in all the three experiments were told about an endowment of 10 Euros (or its equivalent in other currencies based on a country's purchasing power on the Big Mac Index) to be negotiated between two types of subjects, proposers and responders. Yet, both proposers and responders were assigned randomly, and each proposer was automatically paired with a responder by the computer (generated by default). This signifies that, once the proposer sends his/her offer, the computer randomly delivers the offer to a responder. More importantly, the computer makes an explicit linkage of each pair so that tracking their bargaining processes was possible. As a clue, responders were told how much proposers have proposed and also how much effort responders have made and how much their claim was shown to proposers. After that, if a responder rejected an offer, the proposer was notified about this rejection on his/her computer screen. In the same manner, if the responder accepted the offer, the proposer was also notified

that the deal was made successfully. Then, all subjects' decisions were collected and analyzed in order to identify to what extent responders' efforts influenced the two parties' decisions. Finally, the findings of the first experiment (UGT) were compared with a separate control group (UGC) where no effort was involved except the ability to claim.

1.8.4 Offer Making

In the experiments where responders exert effort (UGT), responders were given five minutes to exert effort by performing a slider-task on the Otree platform. The slider-task pops up on the screen and responders' effort is made when responding. In other words, the slider-task is considered as an effort that responders must make in order to claim a certain proportion. Responders cannot select the next proportion level until they make a certain effort. To make this clearer, Table 3 illustrates how the proportions and efforts are laid out in the UGT. Thus, responders consider these efforts carefully prior to making their decisions.

Table 3

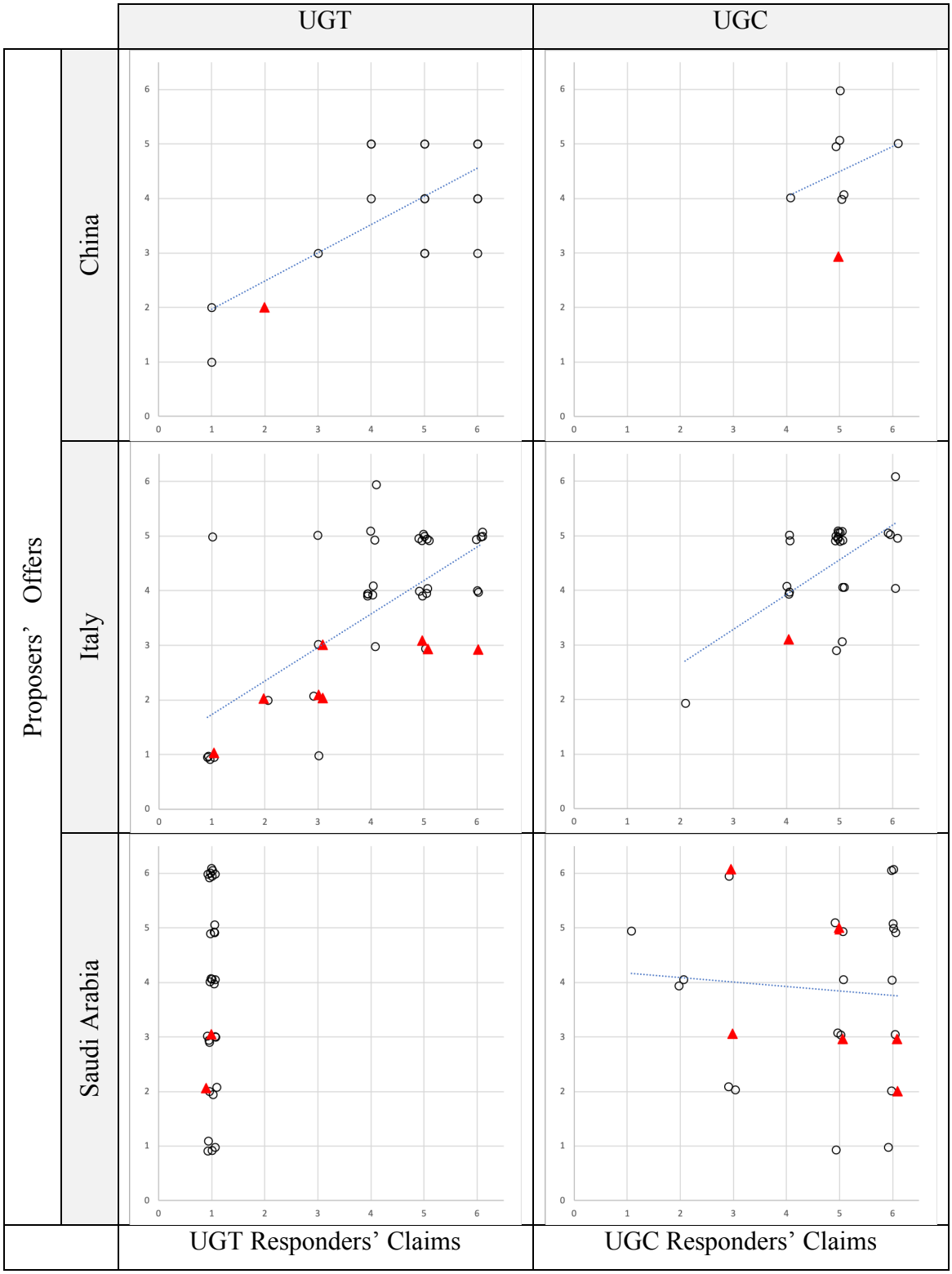
Efforts made by Responders (B), and amounts can be claimed from

Sequence	Efforts (Sliders)	Claim (B)
1	50+	1, 2, 3, 4, 5, or 6
2	40 －49	1, 2, 3, 4, or 5
3	30－ 39	1, 2, 3, or 4
4	20－29	1, 2, or 3
5	10－19	1, or 2
6	0 －9	1

According to Camerer (2003) an offer of 50% is usually accepted in standard UG studies (which reflects offer #2 in Table 3), and any proportion given to a responder greater than 50% is considered rare (#1 in Table 3) as well as offers of 10% or lower (which mirror offer #6 in Table 3). Similarly, another experiment was performed, yet without including the effort variable, which is UGC. This experiment was used as a control to the first experiment (UG with effort).

1.9. Results

Three experiments and three control groups were run in Italy, China, and Saudi Arabia. Italian sessions were done in May, June, and October of 2016, and Chinese sessions were done in July 2016, whereas the Saudi sessions were run in the April and May of 2017. During the sessions, we were assure that they do not overlap with external effects like religious days, exams, or other factors, also, we had not faced any IT problems in any of the sessions. To better show the results of those countries, graph 1 contains each experiment from each country with proposers' offers in Y columns and responders' claims in X rows, while red triangles are the rejected offers. Sections 1.9.1. and 1.9.2. are experiments results in details.



Graph 1: Proposers' offers and responders' claims in the UGT and UGC (red triangles are rejected offers)

1.9.1. The UG with responders' claims and efforts (UGT) experiment:

In this game, responders must exert effort to be able to claim a proportion. If a responder decided not to exert any effort, s/he can only claim a proportion of 10%. However, if a responder wanted to claim a higher proportion, s/he would have to exert more effort. For instance, if a responder wanted to claim a proportion of 50% s/he would have to exert an effort of at least 40 slider-tasks. Unsurprisingly, none of the 4 or 5 offers were rejected in all of the experiments carried out in the three countries except in the control group of Saudi Arabia in which some users rejected fair or even generous offers. This latter kind of behavior might be caused by the subjects' own beliefs and the influence of religion which these subjects had already effectively rejected by participating in these experiments, fearing that this type of experiments might violate their religious teachings. Here are the main results of the UGT:

Table 4

UG with effort and claim option (UGT)

Country	N	Gender		Age		Task Avg.	Proposers' Avg. Offers	Responders' Avg. Claim	% of rejected offers
		Male	Female	Min	Max				
Italy	88	49	39	20	28	37.45	3.57	3.95	18%
China	36	17	19	16	25	40.33	3.72	4.39	5.55%
Saudi Arabia	60	48	12	20	36	0.27	3.73	1	3.33%

In Italy, eight of the offers were rejected. All of them were three or lower, and all of the rejected offers were equal to or lower than responders' claims. While only two offers were rejected in Saudi Arabia , all of them were also three or lower. However, only one offer was rejected in China and that offer was as low as two. By examining the Italian results, it was found that exerting effort plays a significant role in responders' decisions. This result is shown by

comparing responders who exerted effort (as in UGT) with responders who did not (as in UGC). On the one hand, in the Italian UGT there was a positive significant relationship between the proposed offer and its acceptance (p=.039), and a significant negative relationship between the difference of claims to offers and accepting offers (p=.074) which means that when the difference value between the offer and the claim was negative the more probability the offer would be rejected. In addition, a positive significant relationship was found between being a male and accepting offers (p=.078) which indicates that women are not as likely to neglect efforts. In other words, a female responder in the UG who exerts a certain amount of effort would be highly expected to reject any offer below her claim unlike males who are more likely to accept lower offers. On the other hand, the Chinese and Saudi experiments revealed no significant relations between the independent and dependent variables when using the binary logistic regression. However, when using a descriptive analysis, the Saudi experiments revealed unexpected behavior in the UGT where no effort was exerted to claim a specific proportion. This kind of behavior can be interpreted in four possible ways: (1) it may be the result of laziness, since Saudi Arabia ranks as being in the top three laziest countries in the world according to the World Health Organization (WHO) publication (Guthold, Stevens, Riley & Bull, 2018). (2) It may be due to the subjects' religious beliefs which might affect their decision choices in the game, i.e. the Islamic religion can effectively impact the players' behavior as it prohibits the use of certain activities such as gambling, uncertainty, ambiguity in trading, and earning interest on savings[2]. However, the first reason seems more feasible seeing the considerable number of

[2] In Chapter 3 of the Thesis, a detailed investigation about the impact of Islam religion on experimental studies about decision making will be provided.

proverbs and sayings present in the Saudi culture that subtly encourage inertia[3]. (3) University students in Saudi Arabia receive monthly salaries from the universities ($266 per month) and they do not pay any tuition fees. The given show-up fees in the experiments as well as the allocations might not considered as a good incentive to them to exert effort or to take the experiment seriously. Cameron (1999) and Andersen *et al* (2011) concluded that the amount of the stakes in the UG play a major role in players' decisions, which makes responders to be more willing to accept offers if stakes were high offer. (4) The unbalanced recruited gender of participants might cause this type of behavior. (5) The lack of experience and knowledge of experimental studies among students in Saudi Arabia might also be the causal of having this kind of result, which might led them to take the experiment as a joke and not seriously. A further study about number (4) and (5) is needed to expand our knowledge about these kind of effects on participants' decision-making process.

From graph 1 above, the Italian and Chinese responders' claims with the amount of effort they expended is correlated. The greater their effort, the greater their claim. The red triangles are the rejected offers. However, the Saudi Arabian graph shows the *claim* at its lowest (1 point) which means Saudis did not exert any effort to claim any point higher than 1. This suggests that Saudis

[3] For instance, "What is not being done today will be done tomorrow" this proverb is used as a pretext for relaxation; "One bird in the hand is better than ten birds in the tree" is said when someone wants to attempt to gain profit or reward through hard work but others try to change his/her mind; "Relax your angels" means not to bother yourself in any undue effort, just relax; the proverb "What costs you less is blessed" is used to encourage people to spend less money or expend less energy on any aspect of life; "Relaxation is half of our daily bread " is said to encourage someone to relax when exerting effort to earn more money; "If you ran like monsters you wouldn't gain more than has been decided for you" this proverb means that no matter how hard you try you will not achieve more than what you are achieving now; "What is burning your rice?" is said to someone in a hurry in an attempt to calm them down a little; There are many more other proverbs that are well-known in the Saudi culture that promote relaxation and warn against working too hard.

reacted differently from Italians and Chinese participants. Effort represents a tool to enable us to identify whether participants consider endowments as a property right, where responders exert effort to claim their shares, or as a hierarchy, where responders may not become involved due to the effect of the power distance. For instance, high scores in Hofstede's model mean a great distance in power and inequality between a manager and an employee, an older and a younger person, and so on. Hierarchy in those countries whose scores are high in the model is clearly present. Since the second player has the power to accept or reject the offer of the first player the impact of this power distance is detected by a failure to exert effort as shown in the UGT. In addition, by comparing the UGT with the UGC, it was found out that the Italian responders in the UGT had the highest rejections rate among the three countries followed by the Chinese responders and lastly the Saudi responders. Whereas in the UGC the opposite was found, in which, the highest rejection rate was given by the Saudi responders followed by the Chinese responders and lastly by the Italians. The only difference between the UGT and the UGC was the effort put in. This tells us that the Saudis were influenced by hierarchy and that the Italians where influenced by property rights. Furthermore, by analyzing the Chinese responders, it was found that they are more likely to be influenced by hierarchy than by property rights since the rejection rate was low in the UGT and high in the UGC.

1.9.2. The UG with claims but without effort (UGC) experiment:

Table 5

The UG with claim option (UGC)

Country	N	Gender		Age		Avg. Offers	Avg. Claim	% rejected offers
		Male	Female	Min	Max			
Italy	52	22	30	18	33	4.46	4.85	3.85%
China	16	7	9	18	24	4.5	5	12.5%
Saudi	56	49	7	18	36	3.86	4.68	25%

In this control group, this study shows that the percentages of the rejected offers are inversed compared to the UGT. In the UGT the Italian rejection rate was the highest, while in the UGC it was the lowest. The same inverse results were seen with the Chinese and Saudi results. Both countries' rejection rates were low in the UGT but high in the UGC. This suggests that the perception of the endowment was affected by culture. This study assume that Italians were more oriented towards receiving property rights in perceiving endowments while Chinese and Saudi Arabian subjects were more likely to be hierarchy-oriented. This result corresponds to the Power Distance (PDI) dimension in Hofstede's model (Hofstede, 2011) in which the Italian score of the PDI is 50, the Chinese is 80, and the Saudi is 95. This dimension of the model is interpreted as scoring higher in a country where the distance between the decision maker and the follower is greater. It is defined by Hofstede as "the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally". Therefore, individuals in Saudi Arabia are not expected to reject any hierarchy order which is reflected in this study as the rejection rate in the UGT compared to the UGC. When responders were obliged to exert effort in the UGT, it was implied that these players were beta subjects and not decision makers even though they had the ability to accept or reject offers. On the contrary, when no effort was necessary in the UGC, responders behaved as alpha subjects. By alpha subjects we mean those who have hierarchical power, and beta are less powerful subjects. Rejecting offers in the UGC reflects how responders in Saudi Arabia and China were aggressive even when the offers were generous. This type of behavior is absent in the Italian UGC but present in the UGT because, as mentioned earlier ,Italy has a low score in the PDI compared to China and Saudi Arabia.

A logistic regression was run to check the effect of effort on responders' behavior. By including claims, and gender variables it emerged that Italian responders significantly reject offers that are lower than their claims when they were associated with effort (p= .039) and the standard error is 0.38. Furthermore, women tend to reject offers significantly more than men when claims are higher than proposals (p=.078) and the standard error is 0.96. In addition, by correlating Italian claims to offers, results showed that an offer of 3 was not always accepted. Interestingly, the Italian UGT showed that when responders exerted a certain amount of effort in an attempt to claim a certain amount of endowment, 31% of the responders chose not to claim the maximum available option. In the same vein, 16.67% of the Chinese responders demonstrated the same behavior. For instance, if a responder exerted an effort of 43, which enabled him/her to claim 50% of the proportion, s/he claimed 40%. This behavior was not detected in the UGT of Saudi Arabia because all participants did not exert such efforts. To sum up the Italian results from both the UGT and the UGC, this study concludes that there was a significant effect of effort when responders exert effort and claiming was considerable (see the UGT analysis in Table 5 below). This effect was not detected when responders only claimed certain proportions without exerting effort (as in the UGC). These results suggest that Italians perceive endowments as a property right rather than a hierarchy. In contrast, there was no significant effect of effort with claiming on responders' decisions in Saudi Arabia and China as well as no significant relationship between claiming and responders' decisions in the experiments with no effort exerted. Since the sample size of the UGC in China is relatively small, a Fisher's Exact Test was run and it did not reveal any effect on these variables too. This result strengthens the study's hypothesis regarding the perception of endowments as a matter of

hierarchy in cultures that are mainly influenced by hierarchies. Hence, the null hypothesis 2 is rejected.

Table 6

Binary Logistic Regression for the UGT

Italy:	B	S.E.	Wald	df	Sig.	Exp(B)
Offer	0.84	0.407	4.253	1	**0.039**	2.317
Claim-Offer Diff.	-1.024	0.574	3.181	1	**0.074**	0.359
Gender	1.831	1.04	3.099	1	**0.078**	6.243
Constant	-0.989	1.16	0.727	1	0.394	0.372
China:						
Offer	92.275	7989.136	0	1	0.991	1.19E+40
Claim-Offer Diff.	-30.624	2991.901	0	1	0.992	0
Gender	-125.641	12931.28	0	1	0.992	0
Constant	-74.153	11747.4	0	1	0.995	0
Saudi Arabia:						
Offer	0.392	0.505	0.603	1	0.437	1.48
Gender	1.136	1.585	0.513	1	0.474	3.113
Constant	0.637	1.561	0.166	1	0.683	1.89

Table 7

Binary Logistic Regression for the UGC

Italy:	B	S.E.	Wald	df	Sig.	Exp(B)
Offer	33.229	5802.252	0	1	0.995	2.6999E+14
Claim-Offer Diff.	3.111	17572.655	0	1	1	22.434
Gender	70.958	20745.996	0	1	0.997	0
Constant	-48.676	13692.48	0	1	0.997	0
Saudi Arabia:						
Offer	-0.008	0.432	0	1	0.985	0.992
Claim-Offer Diff.	-0.024	0.297	0.007	1	0.936	0.976
Gender	-0.362	1.24	0.085	1	0.77	0.697
Constant	1.451	2.089	0.482	1	0.487	4.266

To detect the impact of responders' effort on proposers' decisions, the offers mean differences between the UGT and UGC was conducted by using the independent-sample t-test. This study

found a significant and negative difference between the Italian UGT and UGC offers (P=.006)[4]. Which means that offers were significantly lower when responders exerted effort (UGT) than when they did not exert effort (UGT). Italian proposers lowered their offers in the UGT because they knew that responders had had exerted adequate amount of effort to claim certain amount of the proportion, and that rejecting an offer would cause unpleasant feeling more than if the claim was done without effort, hence, offers in the Italian UGT were significantly lower than in the UGC. In other words, since responders in the Italian experiment did not exert effort in the UGC they were offered higher amount of proportions than in the UGT because proposers were more worried about rejecting their offers in the UGC than in the UGT. On the contrary, the offer mean differences in the Chinese and Saudi experiments revealed no significant difference between the two experiments (P=.124, P=.775) although the Chinese and Saudi offers averages had the same attitude as the Italian, which show that the averages of the UGT offers were lower than the averages of the UGC. Therefore, the null hypothesis 1 is rejected for the Italian society but it is not rejected for the Chinese and Saudi experiments.

1.10. Social Value Orientation (SVO) :

A Social Value Orientation (SVO) task was given at the end of the experiments. SVO is a well-known tool that measures the magnitude of the concern a person has for others. The SVO scale ranks as follows: Competitive, Individualistic, Prosocial, and Altruist. In short, competitive is the minimization of others' payoffs regardless of the self-payoff. On the contrary, Altruist represents the maximization of others' payoffs regardless of the self-payoff. However, Individualistic represents maximizing self-payoffs with respect to others' payoffs. Lastly, Prosocial represents maximizing others' payoffs with respect to self-payoff. From collected data, it was found that

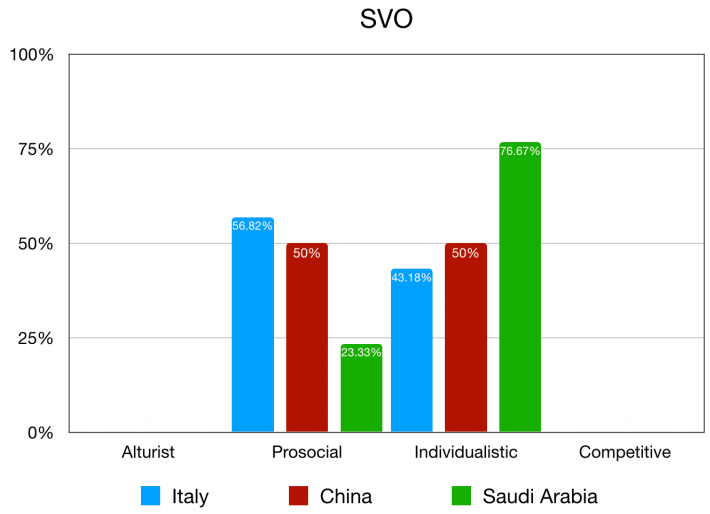
[4] The analysis results are included in the Appendix A.

Italian participants were the highest in the ranking of the Prosocial measure, then Chinese, then Saudis. Conversely, Saudis were the highest in the Individualistic ranking, which supports why Saudis rejected exerting effort when other participants, whom also expected to be individualistic, did not have to exert effort, hence, Saudis preferred to not exert effort. followed by the Chinese, then the Italians. There was no Altruists or Competitive participants in the experiments. Correlating the results of the SVO with the rejections in the UGT experiment shows that the number of Italian Individualistic and Prosocial responders both amounted to 4 (4 Individualistic, and 4 Prosocial). On the other hand, Chinese responders who rejected the offer were Prosocial. Finally, Saudi responders who rejected offers were all Individualistic. To sum up, the percentage of those who rejected the offers was 54.5% Individualistic and 45.5% Prosocial. Here is a table showing the SVO patterns in percentages:

Table 8

SVO frequencies

Categories	Italy	%	China	%	Saudi Arabia	%
Altruist	0	0%	0	0%	0	0%
Prosocial	25	56.82%	9	50%	7	23.33%
Individualistic	19	43.18%	9	50%	23	76.67%
Competitive	0	0%	0	0%	0	0%
Total	44		18		30	100%



Graph 2: SVO distribution among countries

1.11. Further Investigation

In this study, the impact of responders' effort on both the proposers and responders behavior was tested. A further analysis will be provided in the second and third chapters of this thesis. The second chapter will discuss the impact of proposers' effort on the two players, the proposer and the responder. Whereas the third chapter investigates the impact of people's attitudes in Saudi Arabia as an Islamic society toward the experimental studies.

1.12. Recommendations for future studies

Based on the results from the Saudi Arabian experiments, conducting a comparative experimental study to detect the differences between experiments that violate religion beliefs and experiments that do not violate religion would reveal more understanding on the impact of using behavioral economics terms in the experimental studies that have been ignored up to our knowledge. Researchers are encouraged also to examine different parts of a country in a study to shed light on the differences between participants from different cities in a country on a certain topic regarding exerting effort in the UG. For example, conducting a study in the south and north of Italy may reveal differences towards the perception of the endowment as well as an industrial city in China, like Beijing, and a rural city may also reveal different perceptions about the endowments. Another recommendation is to design the UG including the added effort variable in strategic choices, in which, proposers and responders can be asked about their decisions on each available choice before showing the other party's decisions.

1.13. Limitations

Since laboratory studies cost money, it was not feasible to expand this study to involve other countries or to include other cities within the chosen countries. Another limitation is that this

study was targeting mainly university students and did not include other types of participants like employees whom might have different behavior towards exerting effort in the UG.

1.14. Conclusions

In this study, exerting effort by responders was introduced to the Ultimatum Game as a tool to detect the perception of endowments in the game. The experiments of this study were run in three different countries, Italy, China, and Saudi Arabia. The treatment group in the Italian experiment revealed significant relationship between the amount of the offered proportion by proposers and the claims of responders when effort was exerted. On the other hand, the results of the Chinese and Saudi Arabian experiments did not reveal any relation between the amount of offers and the claims by responders in both the treatment and control groups. Hence, the first null hypothesis is rejected for the Italian society but it is not rejected it in the Chinese and Saudi Arabian societies.

In addition, the Italian experiment group shows a significant relationship between the responders' acceptance to the proposers' offers and responders' claims that included efforts but did not reveal any relation in the control group where responders did not exert effort. Nonetheless, both the Chinese and Saudi experiments did not reveal any relation between offers and acceptances, therefore, the second null hypothesis is rejected for the Italian society but it is not rejected it in the Chinese and Saudi Arabian societies.

The Saudi Arabian results in both experiments suggest that participants were not in favor of exerting effort. This kind of behavior tells us that Saudis were influenced by a certain motive which prevents them from exerting effort. That motive could be a person's belief of violating religion or due to laziness or they perceived exerting effort as an extra input in which responders

felt unfairly treated. A further investigation about the Saudi Arabian society will be discussed in the third chapter to know more about the impact of religion on experimental studies.

Including effort to the Ultimatum Game has enabled us, in this study, to know more about the differences between cultures regarding how people perceive endowments. Societies with high hierarchy structures, like China and Saudi Arabia, behaved differently than property rights societies, like Italy. In which, the latter perceived endowments as property rights.

Chapter 2

Proposers' Effort Impact in the Ultimatum Game:

A Cross-Cultural Analysis

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April 2019

Abstract

In the field of behavioral economics endowments have been used in experiments as a bargaining tool between participants. The main benefit of using endowments is the ability to identify how players are behaving within certain circumstances when they are negotiating to reach an agreement in a game. Real and hypothetical endowments have already been addressed in the literature so have not been a focus of this piece of research. This study has employed effort in the ultimatum game (UG) in three different countries to analyze the differences between proposers' decisions when they exert some amount of effort optionally, and when it is a mandatory. It was found that the proposals were of lower value when proposers exert effort rather than when they did not. This behavior was interpreted as a way of guaranteeing that the responders would be convinced to accept the proposers' offers. Furthermore, it was found that culturally driven phenomenon impact on the proposers' behavior. Three experiment groups as well as three control groups were run in three different countries: Italy, China, and Saudi Arabia in order to detect the differences between the different cultures.

Keywords: experimental economics; Ultimatum Game; effort; culture; endowment; hierarchy; property rights.

2.1. Introduction

In the experimental economics it is broadly acknowledged that participants are hired to bargain for a certain reward, which varies according to the design of the experiment. The endowment has been discussed in various ways. For instance, Kahneman & Tversky (1979) provided an explanation of the endowment effect, where they indicated that both reference dependency and loss aversion are the two main features that account for the endowment effect. A decision maker in a transaction values an item according to a reference point s/he has in mind and each party, whether a buyer or a seller, perceive the item as a gain or loss. In this situation, loss aversion means the psychological impact of losing compared to gaining is greater even when the amount lost or gained is the same. Therefore, losing a $1 has a greater psychological impact on decision makers than gaining a $1. This phenomenon is further explained in the literature where it is argued that the greater impact of loss aversion is due to the fact that an owned item is of more value to the owner because it was chosen by them (Brehm, 1956). Further clarification is given by Morewedge, Shu, Gilbert, and Wilson (2009) who link the endowment effect to the ownership of an item rather than to loss aversion. They suggest that bargaining in the buying and selling procedure is correlated to ownership of the item being sold or bought which gives rise to the endowment effect. In their experiment, the endowment effect was not detected when the sellers sold unowned items and buyers purchased owned items. For example, if a buyer already owned an item s/he was ready to pay as much as sellers demanded for the same item. In the same vein, Kogler, C., Kühberger, A., & Gilhofer, R. (2013) found a significant impact of owning a lottery on the endowment effect although they suggest that the endowment effects in lottery settings is still a controversial topic in which explaining the real cause of the endowment effect in lottery settings might be due to anticipated regret rather than loss aversion. To achieve a more

in-depth evaluation, endowments can be analyzed in terms of whether they are real or hypothetical. In an experiment by Kühberger, Schulte-Mecklenbeck, & Perner, (2002) the effect was identified even though the endowments were hypothetical, giving the same results that were presented Kogler, C., Kühberger, A., & Gilhofer, R's paper (2013). In a contrary experiment, Loewenstein and Adler (1995) failed to identify a similar effect when the bargained endowment was a hypothetically owned mug, which people had failed to predict the accurate value of. Van Boven et al. (2003) contended that an intrapersonal empathy gap arises due to biased predictions from both parties, sellers and buyers. The prediction that a person is a buyer and the other person is a seller, or the opposite, creates this gap and as a consequence both parties underestimate the role of the endowment effect on each of them.

In the literature of behavioral economics, the ultimatum game (UG) has been used as a robust way to identify some decision-making effects among participants. The game was firstly introduced by Güth, Schmittberger & Schwarze (1982). The game is simple and reveals some aspects of human behavior that have been ignored. For instance, by employing the UG researchers were able to observe the motives for rejecting positive numbers and agreeing to receive nothing, which in turn was interpreted as a way of expressing anger or punishing the unfair proposers. The game works as follows: a matching of two players who are referred to as a proposer and a responder. Then, an endowment is given to be split by the proposer who can decide the proportion for each player (self and others). For instance, the proposer can decide the proportion of the endowment to offer to the responder. The deal is considered successful only if the responder accepts the offer, otherwise, it is an unsuccessful deal. In classic economics, any positive number greater than zero is better than zero. Nonetheless, in the UG experiments it has been shown that not always do responders accept positive numbers especially when the offered

proportion is low, like 10% or 20% of the endowment. Actually, it has seldom occurred that responders accept very low offers. This kind of behavior has been seen in many other types of games in the field of behavioral economics. Research has investigated the motives of such behavior as mentioned earlier. This study contributes to the literature on understanding the perception of an endowment itself by using effort. How do people from different countries perceive an endowment? Do people from Italy perceive an endowment the same way as Chinese or Saudi people do? Two experiment groups were run to investigate the effect of adding efforts to the ultimatum game. Firstly, proposers in the first experiment (hereafter this text will be abbreviated as UGT) had a choice to either exert effort (Choice1) or alternatively simply choose not to exert effort (Choice2) to offer a certain amount of endowment. The outcomes of the second group (UGT-Choice2) were compared to the second experiment (hereafter this text will be abbreviated as UGC) in which proposers had to exert effort to be able to offer a certain amount of the given endowment to their matched responders. By employing this procedure, this study was able to compare proposers' behavior when exerting effort was optional, and when it was mandatory, and when there was not effort involved to discover differences between the three groups in the three countries.

The abbreviations of the three groups are:

- UGT-Choice1: proposers' effort is optional.
- UGT-Choice2: proposers do not exert effort.
- UGC: proposers' effort is mandatory.

2.2. Existing literature

Exerting effort in the field of experimental economics have been used widely for various reasons. To mention some, Bull, Schotter & Weigelt (1987) used effort in a tournament

experiment in which subjects used how much to exert effort in order to compete between each other. van Dijk, Sonnemans & van Winden, (2001) used the effort in incentive systems for individuals and teams. Burrows, P. and Loomes, G. (1994) used the effort to test the impact of fairness on certain types of bargaining environments. Gneezy, Niederle & Rustichini (2003) implemented effort in order to detect the differences of performance between men and women. A paper by Bland et al (2017) mentioned that "*In real life, however, people's propensity to engage in cooperative behavior depends on their effort and contribution; factors that are well known to affect perceptions of fairness.*". Sutter and Weck-Hannemann (2003) investigated the impact of taxation on performance which was a type of exerting effort. Exerting effort in laboratories has a great advantage, that is, it gives greater validity of experiments to mimic the real-life effort (Gill & Prowse, 2011). A paper by Ruffle (1998) employed the effort in both the dictator and the ultimatum games. The effort in the latter game was used as a tool to know how much effort a responder had exerted to enable the proposer to receive a greater endowment in case the responder exerted an adequate amount of effort, and vice versa. Furthermore, MD Carr, P Mellizo (2013) included the effort in the ultimatum game to allow the responder to produce the endowment. Also, in the ultimatum game, García-Gallego, Georgantzís & Jaramillo-Gutiérrez (2008) used real effort in an employer-employee setting where exerting effort was exerted by the responders. Franco-Watkins, Edwards & Acuff (2011) applied effort to the ultimatum game, where earning money was via exerting effort rather than receiving money as a windfall. Effort was used also in other experimental games such as moonlighting game (Abbink, Irlenbusch & Renner, 2000). And is used in the trust game (Vilares, Dam & Kording, 2011). And in general, Dutcher, Salmon & Saral (2015) compared three types of efforts, real, stylized and trivial, in the public goods game, they found that all the three types revealed identical outcomes. The main use

for the effort is to detect the behavioral differences among people in three different cultures, in which, proposers exert the effort optionally or mandatory.

2.3. Target Population:

Three countries were chosen to run this study at. These countries are Italy, China, and Saudi Arabia. All these countries represent some common and unique features, like being members of the G20 (Group of Twenty), and they are all ancient cultures. Nonetheless, they differ in some other aspects, for instance, Italy, which has the Vatican, represents a western country that is influenced by Christianity religion whereas Saudi Arabia, which has the two holy cities Makkah and Madinah, represents a Middle Eastern country that is influenced and run by Islamic rules. In fact, the Saudi government adapted Islamic teachings as the country's constitution, which has an influence on people's daily lives. Furthermore, China was chosen as an eastern country that is mainly influenced by another type of belief, namely atheists or Buddhists, and is considered as one of the fastest economies in the world in the last two decades (Bustelo, Reis, 2019), not to mention its score in the Hofstede Model's PDI, which is interpreted as inequalities are accepted among Chinese people. Furthermore, all the three countries speak different languages, which are Italian, Chinese, and Arabic. Not only do these countries share some similarities and difference, they also differ in their performance regarding productivity, more precisely, Chinese are considered to be one of the most productive people in the world, according to Statista (2017). Additionally, Italians spend adequate amount of daily activity according to their average steps per day, which can be seen as a tool to know more about how Italians willing to expend effort. That being said, Saudi Arabia ranks as one of the laziest countries in the world, according to WHO's Insufficient Physical Activity Index (2018), which indicates that Saudis are not in favor

of exerting effort during their daily life. In fact, more than 72% of Saudis were inactive to exert an effort that last for only 10 minutes (Al-Hazza, 2007).

2.4. Research Questions

A- By knowing that proposers have exerted effort to be able to offer certain proportions, will responders be prepared to reduce their expected payoffs and accept lower offers? More precisely, will offers that are usually rejected in the UG be accepted in the UG if proposers effort has been made?

B- Will proposers lower the offered proportion because of the effort they have made? If so, what are the most common offers, are they ones that would normally be rejected in the UG?

C- Do culturally driven phenomenon impact on the proposer's behavior?

2.5. Hypotheses

Hypothesis A: Exerted effort by proposers significantly and positively influences responders' decisions about acceptances in the UG.

Hypothesis B: Exerted effort by proposers significantly and negatively influences proposers' decisions about the size of the proportion they offer in the UG.

Hypothesis C: Proposers' behavior is driven by cultural differences.

2.6. Data Analysis

Hypothesis A. The first hypothesis states that the UG with proposers' effort compared to no effort significantly and positively influences responders' decisions about acceptances. To test this hypothesis, a binary logistic regression was conducted using data from UGT-Choice1 and UGC and compared with the UGT-Choice2. The independent variables were the group of effort, and gender, while the dependent variable was acceptances of offers.

Hypothesis B. The second hypothesis states that the UG with effort compared to no effort significantly and negatively influences proposers' decisions about the size of the proportion they offer in the UG. To test this hypothesis, an OLS regression analysis was conducted using data from each group in experiment 1 and experiment 2. The independent variables grouped in categories of effort, gender, and country while the dependent variable was the size of the proportions offered in both experiments.

Hypothesis C. The third hypothesis states that proposers' behavior is driven by cultural differences. To test this hypothesis, an independent sample t-test was conducted using data from all experiments in all the three countries to check the differences in means in both the efforts and proposals.

2.7. Experimental Design

This study was conducted experimentally in three different countries. In Europe, it was carried in Italy, at CEEL, part of the Universita' di Trento, whereas in Asia, the experiments were run in China, at the FEEL laboratory, part of Xiamen University and in Saudi Arabia in the Middle East at Majmaah University. Each location carried out two different experiments; firstly, the UG where the proposer chose to exert effort (UGT-Choice1) and also where effort was not exerted (UGT-Choice2). By using data from both choices, the decisions of those who decided not to exert effort are used as a control group for the other group who decided to exert effort; secondly, the UG with the effort component incorporated (UGC) is used for a comparison group to the first group to detect if exerting effort optionally differs from when it is mandatory or not. The expenses for running the experiments were around 2,600.00 Euros[5]. All the experiments were

[5] This does not include other expenses such as travel expenses, printing documents, assistance fees, and other lab expenses

written in the English language then translated into the Italian, Chinese, and Arabic languages, and to ensure that there were no ambiguities the translated texts were translated back into English, then both English versions were compared.

Data was collected by randomly recruiting about 324 subjects in the two experiments from the three countries as shown in Table 1. These subjects were mostly university students from different majoring fields in order to ensure that different backgrounds were hired in the data. The subject pool recruited for these experiments was not the same as the first chapter to ensure that there is no effect of a previous experience. A show-up fee of 3 Euros was given to each participant to encourage them to take part in the study, and 10 Euros was given to each group of players as an endowment for bargaining.

Table 1

Participants in the UGT and the UGC experiments

Country	UGT	UGC	Total
Italy	60	52	112
China	36	56	92
Saudi Arabia	60	60	120
Total	156	168	324

2.8. Laboratory Environment

Before starting the experiment sessions, the participants read detailed instructions about the game rules including how to bargain with the 10 Euros endowment, how to exert effort, what makes a successful deal, and when both players will lose the entire endowment. The instructions were read out before the start of the game and shown on the computers that the subjects used. Each subject read that if the responder accepted the offer, the endowment would be shared according to the agreed proportion. Yet, if the responder rejected the offer, both subjects would

lose the endowment and both would receive zero. To minimize the possibility of other effects, all offers were made under conditions of anonymity. In other words, proposers did not know the identity of the responders they were matched with and vice versa. To implement this method effectively, proposers and responders did not receive information about their roles until they read the instructions on their computer screens in pop up form. In addition, both proposers and responders were assigned randomly, and each proposer was paired with a responder automatically by the computer platform being used. That is, once the proposer sent his/her offer, the computer delivered the offer to a responder randomly. More importantly, the computer made an explicit linkage of each pair so that their bargaining processes were trackable. For instance, responders were told how much proposers had proposed as well as how much effort they had made. Subsequently, if a responder rejected an offer, the proposer was notified about this rejection on his/her computer screen. In the same manner, if the responder accepted the offer, the proposer was also notified that the deal had been made successfully. Then, all subjects' decisions were collected and analyzed in order to identify to what extent proposers' efforts had influenced the two parties' decisions. Regarding the Italian and Chinese experiments, there was no problem in recruiting subjects to participate in the experiments, but in the Saudi Arabian experiments there was a law prevented us to run the experiments in the same lab for both genders. The government of Saudi Arabia segregates males and females in two separate sections (Alsuwaida, 2016). Therefore, we had to recruit makes subjects in a lab and female subjects in another lab in the same time, with an IT linkage between them. Subjects of Saudi Arabia were aware that there are another participants from the opposite gender joining the experiment. Finally, the findings of the experiment were compared with a separate control group (UGT-Choice2) where exerting

effort was not chosen. Furthermore, the participants' performance was monitored by providing them with feedback or help whenever needed.

2.9. Offer Making

Subjects in the UGT-Choice1 and UGC were given five minutes to expend effort. The effort was a slider-task, which was firstly used by Gill and Prowse (2012), using an Otree platform, which is an open-source software developed by Chen, Schonger & Wickens (2016) for laboratory, online, and fieldwork experiments. The slider-task pops up on the screen and doing them elicits proposers' effort. In other words, completion of the slider-task is considered as an effort that proposers must make in order to offer a proportion of the endowment in the experiments that include the effort component. In the event that proposers chose to exert effort in the UGT-Choice1 or in the UGC, they were not able to select the next proportion level until effort had been expended. To make this clearer, Table 2 illustrates how the proportions and efforts were set out in the UGT-Choice1 and UGC, whereas the UGT-Choice2 did not involve any effort. Thus, proposers as well as responders had to consider these carefully how much effort to exert prior to making their decisions.

Table 2

Efforts made by proposers, and proposal options to be sent to responders

Sequence	Efforts (Sliders)	Proposal Options
1	50+	6, 5, 4, 3, 2, or 1
2	40 －49	6, 5, 4, 3, or 2
3	30－ 39	6, 5, 4, or 3
4	20－29	6, 5, or 4
5	10－19	6, or 5
6	0 －9	6

Prior research suggests that an offer of 50% is usually accepted in a standard UG (Camerer, 2003) which reflects offer number (5) in Table 2, and shows that an offer of any proportion greater than 50% is considered rare as in number (6) in the above table. In addition, low offers such as 10% or lower (which mirrors offer number (1) in Table 2) are rarely seen in the UG experiments, which, if it occurred, would mostly be rejected. Subsequently, a similar experiment was performed, but omitting the effort variable, which is UGT-Choice2. The latter experiment was used as a reference group to use as a comparison to other experiment groups, when expending effort was optional and when it was a mandatory.

2.10. Results

Two experiments were run in Italy, China, and Saudi Arabia. Italian sessions were conducted in May, June, and October of 2016, Chinese sessions were conducted in July 2016, whereas the Saudi sessions were run in the April and May of 2017. All sessions were run during normal days, more precisely, there was no exams or religious events during the conduct of the experiments to eliminate any external effects. The results from those countries are as follows:

Model:

$$y = B_0 + B_1 Variable1 + B_2 Variable2 + \cdots + \varepsilon$$

Hence, the model for the UGT-Choice1 and UGC is as follows[6]:

$$Offer = B_0 + B_1 Effort + B_2 PropGender + B_3 Country + \varepsilon$$

The results of the OLS analysis when the proposal (offer) is the dependent variable for the UGT-Choice1 and the UGC are shown in the following table:

[6] In the Appendix, we have run another regression model to test the acceptance as a dependent variable, in which the impact of acceptance was not statistically significant.

Table 3

OLS Analysis for: UGT Choice 1 and UGC

	UGT Choice1: Coefficients[a1]					UGC: Coefficients[a2]				
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta			Beta	Std. Error	Beta		
(Constant)	5.704	0.932		6.121	0.000	5.232	0.455		11.505	0.000
Effort	-0.048	0.014	-0.591	-3.318	**0.003**	-0.045	0.005	-0.777	-9.969	**0.000**
Proposer's Gender	0.008	0.37	0.004	0.021	0.983	0.255	0.175	0.095	1.459	0.148
Country	0.156	0.324	0.085	0.483	0.634	0.147	0.129	0.09	1.139	0.258

$a1$: Dependent Variable: UGT-Choice1.Proposal
$a2$: Dependent Variable: UGC.Proposal

As can be seen from the table above that Effort was significant in both groups (UGT-Choice1 and UGC) with the same beta altitudes, which means, the greater the effort the lower the offer was. Hence, the null hypothesis B is rejected. Because there is a significant relation between exerting the effort and the size of the offered proportions. Nonetheless, the effect of effort on the number of rejected offers in the UGT-Choice1 and the UGC was not detected when countries were grouped in the analysis, but it was found significant in the Saudi Arabian UGC when the analysis on each of the countries was run separately[7].

A heteroscedasticity was run to test how robust the standard errors were. It reveals smaller standard error differences on the UGT and UGC experiment's results than without the heteroscedasticity test as follows:

[7] Another analysis was run for each country separately and reported that in the appendix.

Table 4

Heteroscedasticity for the UGT & UGC

	UGT				UGC			
	Coeff	SE(HC)	t	P>|t|	Coeff	SE(HC)	t	P>|t|
Constant	5.9886	0.3015	19.8623	0.000	5.9577	0.0479	124.3942	0.000
Effort	-0.0488	0.008	-6.1165	0.000	-.0472	0.0038	-12.5438	0.000

Hence, this study concludes that standard errors were robust in both experiments.

The model for the UGT-Choice2 is as follows:

$$Offer = B_0 + B_1 PropGender + B_2 Country + \varepsilon$$

The results of the OLS analysis for the UGT-Choice2 are shown in the following table:

Table 5

OLS Analysis for the UGT Choice2

Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	4.375	0.899		4.865	0.000
Proposer's Gender	-0.368	0.43	-0.124	-0.855	0.396
Country	-0.215	0.233	-0.133	-0.921	0.361
a Dependent Variable: UGT-Choice2.Proposal					

Also a heteroscedasticity test was run to check the standard error robustness for the UGT

Choice2 and it reveals a bit smaller standard errors than without the test as follows:

Table 6

Heteroscedasticity test for the UGT Choice2

Coefficients[a]						
Model	B	Std. Error	t	Sig.	95%LB.	95%UB.
(Constant)	4.375	0.788	5.549	0.000	2.613	6.138
Proposer's Gender	-0.368	0.411	-0.894	0.376	-1.21	0.475
Country	-0.215	0.21	-1.024	0.311	-0.672	0.242
a Dependent Variable: UGT-Choice2.Proposal						

From the table above, there was no significant relation between any of the variables on the size of the offered proportion, which by comparing this result with the other groups, this study found that effort plays a significant role in the size of the proposal, hence, as mentioned earlier, the null hypothesis B was rejected. In the next sections, the three groups will be discussed further in details.

2.10.A. The UG with a choice to exert effort or not (UGT) :

The Ultimatum Game with proposer effort (UGT). Here, proposers had a choice to exert effort (Choice 1) or not (Choice 2) as mentioned before. If a proposer chose to exert effort, s/he followed the proportions shown in the below table:

Table 7

Proportions that proposer can offer and the corresponding sliders (effort)

Offers (proposers can offer)	Sliders
60%	0-9
60% or 50%	10-19
60% , 50% or 40%	20-29
60% , 50% , 40% or 30%	30-39
60% , 50% , 40% , 30% or 20%	40-49
60% , 50% , 40% , 30% , 20% or 10%	50+

From the table above, if a proposer decided to keep 60% and offer 40% s/he has to exert at least 20 sliders. This means, the greater the effort, the more offer options a proposer has and the smaller the proportion to be offered optionally. However, if a proposer exerted 50+ sliders s/he would have all the options to offer the paired responder. The results of the two choices from the three countries are shown in Table 8 as follows:

Table 8

UGT: Averages and Gender frequencies, of Choices 1 and 2

Country	N	Choice 1					Choice 2			
		Male	Female	Avg. Offer	Avg. Effort	Rej. Rate	Male	Female	Avg. Offer	Rej. Rate
Italy	60	19	11	3.8	43.13	3.33%	13	17	3.67	3.33%
China	36	7	11	3.67	50.33	11.1%	10	8	3.22	5.5%
Saudi Arabia	60	2	0	6	0	0%	43	15	3.31	17.2%

In the UGT experiment there were two choices, choice 1 and choice 2. The first choice was the UG including a compulsory effort while the second choice was the UG without the effort component. Participants were allowed to choose their preferred choice, being familiar with the difference between the two choices before starting the game. In the Italian experiment, half of the proposers chose the first option (UGT-Choice1) and the other half chose the second option (UGT-Choice2). There were 60 subjects participating in the experiment with 53.33% being male and 46.67% being female. The average offer for the first choice was 3.8 with an average effort of 43.13. There was a single rejection in both choices and both rejections were for offers of 3. Surprisingly, the average offer in the second choice (without effort) was lower than the first choice (where proposers had to exert effort). Proposers who demonstrate this kind of behavior, that is they preferred the first choice, are evaluated as being risk-averse. Choosing to exert effort and offering a higher proportion were both indications of how those participants were risk-averse, thus they considered effort exerted as an insurance that responders would accept their offers. On the contrary, proposers who favored the second choice were considered greater risk-takers than the first group. They proposed less because they chose not to exert effort, and that made them become greater risk-takers. As shown in graph 1, the more effort that was exerted, the smaller the proportion which was offered. This behavior indicates that when proposers exert

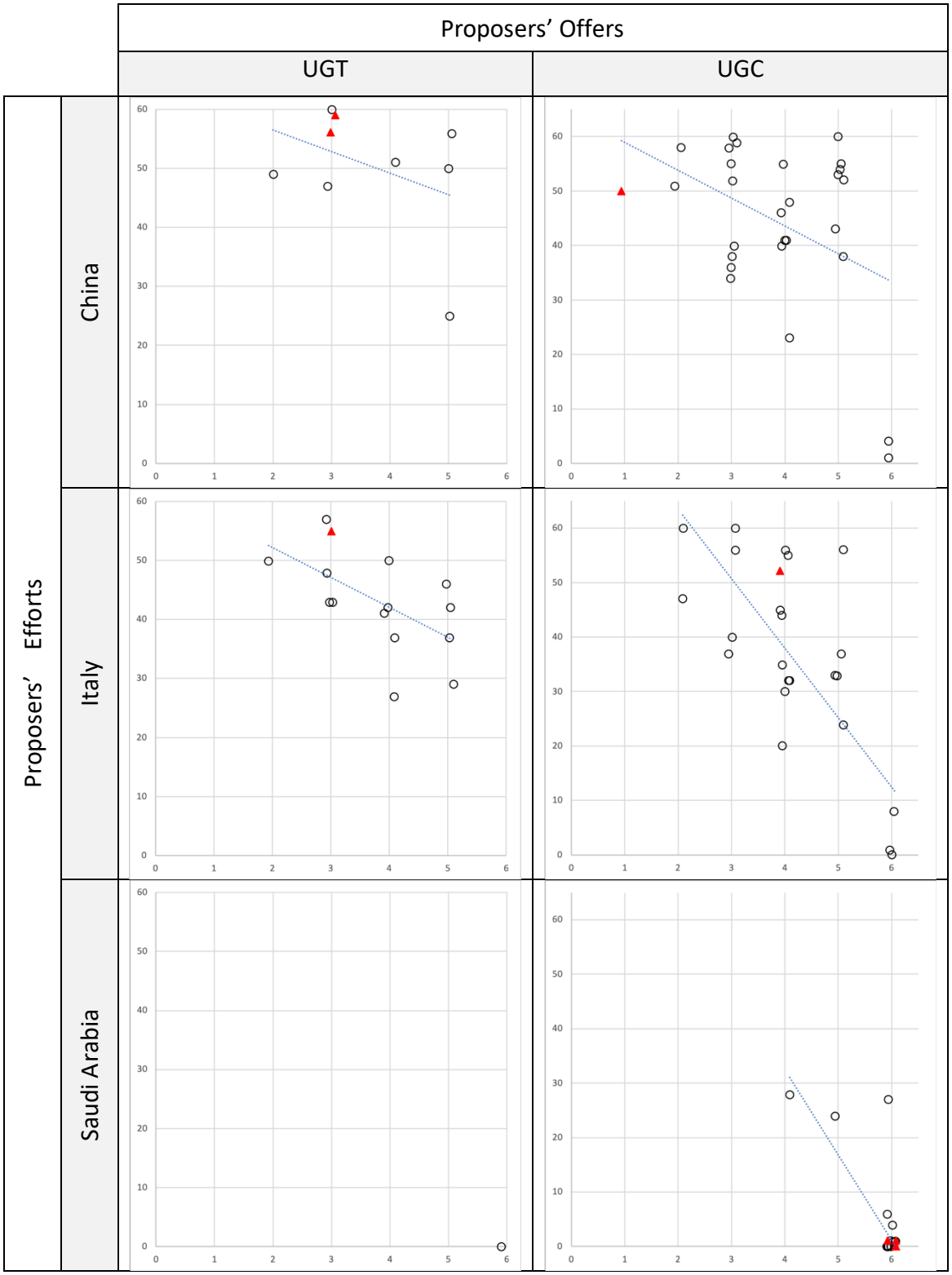
more effort they tend to offer less, that is because of their feeling of entitlement to the proposal. In other words, when proposers exert more effort they send a message to the responders that they deserve more of the proportion. However, having the option to exert the effort was a useful tool that was used to identify those who took a risk and did not exert effort, as in the second choice, and those who are a risk-averse, as in the first choice. The players who favored the second choice were greater risk-takers than those who favored the first choice, as mentioned earlier, which in turn results in lower offers in the second choice than in the first one. A responder's rejection of an offer of 3 was a punishment for making a relatively low offer even when the proposer had exerted a high amount of effort. This rejection can be interpreted in two ways: (1) the responder felt unfairly treated and wanted to punish the proposer even if the proposer had already made a considerable amount of effort. (2) Since the proposer had had the option not to exert effort at the beginning, the responder punished that proposer for not choosing that option. In the same vein, the results from the Chinese experiments show the same preference pattern between the two choices as well as the same behavior regarding the offered proportions in both choices. There were 36 subjects in the Chinese experiment, fifty percent of whom chose to exert effort (UGT-Choice1), while the other fifty percent chose not to exert effort (UGT-Choice2). Males represent 47.22% of the sample, and females represent 52.78%. The average offers for the two choices were 3.67 and 3.22 respectively. The average effort for the first choice was 50.33, which was higher than that of the Italians. Furthermore, the average rejection rates for the two choices were 11.1% and 5.5% respectively, which was higher than those of the Italian experiments. Contrary to the Italian and Chinese experiments, participants from Saudi Arabia did not favor the first choice (UGT-Choice 1) preferring to select the second choice (UGT-Choice2) with the exception of a single proposer. This proposer selected the first choice, but it might be done by a mistake

because that proposer did not exert any effort, hence, all proposers preferred the second choice. In the control group, the number of those who did not exert any effort was the highest among the three countries in which there were only 3 proposers who exerted a very low amount of effort (max of 28 slide-task). This behavior tells us that Saudi people prefer not to be involved in effort type tasks which could be accounted for by one or more of the following reasons: (1) Saudis are lazy. According to a World Health Organization (WHO) publication by Guthold, Stevens, Riley & Bull, (2018) Saudi Arabia ranks as one of the top three laziest countries in the globe. (2) Being a Muslim in Saudi Arabia, which is one of the most conservative Islam communities (Mustafa & Troudi, 2019), might also be the reason for such behavior. Participants might perceived the experiment as a violation of their religious beliefs, hence, they expended no effort in an experiment that might violate their own beliefs. This interpretation is reinforced by the fact that certain terminology in the field of experimental economics is actually prohibited in the Islamic religion such as gambling, uncertainty, ambiguity in trading and interest[8]. (3) Participants from Saudi Arabia were mainly university students, who were receiving payment from universities and were not required to pay any tuition fees. In fact, all students in the public universities in Saudi Arabia are getting paid around $266 per month. Hence, the amount of effort expanded in relation to the relatively small size of the endowment for a rich country like Saudi Arabia, might render the experiment as being of a little interest. A paper by Cameron (1999) studied the impact of raising the stakes in the UG and stated that "Responders react to higher stakes by becoming more willing to accept a given percentage offer". Andersen, Ertaç, Gneezy, Hoffman & List, (2011) also reported that the willingness of responders to accept low offers significantly changed

[8] A further investigation about the impact of the Islam religion on the experimental studies will be discussed in the third chapter of this thesis.

in the UG where responders' decisions in their study differed based on the stake size. When the stake size was relatively big, responders tended to accept low offers more than when the stake size was small. (4) The unbalanced gender is another possibility that might cause this kind of behavior among Saudi students. Since the Saudi law prohibits joining males and females in the same laboratory, the experiments were run in the males section as well as in the females section in a parallel time with an IT connection between them, and students were aware of this connection. This procedure created an unbalanced recruited subjects regarding gender. (5) Students in Saudi Arabia do not have any experience or background about experimental studies. This study suggests that lack of experience or knowledge can create some types of errors that might lead to an uninterpreted results. A further investigation about experimental studies in Saudi Arabia will be provided in Chapter 3.

The graph below shows the proposers' efforts and their offers of the experiments in the three countries:



Graph 1: Proposers' offers and their efforts in the UGT and UGC (red triangles are the rejected offers)

As shown in Graph 1, subjects in Saudi Arabia did not exert any effort in the UGT-Choice 1 as well as the UGC with some minor exceptions of efforts, which were below 30 sliders. This behavior is interpreted in section "Target Population" as well as in section 2.10.B. below.

2.10.B. The UG with exerting effort as a mandatory (UGC)

The Ultimatum Game with compulsory proposers' effort (UGC). Here, proposers had to exert effort to be able to offer a certain proportion of the endowment to the responders. For instance, if a proposer decided to offer 30% s/he had to complete at least 30 slider-tasks. The following Table 9 shows the percentages and the correspondent effort task:

Table 9

Proportions that the proposer can offer and the corresponding sliders (effort)

Offers (proposers can offer)	Sliders
60%	0-9
60% or 50%	10-19
60%, 50% or 40%	20-29
60%, 50%, 40% or 30%	30-39
60%, 50%, 40%, 30% or 20%	40-49
60%, 50%, 40%, 30%, 20% or 10%	50+

Proposers' average offers in the UGC shows different numbers than both choices in the UGT. When proposer-effort was optional (UGT-Choice1), the average proportion of the endowment offered in the Italian experiment was lower than the average offer in the UGC, 3.8 and 4.27 respectively. Furthermore, the average exerted effort in the UGT-Choice1 was higher than the UGC, 43.13 and 34.35 respectively. In the same way, the experiment in China shows the same behavior as in Italy. Chinese proposers exerted more effort in the UGT-Choice1 than the UGC and offered less in the UGC compared to the UGT-Choice1. The average Chinese exerted effort

in the UGC was 44.46 and the UGT-Choice1 average effort was 50.33, with the average offer in the UGC being 3.82 and the UGT-Choice 1 average offer being 3.67. The average rejection rate for the Italian experiments (UGT-Choice1 and UGC) remain the same but the rejection rate of the Chinese responders dropped from 11.1% in the UGT-Choice1 to only 3.6% in the UGC. On the other hand, proposers in the Saudi experiments behaved the same in both experiments, nonetheless, responders rejected 10% of the offers in the UGC. The next table shows the results of the UGC experiments in the three countries:

Table 10

UGC: Gender frequencies and averages

Country	N	Male	Female	Avg. Proposal	Avg. Effort	Rej. Rate
Italy	52	27	25	4.27	34.35	3.8%
China	56	26	30	3.82	44.46	3.6%
Saudi Arabia	60	46	14	5.9	3.17	10%

From the Italian and Chinese experiments, it can be seen that the greater the effort, the lower the offer. These results give us an interpretation regarding the effect of effort on proposers' decisions. They indicate that when exerting effort was optional, proposers treated it as guaranteeing an acceptance of their offer by responders. In other words, proposers' efforts were greater and their offers were lower than that in the UGC in which exerting effort was a must as shown in the table below:

Table 11

UGT-Choice1 and UGC: participants and averages

Country	Experiment	N	Avg. Offer	Avg. Effort	Rej. Rate
Italy	UGT-Choice1	30	3.8	43.13	3.33%
	UGC	52	4.27	34.35	3.8%
China	UGT-Choice1	18	3.67	50.33	11.1%
	UGC	56	3.82	44.46	3.6%

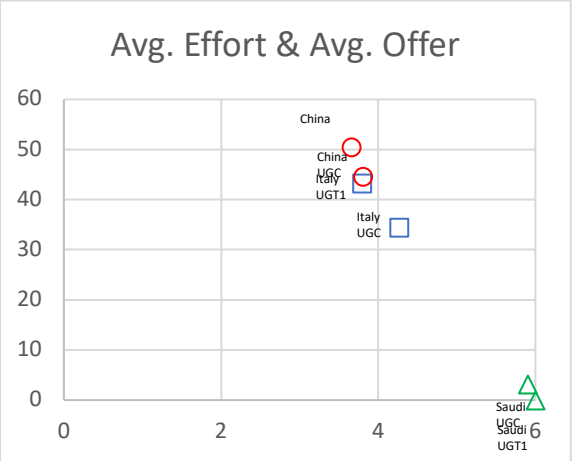
Saudi Arabia was excluded from the table because the number of participants who chose the UGT-Choice1 was very low. By comparing the UGT-Choice2 with the UGC, the Italian experiments revealed more rejections in the UGC although the average offer was higher than in the UGT-Choice2. On the contrary, the Chinese and Saudi results experienced lower rejection rates in the UGC compared to the UGT-Choice2. Nonetheless, none of the experiment groups had a significant relation between rejecting offers and exerting effort except the Saudi Arabian UGC which shows a significant impact of the effort in accepting the offers (reported in the appendix). Hence, the null hypothesis A is not rejected for the Italian and Chinese societies but rejected in the Saudi Arabian society. The following table shows the differences of the three experiments in the three countries:

Table 12

UGT-Choice1 and UGC: participants and averages

Country	Experiment	N	Avg. Offer	Avg. Effort	Rej. Rate
Italy	UGT-Choice1	30	3.8	43.13	3.33%
	UGT-Choice2	30	3.67	-	3.33%
	UGC	52	4.27	34.35	3.8%
China	UGT-Choice1	18	3.67	50.33	11.1%
	UGT-Choice2	18	3.22	-	5.5%
	UGC	56	3.82	44.46	3.6%
Saudi Arabia	UGT-Choice1	2	6	0	0%
	UGT-Choice2	58	3.31	-	17.2%
	UGC	60	5.9	3.17	10%

As shown in Table 12 above, it is clear that Chinese participants scored the highest effort averages in the three countries followed by Italians and lastly Saudis. This result corresponds to the results seen in the literature. Research published by Heath et al., (2012) shows that China has a score of 31% in the least physically active index. In the same index, Italy scores 54.7% and Saudi Arabia has a 68.8% as one of the highest inactive populations in the world. The following Graph 2 shows the differences between the three countries based on the effort expended and the proportions of the stake that were offered by proposers in the UGT-Choice1 and UGC:



Graph 2: Efforts and proposals in the UGT-Choice1 and UGC

This study tested proposal and effort mean differences in the two groups which included effort (UGT-Choice1 and UGC) as well as the proposal mean differences in the control group (UGT-Choice2) in the three countries and it found significant differences between all the three countries in the UGT-Choice1, and UGC effort means as shown in table 13 below.

Table 13

Significant of means differences between the three countries (P values)

Country	UGT-Choice1		UGT-Choice2	UGC	
	Proposal	Effort	Proposal	Proposal	Effort
Italy-China	0.757	**0.079**	0.351	0.177	**0.037**
Italy-Saudi	**0.040**	**0.000**	0.442	**0.000**	**0.000**
China-Saudi	**0.083**	**0.002**	0.886	**0.000**	**0.000**

However, there was not a significant difference in the experiments means between the Italian and Chinese proposals in all the groups. Nonetheless, there was a significant difference between the Saudi and Chinese proposal mean differences as well as the Saudi and Italian's in both the UGT-Choice1 and UGC. In other words, the test of proposal and effort means differences between the three countries has revealed the same results in both the UGT-Choice1 and UGC but not the same as the control group (UGC). Based on these results, the null hypothesis C is rejected with

the exception of the mean differences between the Italian and Chinese proposals since the results revealed no difference between the two countries.

2.11. Conclusion

Two different experiments were run in three different countries, Italy, China, and Saudi Arabia. The first experiment had two options for proposers to choose from. The first choice (UGT-Choice1) included an effort component, in which, proposers had to exert some amount of effort to be able to offer a certain proportion of the endowment to the responders who they were matched with. The second choice (UGT-Choice2), however, omitted the effort component. On the other hand, in the second experiment (UGC), it was compulsory to exert some effort to be able to offer a certain amount of the endowment to the responders. The results varied among the three countries. Although the Italian and Chinese participants exerted considerable effort, Chinese topped Italians in both experiments in terms of the amount of effort exerted while the Saudis did not exert any worthwhile effort in either experiment. This result is in line with the literature regarding the inactive populations in the world. Further differences in behavior were noted between the three countries in terms of the rejection rates. In the Italian experiments these rates were between 3.3% and 3.8%; while the Chinese rejections were in the range of 3.6% and 11.1%; however, the rejection rates in Saudi Arabia varied the most as the range was between 0% in the UGT-Choice1 and 17.2% in the UGT-Choice2.

When the effort component was included in the experiment, as in the UGT-Choice1 and UGC, hardly any of the proposers offered a low proportion in all the three countries, that is, only 2.7% offered 2, and one Chinese proposer offered 1 of the proportion to the responder. Even though proposers who chose to exert effort, had already expended a fair amount of effort, their average offer was actually higher than those who chose not to exert effort. Choosing to exert

effort is interpreted as buying an insurance to convince responders to accept their offers but when the effort was compulsory, as in the UGC, the average offers were even higher in the Italian and Chinese experiments. Nonetheless, when proposers exerted more effort (UGT compared to UGC) they offered lower proportions because of the entitlement of proposers to the shares and the feelings generated by exerting effort towards the proportions being offered. In other words, when proposers exert more effort they send an implicit message to the responders that they deserve a higher share of the proportions of the endowment. The experiments in Saudi Arabia, on the other hand, show unpredicted results, in which, proposers did not exert any effort in either experiment and had the highest rejection rates even when the offers were generous. A further investigation about the Saudi Arabian orientations towards the experimental studies will be provided in the third chapter of this thesis.

Chapter 3

Behavioral Economics Experiments in Saudi Arabia as an Islamic Society: An Investigation into Individual Attitudes

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April 2019

Abstract

Experimental Economics has been widely used as a tool to understand people's preferences and decision-making behavior. Nonetheless, there is a dearth of studies that investigate making economic decisions in societies in which religion plays a major role. Saudi Arabia, as an Islamic country, represents a society that has not been investigated yet in the field of behavioral economics. This study addresses to what extent the religion of Islam has an impact on people's willingness to participate in economic-type experiments in Saudi Arabia. It also studies the effect of language on the experiments' results as well as correlating the Hofstede model with people's choices. An online survey was distributed and it was found that religion has a significant effect on people. Therefore, it is recommended that in future researchers pay attention when using behavioral economic terms, such as gambling and uncertainty.

Keywords: Islamic countries, behavioral economics, lab experiments, religion, culture.

3.1. Introduction

Experimental studies have been used widely in most laboratory settings, like medicine, social and psychological studies, and behavioral economics. People around the world share some similarities and some differences, and those similarities and differences are also varies within a certain country or culture. Conducting a study about a specific culture should take into consideration some factors that may play a role in people's preferences and attitudes. Some of which are religion, demographics, political influence, and so on. Behavioral Economics studies have been using experimental studies widely in order to give some answers about when, how, and why people make certain economic decisions. In fact, the scientist professor Richard Thaler has won the Noble Prize in 2017 for his contributions in the field. Behavioral Economics not only became a hot topic in the field of economics, but also some governments have adapted some of its applications, like Nudge, to improve people's lifestyle and to better influence people towards making healthy choices. In Saudi Arabia, the Ministry of Health has established a unit for Nudge to promote behavioral studies among health institutions. Saudi Arabia has been lagging behind developed countries regarding its contributions to the scientific research in general (Saquib, 2018). A recommendation was provided in Saquib's study regarding conducting experimental studies in Saudi Arabia, which is "*Funding institutions (e.g., government, universities, and private organization) should give priority to hypothesis-testing studies, particularly those with experimental designs*.". Based on Chapter 1 and 2 in this thesis, this study is presented to shed some light on what and why Saudis preferred to do or not to do some of those chapters' tasks. Therefore, this study is focused on people's attitudes about experimental studies in Saudi Arabia in the field of behavioral economics.

3.1.1 The Religion of Islam

Islam is the second largest religion in the world after Christianity. With almost 1.5 billion followers who mainly live in the Middle East, North Africa, and Asia. Although Islam was founded in Makkah, which is located in Saudi Arabia now, most of the followers are from non-Arab countries. Indonesia is considered the largest Islamic population with nearly 15 percent of all Muslims around the world, followed by Pakistan which has nearly 200 million Muslims. Furthermore, Islam nowadays is divided into two major groups, Sunnis and Shias with some other minor groups making up the rest. Sunnis represent a minimum of 87 percent of all Muslims, followed by Shias representing between 10 and 13%. The religion of Islam goes back to 608 CE when the religion's prophet Muhammad received the first revelation from God. Islam is the latest one of the three Abrahamic religions, which are Judaism, Christianity, and Islam. The five pillars of Islam are Shahada (testifying that there's only one God, and that Muhammad is his messenger), Prayers (five times a day), Zakat (charity based on accumulated wealth), Fasting Ramadan (fasting for a certain month in a year), and Hajj (pilgrimage to Makkah). The pillar that has an influence on Muslims economics is Zakat. Saving money for a year would make it taxable (Zakat). A person who has money or valuable possessions that they keep for trading and are kept for a year must pay Zakat, which is equivalent to 2.5%. That Zakat goes, in the end, to the poor, the needy, orphans, Zakat collectors, non-Muslims who are sympathetic to Islam, to assist in freedom from slavery, for debt relief, and for travelers who need support. The Quran is considered as the highest scripture in Islam, and it is believed that it is the word of God that was revealed to his messenger, the prophet Muhammad. Islamic teachings touch all aspects of Muslims' daily life. For instance, trading, respecting others, encouraging education, advising people, even taking care of the environment and being good to others, regardless of their beliefs

or ideologies. Another influence of Islam is its law. Islamic law is called Sharia (or sometimes Shari'ah) law, which derives its rules mainly from the Quran, and the prophet's sayings and practices, which is known as Hadith. Sharia law is divided into two sections (rituals and social relations). Nowadays, there are legislative bodies (committees) who are allowed to interpret the scripts of the law that are in the Quran and Hadith. For example, in Egypt, there is a legislative counsel which is called Dar al-Ifta and it has a single role in Egyptian law that only relates to capital punishment. In Saudi Arabia, the first Article in the country's constitution[9] states "*Constitution: The Holy Qur'an and the Prophet's Sunnah*". In addition, the country has three different powers; the Judicial Power, the Executive Power, and the Organizational Power, and the King is the ultimate source of all these authorities. Regarding the effect of Islam on law, Article number 46 affirms that "*The judicial authority is an independent power. In discharging their duties, the judges bow to no authority other than that of Islamic Shari'ah*". From those articles it can be seen how deep the Islamic teachings influence people in Saudi Arabia. Thus, researchers who want to study and carry out experiments in the Saudi society are encouraged to be aware of the effect of religion, especially in the field of economics. Using terms that relate to things that are prohibited in the religion of Islam, but those that are familiar in the field of economics, may affect, in a negative way, the results of an experiment. Terms like gambling and uncertainty can be faced with rejections, not because people do not like to gamble or they are risk averse but because of the effect of Islamic teachings.

[9] Saudi Arabia's Constitution of 1992 with Amendments through to 2005

3.1.2. Prohibited Transactions in Islam

In the Islamic teachings there are a number of prohibited transactions. For instance, gambling is considered as one of the most prohibited transactions in Islam, it is not only prohibited in the Holly Book (Quran) but also in the Hadith of the Islam's prophet (his sayings). Firstly, in the Quran it is stated "*They ask you [Muhammad] concerning wine and gambling. Say: In them is great sin, and some profit for mankind; but the sin is greater than the profit*." (Quran 2:219), it also shows that gambling and other types of gaming (like lottery) are prohibited in Islam "*O you who believe! Intoxicants and gambling, dedication of stones, and divination by arrows, are an abomination of Satan's handwork. Eschew such abomination, that you may prosper*" (Quran 5:90). In another verse, the Quran states that gambling is such unethical work to do "*Satan's plan is to excite enmity and hatred between you, with intoxicants and gambling, and hinder you from the remembrance of Allah, and from prayer. Will you not then abstain?*" (Quran 5:91). Secondly, in the Hadith of Islam's prophet, which was narrated by his companion Abu Huraira, he said: "*Whoever says to his friend, 'Come, let me gamble with you,' should give something in charity*.". Based on the previous quotes from Quran and from Hadith, all Islam's scholars[10] agreed that gambling is prohibited especially when money is involved. In addition to gambling, there are other types of transaction that are prohibited in Islam, such as uncertainty, which will be explained in section 3.3.F., as well as getting interest from loans (In Arabic: *Riba*).

[10] Scholars who mentioned that gambling is prohibited by all other scholars are: Imam Ibn Hazm in Ibn Alqayyem's book 'Alforosyyah' page: 224; Aljassas in his book 'Ahkam Al Quran' chapter: 2, page: 11; Abu Hayyan Alandalusy in his book 'Tafseer Albahr Almuheet' chapter: 2, page: 250; Ibn Taimyah in the book 'Majmo Fatawa Shaikh Al Islam Ibn Taimyah chapter:32, page: 220; and Imam Alqurtoby in his book 'Tafseer Alqurtoby' chapter: 3, page: 434.

The latter way of gaining money is highly prohibited in Islam by both the Holy book and the prophet's Hadith. In the Quran it is mentioned in twelve verses, for example:

> "*Those who consume interest cannot stand [on the Day of Resurrection] except as one stands who is being beaten by Satan into insanity. That is because they say, "Trade is [just] like interest." But Allah has permitted trade and has forbidden interest. So whoever has received an admonition from his Lord and desists may have what is past, and his affair rests with Allah . But whoever returns to [dealing in interest] - those are the companions of the Fire; they will abide eternally therein.*" Chapter: 2, verses 275.

In addition to Quran's warnings of dealing with interest, several narrators[11] mentioned that "*The Islam's prophet cursed the accepter of interest and its payer, and one who records it, and the two witnesses, and he says: they are all equal.*". In addition, gaining interest not only is prohibited in form of money but also when trading between six types of products, which are known as '*the six commodities of interest*': gold, silver, wheat, barely, dates, and salt. Those six types are prohibited to be traded by using the same commodity as a mean of transaction. For example, it is prohibited to buy gold with gold, or to buy silver with silver and so on but they are acceptable to be traded if one type is not the same as the other one, for example, exchanging gold with silver is acceptable, the same with trading salt with gold and so on. The latter type of prohibited transaction is derived from the Islam's prophet's warning. The prophet said: "*While exchanging gold for gold, silver for silver, wheat for wheat, barley for barley, dates for dates and salt for salt, exchange in equal measure and exchange hand by hand. Whosoever paid more than what he received or demanded more than what he gave, verily he dealt in interest. Both the*

[11] Jabir in Imam Muslim's book 'Sahih Muslim', Hadith No. 1598; Imam Albukhari's book 'Sahih Albukhari' chapter: 3, page:59; Imam Alhafidh ibn Hajar in his book 'Mokaddima Fat'h Albari' chapter: 4, page: 314.

payee and the receiver are equal in violating the Law of God."[12] Therefore, using certain terminologies in the field of experimental economics in Islamic communities should be done in cautious way. Terms like gambling, interest and uncertainty are all prohibited and may lead an experiment's results to be ambiguous or may result in an unexpected outcome.

3.2. Literature Review

Making economic decisions has been discussed widely in the literature of behavioral economics. Some studies focused on some of the psychological processes used in decision-making (Svenson, 1992) in which making decisions was divided into three stages: pre-decision, decision, and post-decision, while some other studies related certain types of decision-making to hormones and neurological factors (Camerer, Loewenstein & Prelec, 2004; Bechara, 2004; Sanfey, 2007). Furthermore, some studies have linked making decisions with some demographic factors, like age (Besedeš, Deck, Sarangi & Shor, 2012), gender (Andreoni & Vesterlund, 2001; Eckel & Grossman, 2008), education (Solmon, 1975), income (Horowitz & McConnell, 2003), and so on. However, the effect of Islamic teachings to influence people towards a certain economic decision is rarely seen in the literature. A book by Minton and Kahle (2004) addressed the importance of shedding light on the impact of religion in business fields and behavioral economics. They assumed that the majority of businesses nowadays are neglecting religion in making decisions. Yet, there is a lack of depth in investigations into Islamic societies and their willingness to be a part of experimental economics and this gap needs to be bridged to fully understand the effect of the religion of Islam on people's choices in making decisions. Knowing that some types of trades and games are prohibited in the Islamic teachings, like gambling and

[12] Narrated by Imam Muslim in his book 'Sahih Muslim', Hadith No. 2971.

interest, and when uncertainty evolves in a trade, researchers are presented with a society that would probably reject all those types of transactions. Hence, it is a challenging problem which researchers face in conducting experimental economic studies. The aim of this study is to shed some light on Muslims' attitudes in Saudi Arabia towards participating in economic-type experiments. This study collected data from 1,607 respondents using an online questionnaire[13] on the social media applications Twitter and WhatsApp.

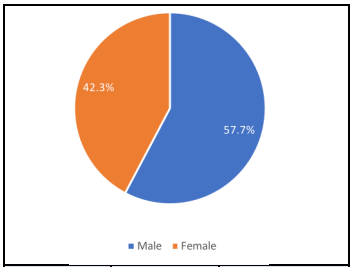
3.3. Data Analysis

3.3.1 The whole sample report

The study sample size was 1,607 participants, most of which are from Saudi Arabia. The questionnaire was designed using a web-based platform called SurveyMonkey. It was distributed using two social media platforms: Twitter and WhatsApp. The participants voluntarily responded to the questionnaire between February 17 to 24, 2018. Some of participants' demographic information was collected like gender, age, education level, employment status, nationality, and religion. This study compared some of those variables with each other, for example, it compared education with gender and age and so on, and then the analysis was performed.

3.3.2. Gender

The study targeted both genders: males and females. The number of male participants was 928 (57.7%), and there were 679 (42.3%) female participants, as shown in Pie Chart 1.



Gender	Number	Percentage
Male	928	57.7%
Female	679	42.3%
Total	1607	100%

Pie Chart 1: Gender

[13] The questionnaire was distributed in February, March and April of 2018.

3.3.3. Age Grouping

Participants reported their ages, which were classified into eleven groups as shown in Table 1. The minimum allowed age to participate in the questionnaire was 18, and there was no maximum age, however, it was limited to 71. The most frequent group was the group of 28-32 year-olds with a total number of 288 participants. To analyze data using a binary logistic regression, the groups were divided into two groups, more precisely, below 35 and 35 or above, based on the median age as shown in Table 2.

Table 1

Participants' age groups

Age Groups	**18-22**	**23-27**	**28-32**	**33-37**	**38-42**	**43-47**	**48-52**	**53-57**	**58-62**	**63-67**	**68-71**	**Total**
Freq	186	231	288	253	222	127	125	87	63	20	5	1607
Percent	11.57%	14.37%	17.92%	15.74%	13.81%	7.90%	7.78%	5.41%	3.92%	1.24%	0.31%	100%

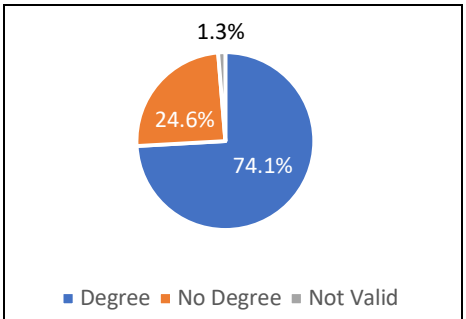
Table 2

Age groups based on the median age

Age Group	**Freq**	**%**
Below 35	804	50%
35 or above	803	50%
Total	1607	100%

3.3.4. Education: Degree and Non-degree

The participants were also asked about their education level. They had six different choices: high school, diploma, Bachelor's, Master's, PhD, or other. These groups were categorized into two main groups: degree and non-degree holding participants. Degree-holding participants obtained Bachelors, Masters, and PhDs, representing 74.1% of the sample size, while non-degree-holding participants obtained merely a diploma or completed high school, representing 24.6% of the entire sample size. The



Education	**Number**	**Percentage**
Degree	1191	74.1%
Non-degree	395	24.6%
Not Valid*	21	1.3%
Total	1607	100%

Pie Chart 2: Education

participants who classified their education level as "other" were excluded due to the misleading meaning of the choice. In other words, any participant who obtained a degree higher than a PhD or lower than a high school certificate was excluded from the analysis. Those participants represented only 1.3% of the sample size and were labeled as "not valid" as shown in Pie Chart 2. After the invalid responses were eliminated, the total education sample becomes 1,586 participants of which 75.09% have a degree, and 24.9% don't have a degree.

3.3.5. Employment: Employed and Non-employed

The sample was divided into two employment-status groups: employed and non-employed. Employed participants were either working in private or public sectors, while non-employed participants were either unemployed, students, or others. 949 participants were in the former group, and 658 participants were in the latter one.

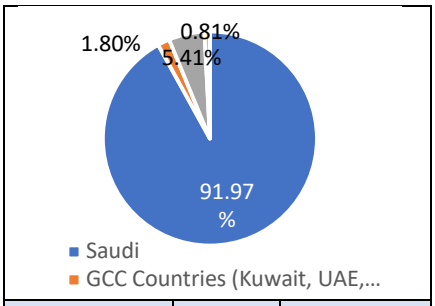
Table 3

Employment Status

Employment	Freq	%
Employed	949	59.1%
Non-employed	658	40.9%
Total	1607	100%

3.3.6. Nationalities: Saudi vs Others

Although the questionnaire was targeting participants from Saudi Arabia, some responses were received from other nationalities. The questionnaire had four different nationality categories: 1) Saudi Arabia, 2) the Gulf Cooperation Council countries (GCC) including the United Arab Emirates, Kuwait, Bahrain, Qatar and Oman, 3) other Arabian countries and 4) others. The vast majority of the responses were from



Nationality	Freq	Percentage
Saudi	1478	91.97%
GCC	29	1.80%
Other Arabians	87	5.41%
Other	13	0.81%
Total	1607	100%

Pie chart 3: Nationalities

Saudi Arabia with 91.97% of the sample size, followed by other Arabian countries with 5.41%, then GCC countries 1.8% and lastly other countries with less than 1%, as illustrated in Pie Chart 3. Then, the nationalities were classified into two categories, Saudi and non-Saudi participants as demonstrated in Table 4.

Table 4

Saudi vs Non-Saudi participants

Nationality	Freq	%
Saudi	1478	91.97%
Non-Saudi	129	8.03%
Total	1607	100%

3.3.7. Religion

To ensure that the targeted sample represents the study community in a form that answers the research question, an additional question was added to the questionnaire about participants' religion. The results showed that more than 99% of the participants were Muslims and less than 1% were non-Muslims as shown in Table 5.

Table 5

Muslims vs Others

Religion	Freq	%
Muslim	1593	99.13%
Others	14	0.87%
Total	1607	100%

3.3.8. Education and Gender

The sample shows that the number of male degree-holding participants is greater than any other category. More specifically, their numbers are higher than degree-holding female participants and all non-degree-holding participants as shown in Table 6.

Table 6

Education and Gender

Education	Gender	Freq	%
Degree	Male	661	41.68%
	Female	530	33.42%
Non-Degree	Male	257	16.2%
	Female	138	8.7%
	Total	1586	100%

3.3.9. Grouping of Education, Gender, and Age:

The collected data indicated that the number of older (35 and above) male degree-holding participants was higher than all other categories (376) in contrast to older female non-degree holding participants who represented the least number of participants with only 65 participants as shown in Table 7 below:

Table 7

Education, Gender, and Age

Edu	Gender	Age		Total	G. Total
		<35	≥35		
	Male	285	**376**	661	
	% Male	45.53%	66.55%	55.50%	41.68%
Degree	Female	341	189	530	
	% Female	54.47%	33.45%	44.50%	33.42%
	Total	626	565	1191	
	% Total	78.05%	72.07%	75.09%	
	Male	103	154	257	
	% Male	58.52%	70.32%	65.06%	16.2%
Non-degree	Female	73	**65**	138	
	% Female	41.48%	29.68%	34.94%	8.7%
	Total	176	219	395	
	% Total	21.95%	27.93%	24.91%	
	Grand Total	802	784	1586	
	% Grand Total	50.57%	49.43	100%	100%

3.4. Research questions and hypotheses

Research question: ***To what extent are people from an Islamic country (Saudi Arabia) willing to participate in experimental economics-type experiments?***

In order to answer the primary research question, the following five secondary questions need to be analyzed:

A. Are participants willing to take part in experiments that are *against* their religious teachings?

B. Are participants willing to take part in experiments that are *not against* their religious teachings?

C. Are participants willing to accept cash prizes / prizes to encourage them to participate in an experiment?

D. Are participants willing to participate in a gambling-type game?

E. Are participants willing to participate in a gambling-type game that doesn't use real money?

F. To what extent Islam religion has an impact to prevent uncertainty?

Hypotheses:

H_1: Saudi participants' average acceptance to participate in experiments that are against their religious teachings is less than that of experiments that are not against religious teachings.

H_2: Cash prizes are of favor for Saudis as experiments rewards.

H_3: Gambling with real money prevents Saudis from participating in experimental studies.

H_4: Islam influences people to prevent uncertainty.

3.4.A. Willingness to take part in experiments that are *against* religious teachings

In order to analyze the willingness of participants to participate in such experiments, the participants were asked a general question as well as some of their demographic information such as their age, gender, education level, employment status, and nationality. The general question was: would you participate in an experiment that is against your religious teachings? The participants responded as follows:

Table 8

Participants who are willing to participate in an experiment that is against their religious teachings

Would you participate in an experiment that is against your religious teachings?		
Answer	**Freq**	**%**
Yes	225	14%
No	1382	86%
Total	1607	100%

The majority of the sample (86%) chose that they are not willing to participate in experiments that are against their religious teachings. On the other hand, only fourteen percent chose "Yes", showing their willingness to participate in experiments that are against their religious teachings. Later in this paper, the participants' willingness will be discussed and accounted for in more details regarding gambling, experiments with real money versus non-monetary awards in order to further identify if there is a statistical correlation with religion or not. The high percentage (86%) of rejections was expected by the authors in such a conservative community (Saudi Arabia) due to the influence of Islamic teachings on people's preferences. Next, the impact of participants ages, genders, education levels, employment statuses and nationalities, on their decisions to participate or not, will also be investigated.

3.4.A.i. Against religious teachings: Age

As shown in Table 9 below, younger participants were more likely to participate in an experiment that is against their religious teachings. Furthermore, results of the binary logistic regression show that there was a significant relationship between participants' age and their willingness to participate in experiments against their religious teachings ($X^2(5) = 37.16$, $p < .001$). The percentage of those who chose "Yes" for younger participants is almost double the percentage of that for the older group with 18.3% and 9.7% respectively.

Table 9

Participants' age group, and their willingness to participate

			Age Groups		
			≤34	≥35	Total
Would you participate in an experiment that is against your religious teachings?	Yes	Count	147	78	225
		%	18.30%	9.70%	14%
	No	Count	657	725	1382
		%	81.70%	**90.30%**	86%
	Total		804	803	1607

3.4.A.ii. Against religious teachings: Gender

Male participants were more willing to participate in experiments that are against their religious teachings as opposed to female participants, as shown in Table 10, with a percentage of 15.3% for the male participants and 12.22% for female participants. There was a significant association between gender and participation in games that are against participants' religious teachings ($X^2(5) = 37.16$, $p = 0.002$). This finding is consistent with several studies in the literature that have addressed male participants' risk-taking (Nicholson, Soane, Fenton-O'Creevy & Willman, 2005). Therefore, this study concludes that male participants tend to take risks compared to their female counterparts, where both genders could face issues that might act against their religious teachings.

Table 10

Participants' gender, and their willingness to participate

Against	Freq	Male	%	Female	%
Yes	225	142	15.30%	83	12.22%
No	1382	786	84.70%	596	87.78%
TOTAL	1607	928	100.00%	679	100.00%

3.4.A.iii. Against religious teachings: Education

The participants who obtained a degree (Bachelor's, Master's, or a PhD) showed more acceptance to participate in experiments that are against their religious teachings ($X^2(5) = 37.16$, p=.08) as shown in the analysis.

Table 11

Participants' education, and their willingness to participate

			Education Groups		
			Non-Degree	Degree	Total
Would you participate in an experiment that is against your religious teachings?	Yes	Count	46	178	224
		%	11.60%	**14.90%**	14.12%
	No	Count	349	1013	1362
		%	88.40%	85.10%	85.87%
	Total		395	1191	1586

3.4.A.iv. Against religious teachings: Employment status

In the questionnaire, the participants were asked to report their employment status. As mentioned earlier, the participants were shown five categories: private sector, public sector, unemployed, student, and others. The employment answers were classified into two categories: employed and non-employed. Private and public sectors were grouped into the employed category, while student, unemployed and others were grouped into the non-employed group. As reported in Table 12, non-employed participants revealed a tendency towards accepting these experiments compared to employed participants. Nevertheless, the results have revealed a non-significant association between participating in such games and employment statuses ($X^2(5) = 37.16$, $p = .165$).

Table 12

Participants' employment status, and their willingness to participate

			Employment Status		
			Non-employed	Employed	Total
Would you participate in an experiment that is against your religious teachings?	Yes	Count	103	122	225
		%	15.7%	12.9%	14%
	No	Count	555	827	1382
		%	84.3%	87.1%	86%
	Total		658	949	1607

3.4.A.v. Against religious teachings: Nationality

Participants from Saudi Arabia represent (91.97%) and other nationalities represent (8.03%) of the sample. In the table shown below, non-Saudis are more willing to participate in experiments that are against their religious teachings. Nevertheless, there is no significant relationship between participants' nationalities and their willingness to participate in experiments that are against their religious teachings (p=.186). Since Muslims represents 99.13% of the sample, the correlation between the nationality and the willingness to participate was diminished. Therefore, it makes the hypothesis stronger about the effect of the religion of Islam on people's choice.

Table 13

Participants' nationalities, and their willingness to participate

			Nationality		
			Saudi	Non-Saudi	Total
Would you participate in an experiment that is against your religious teachings?	Yes	Count	202	23	225
		%	13.67%	17.83%	14%
	No	Count	1276	106	1382
		%	86.33%	82.17%	86%
	Total		1478	129	1607

3.4.A.vi. Against religious teachings: Education and Gender

As seen in Table 14 below, males with a degree were more willing to participate in experiments that are against their religious teachings (16.79%) as opposed to any other group in the table, followed by females with a degree (12.64%). In contrast, females without a degree were the smallest group who would participate in such experiment (11.59%). Since educated participants (both males and females) were more willing to participate in such experiments than less-educated participants, this study therefore conclude that education plays a major role in changing people's attitudes, decision making and even risk taking. That being said, it also considers male participants are more risk-taking than females.

Table 14

Participants' education and gender and their willingness to participate

Education	Willingness		Gender: Male	Female	Total
	Yes	Count	30	16	46
		%	11.67%	**11.59%**	13.18%
Non-Degree	No	Count	227	122	349
		%	88.33	88.41%	88.35%
	Total	Count	257	138	395
	Yes	Count	111	67	178
		%	**16.79%**	12.64%	14.95%
Degree	No	Count	550	463	1013
		%	83.21%	87.36%	85.05%
	Total	Count	661	530	1191
	Grand Total		918	668	1586

3.4.A.vii. Against religious teachings: Gender and Age:

From the data, this study observes that the younger male group was more willing to participate in an experiment that is against their religious teachings compared to any other group in the table (20.8%). It also observes that the older female group showed the least willingness to participate in such experiments (6.4%). This result was found statistically significant for both gender and age ($X^2(5) = 37.16$, p=.002, p<.001) respectively. In addition, the result is also in line with those in the literature that have used young male and risk taking as variables (Nicholson, Soane, Fenton-O'Creevy & Willman, 2005).

Table 15

Participants' gender and age group, and their willingness to participate

Gender	Willingness		Age Groups: <35	≥35	Total
	Yes	Count	81	61	142
		%	**20.8%**	11.3%	
Male	No	Count	308	478	786
		%	79.2%	88.7%	
	Total	Count	389	539	928
	Yes	Count	66	17	83
		%	15.9%	6.4%	
Female	No	Count	349	247	596
		%	84.1%	**93.6%**	
	Total	Count	415	264	679
	Grand Total		804	803	1607

3.4.A.viii. Binary Logistic Regression:

Model[14]:

$$\begin{cases} Y = 1 & if\ Yes \\ Y = 0 & if\ No \end{cases}$$

$$Prob(Y = 1|x) = logit(\pi(x)) = -1.604 - 0.739age + 0.499gender + 0.317edu - 0.229emp - 0.325natio$$

Model Results:

Table 16

Binary Logistic Regression for the first hypothesis

Variables	B	S.E.	Wald	df	Sig.	Exp(B)
35 and above	-0.739	0.159	21.541	1	**0.000**	0.478
Male	0.499	0.164	9.253	1	**0.002**	1.648
Degree	0.317	0.181	3.071	1	**0.08**	1.374
Employed	-0.229	0.164	1.932	1	0.165	0.796
Saudi	-0.325	0.246	1.748	1	0.186	0.722
Constant	-1.604	0.294	29.854	1	0	0.201

A binary logistic regression was run with a dependent variable "Would you participate in an experiment that is against your religious teachings?" and five independent variables: age, gender, education, employment status, and nationality. It was found that age, gender, and education play a role in making decisions, with age and gender showing high statistical significance ($X^2(5) = 37.16$, $p<.001$; $p=.002$) respectively. Education reveals a statistically significant result ($p=.08$), while both employment status and nationality have no statistical significance.

[14] *Y*: the dependent variable (Participating in experiments that are against religious teachings)
age: an independent variable of participants' age equal to or more than 35 years old.
gender: an independent variable of participants' male gender.
edu: an independent variable of participants' education level with a degree of Bachelor's or more.
emp: an independent variable of participants' employed status.
natio: an independent variable of participants' Saudi nationality.

Overall Model Significance:

To determine the overall model significance to accept or reject the null hypothesis, a chi-square test (1-pchisq) was performed. The result revealed a highly significant difference (>0.001), which rejects the null hypothesis.

Moreover, the variance inflation factor (VIF) test was calculated to assess if there was a potential multicollinearity problem in the study model. The results are shown in the table below:

Table 17

Model collinearity

Test	Male	35More	Degree	Employed	Saudi
VIF	1.19	1.11	1.03	1.25	1.00

All variables have a VIF value of approximately 1, which indicates that there is no problematic collinearity in the study model.

Odds Ratio:

Table 18

Odds Ratio of experiments that are against religious teachings

(Intercept)	Male	35More	Degree	Employed	Saudi
0.201	1.648	0.478	1.373	0.796	0.722

An odds ratio of more than 1 suggests that the participants were more willing to participate in experiments that are against their religious teachings compared to the other group. This is contrary to the ratios that are less than 1. For example, male participants were found more willing to participate in experiments that are against their religious teachings compared to their female counterparts. Specifically, the odds of participation for male participants were almost 1.65 times higher than the odds of participation for female participants in such experiments.

Moreover, older participants (35+) were less likely to participate in experiments that are against their religious teachings as opposed to younger participants (<35). In other words, the

odds of participation of the younger group were 2.09 (1/0.478) times higher than the odds of participation of the older group. In addition, the educated group, which has bachelor's degrees or higher, were found more likely to participate in such experiments than the less-educated group. The odds of participation of the educated group were 1.37 times higher than the odds of participation of the less educated group. Lastly, both the employment status and nationality variables reported non-statistically significant distributions, hence, the odds ratios were not interpretable.

Average Marginal Effects:

Table 19

Average marginal effects of experiments that are against religious teachings

(Intercept)	Male	35More	Degree	Employed	Saudi
-0.190	0.059	-0.087	0.038	-0.027	-0.0385

The study shows that, on average, the probability that male participants would participate in experiments that are against their religious teachings was 5.9 percentage points higher than that of the female participants. Moreover, the probability, on average, that a participant with a degree would participate in experiments that are against his/her religious teachings is 3.8 percentage points higher than the probability of an individual without a degree. Another finding of the study is that, on average, the probability that an older person would participate in experiments that are against his/her religious teachings is 8.7 percentage points less than the corresponding probability for the younger group (<35).

3.4.B. Willingness to take part in experiments that are *not* against religious teachings

In order to answer this question, it is necessary to analyze the general question that was asked to the participants and the participants' demographic information.

General question: Would you participate in an experiment that is not against your religious teachings?

The majority of the sample chose "Yes" whereas only 5.2% chose "No". Therefore, the majority of participants showed willingness to participate in experiments that are not against their religious teachings. In other words, the findings suggest that religion plays a role in people's decision making in Saudi Arabia regarding participation in lab experiments when compared to the first question, where the majority chose not to participate in experiments that are against their religious teachings.

Table 20

Participants who are willing to participate in an experiment that is not against their religious teachings

Would you participate in an experiment that is not against your religious teachings?		
Answer	**Freq**	**%**
No	83	5.2%
Yes	1524	94.8%
Total	1607	100%

3.4.B.i Not against religious teachings and age group:

Of those who chose not to participate in experiments that are not against religious teachings, it was found that older participants were more likely not to participate in such experiments compared to younger participants ($X^2(5) = 20.15$, p=.036), as reported in Table 21. In other words, the percentage of the younger group who were willing to participate in such experiments is relatively higher than their older counterparts. This finding tells us that younger participants (<35) are more willing to participate in experiments than older ones (≥35) whether those experiments are against their religious teachings or not.

Table 21

Experiments that are not against religious teachings and age groups

			Age Group				
			<35	%	≥35	%	Total
Would you participate in an experiment that is not against your religious teachings?	Yes	Count	777	51. 0%	747	49.0%	1524
		%	96.64%		93.03%		94.8%
	No	Count	27	32.50%	56	67.50%	83
		%	3.36%		6.97%		5.2%
	Total		804		803		1607
	% Total		50%		50%		100%

3.4.B.ii. Not against religious teachings and Employment:

As mentioned earlier, the employment answers were classified into two categories: Employed and Non-employed. As shown in Table 22 below, non-employed participants showed a tendency towards participating in such experiments (96.66%) as opposed to the employed participants (93.57%). This finding was found statistically significant ($X^2(5) = 20.15$, p=.064). This tendency is attributed to two reasons 1) the limited time that employed participants have to spend on lab experiments compared to the non-employed participants, and 2) non-employed people may need some money so they participate to gain some rewards from the experiments.

Table 22

Experiments that are not against religious teachings and employment status

			Employment Status				
			Employed	%	Non-Employed	%	Total
Would you participate in an experiment that is not against your religious teachings?	Yes	Count	888	58.3%	636	41.7%	1524
		%	93.57%		96.66%		94.84%
	No	Count	61	73.5%	22	26.5%	83
		%	6.43%		3.34%		5.16%
	Total		949		658		1607
	% Total		59.05%		40.95%		100%

3.4.B.iii. Not against religious teachings and Education:

Participants who hold a degree tend to be more willing to participate in experiments that are not against their religious teachings, see Table 23. There is a significant association between

participating in such experiments and obtaining a degree ($X^2(5) = 20.15$, p=.089) as shown in the regression analysis.

Table 23

Experiments that are not against religious teachings and education

			Education				
			Degree	%	Non-degree	%	Total
Would you participate in an experiment that is not against your religious teachings?	Yes	Count	1137	75.5%	368	24.5%	1505
		%	**95.47%**		93.16%		100%
	No	Count	54	66.7%	27	33.3%	81
		%	4.53%		6.84%		100%
	Total		1191		395		1586
	% Total		75.09%		24.91%		100%

3.4.B.iv. Binary Logistic Regression:

Model:

$$\begin{cases} Y = 1 & if\ Yes \\ Y = 0 & if\ No \end{cases}$$

$$Prob(Y = 1|x) = logit\big(\pi(x)\big) = -3.466 - 0.528age - 0.323gender + 0.424edu - 0.538emp + 0.033Natio$$

Model Results:

Table 24

Binary Logistic Regression

Variables	B	S.E.	Wald	df	Sig.	Exp(B)
35 and above	-0.528	0.252	4.379	1	**0.036**	0.590
Male	-0.323	0.270	1.423	1	0.233	0.724
Degree	0.424	0.249	2.900	1	**0.089**	1.528
Employed	-0.538	0.290	3.440	1	**0.064**	0.584
Saudi	0.033	0.410	0.006	1	0.937	1.033
Constant	3.466	0.495	49.038	1	0.000	32.018

A binary logistic regression was run to analyze the data of the second question, which is: Would you participate in an experiment that is not against your religious teachings? The question was the dependent variable, where age, gender, education, employment status and nationality

were all independent variables. As shown in Table 24, age, education, and employment status revealed statistically significant distributions ($X^2(5) = 20.15$, p=.036; .089; and .064 respectively). From the table, it can be noted that both age and employment status negatively correlate with the participation willingness, which suggests that older participants are less likely to be involved in experiments that may not be against their religious teachings. In the same vein, employed participants were less likely to engage in such experiments, which might be ascribed to their time limitations compared to non-employed participants. On the contrary, educated participants showed more willingness to be involved in experiments that are not against their religious teachings compared to those who hold a diploma or lower level of education.

Odds Ratio:

Table 25

Odds Ratio of experiments that are not against religious teachings

(Intercept)	Male	35More	Degree	Employed	Saudi
32.018	0.724	0.590	1.528	0.584	1.033

Since degree-holding participants are more willing to participate in experiments that are not against religious teachings, compared to non-degree holding participants, it was found that the odds of participation of the former group were 1.52 times higher than the odds of participation of the latter group. In addition, older participants were less likely to participate in such experiments than their younger counterparts. In other words, the odds of participation of the younger group were 1.69 (1/0.59) times higher than those of the older group. Similarly, employed participants were less likely to participate in those experiments than non-employed participants in that the odds of participation for the non-employed group were 1.71 (1/0.5839814) times higher than those of the employed group. Gender and nationality were not statistically significant.

Average Marginal Effects:

Table 26

Average marginal effects of experiments that are not against religious teachings

(Intercept)	Male	35More	Degree	Employed	Saudi
0.166	-0.015	-0.025	0.02	-0.026	0.002

On average, the probability that degree-holding participants would participate in experiments that are not against their religious teachings is 2 percentage points higher than that of non-degree-holding participants. Furthermore, the probability that older participants would participate in those experiments is 2.5 percentage points lower than that of the younger participants. Correspondingly, the probability that employed participants would participate in such experiments is 2.6 percentage points lower than that of non-employed participants.

Participation comparison between the two experiments: against and not against

In this section, the results of participants' willingness to participate in experiments that are against and not against religious teachings are compared.

Table 27

A comparison between the willingness to participate in experiments that are against and not against religious teachings

	Against*		Not Against**	
Answer	**Freq**	**%**	**Freq**	**%**
Yes	225	14%	1,524	94.8%
No	1,382	86%	83	5.2%
Total	1,607	100%	1,607	100%

*: Participants who are willing to participate in an experiment that is against their religious teachings
**: Participants who are willing to participate in an experiment that is not against their religious teachings

From the table above, it can easily be concluded that people are more willing to participate in experiments that are not against their religious teachings, suggesting that religion in Saudi Arabia plays a major role in decision making. Therefore, when designing an experiment in Saudi Arabia, a researcher should take into account terminologies that they would use in a way that does not go against the religious beliefs of the participants.

Binary Logistic Regressions:

Table 28

Binary Logistic Regression for experiments against & not against religious teachings

	Against						Not Against					
Variable	B	S.E.	Wald	df	Sig.	Exp(B)	B	S.E.	Wald	df	Sig.	Exp(B)
35 and more	-0.739	0.159	21.541	1	**0.000**	0.478	-0.528	0.252	4.379	1	**0.036**	0.590
Male	0.499	0.164	9.253	1	**0.002**	1.648	-0.323	0.270	1.423	1	0.233	0.724
Degree	0.317	0.181	3.071	1	**0.08**	1.374	0.424	0.249	2.900	1	**0.089**	1.528
Employed	-0.229	0.164	1.932	1	0.165	0.796	-0.538	0.290	3.440	1	**0.064**	0.584
Saudi	-0.325	0.246	1.748	1	0.186	0.722	0.033	0.410	0.006	1	0.937	1.033
Constant	-1.604	0.294	29.854	1	0.000	0.201	3.466	0.495	49.038	1	0.000	32.018

In the "Against" type, younger males who hold a degree were found more willing to participate compared to the older group, whereas in the "Not Against" type, males were not found to be significantly different from females. However, being employed was negatively significant in participating in the "Not Against" type. Age and education have the same effect on both types, where older and less educated people tend to not be willing to participate in lab experiments. Therefore, the first null hypothesis is rejected.

3.4.C. Participants willingness to accept cash prizes as a reward

Dealing with money is somehow seen as a sensitive issue in the religion of Islam. For example, interest on lending money (usury) is prohibited. Islamic banking was initiated to fulfil people's needs where they can borrow money in terms of goods (not cash). For instance, if a bank client wants to buy a new car but he needs cash to be able to buy it, the bank would buy the car then lend it to the client who would pay back the bank in monthly instalments. In the previous example, the client does not have a hand on the cash, rather it is the bank who buys the car then lends it to the client. In the same vein, buying gold with gold, silver with silver, and other certain types of goods, they must have the same value and the transaction must be a hand-by-hand. Hence, it is discouraged to buy gold or silver in Saudi Arabia with credit cards, because

processing the transaction takes 2 or 3 days and that is not a hand-by-hand transaction. On the contrary, it is permitted to buy gold and silver by debit cards where money goes directly to the seller's account. Addressing these examples is to clarify the sensitivity of money and cash transactions in Islam. A binary logistic regression was run to test if there is an impact of using money as a reward or not. A significant relationship between older people and choosing rewards that are not monetary was found (p=.023). In particular, 35% of older people are not in favor of receiving money as a reward compared to 29.6% of the counterpart age group (below 35).

Table 29

Binary logistic regression for participants' willingness to accept money vs other

Variables	B	S.E.	Wald	df	Sig.	Exp(B)
35 and more	-0.267	0.117	5.204	1	**0.023**	0.766
Male	-0.191	0.122	2.458	1	0.117	0.826
Degree	0.038	0.129	0.085	1	0.771	1.038
Employed	0.092	0.127	0.522	1	0.47	0.912
Saudi	0.097	0.2	0.234	1	0.629	0.908
Constant	1.414	0.467	9.158	1	0.002	4.114

Odds Ratio:

Table 30

Odds ratio for the willingness to accept money vs other

(Intercept)	Male	35More	Degree	Employed	Saudi
4.114	0.826	0.766	1.038	0.912	0.908

An odds ratio of less than 1 suggests that the participants were less willing to accept money as a reward for their participation in lab experiments. Specifically, older participants were found less willing to accept money as a reward compared to their younger counterparts. The odds of accepting money for the younger participants were 1.3 (1/0.766) times higher than the odds of participation for the older group. All other variables reported non-statistically significant distributions, hence, the odds ratios were not interpretable.

Average Marginal Effects:

Table 31

Average marginal effects for participants' willingness to accept money vs other

(Intercept)	Male	35More	Degree	Employed	Saudi
0.176	-0.042	-0.058	0.008	0.02	0.021

On average, the probability that older participants would accept money as a reward was 5.8 percentage points less than that of the younger participants. This suggests that having other reward options, other than money, would be a good option to have when a researcher conducts an experiment in Saudi Arabia. Therefore, the second null hypothesis is rejected.

3.4.D. Participants willingness to be part of a game-type gambling?

Table 32

Gambling with real money

Would you participate in an experiment that has gambling with real money?

Answer	**Freq**	**%**
No	1373	85.44%
Yes	234	14.56%
Total	1607	100%

The total analysis shows that more than 85% of people do not want to take part in an experiment that has gambling with real money. This percentage is as expected due to the fact that Islam prohibits gambling in all its forms even if it is for the sake of studies. This result suggests that the majority of Muslims will not participate in behavioral economics experiments that have gambling with money. Therefore, this study encourages future researchers to take into account the terminologies used in their experiments, specifically, to not include the word "gambling", otherwise they might end up with participants refusing to take part in the experiments.

Table 33

Gender and gambling with real money

Gamble	Freq	Male	%	Female	%
Yes	234	165	17.8%	69	10.2%
No	1373	763	82.2%	610	89.8%
TOTAL	1607	928	100.00%	679	100.00%

Nearly 91.5% of those who chose "No" reported the reason to be because of their religious beliefs. While 4.89% reported their reason to be due to their hatred of losing, and the other 3.61% due to other reasons like morals, lack of experience, and fear of addiction.

Table 34

Binary logistic regression for participants' willingness to gamble with real money

Variables	B	S.E.	Wald	df	Sig.	Exp(B)
35 and more	-0.215	0.151	2.03	1	0.154	0.806
Male	0.767	0.168	20.964	1	**0.000**	2.154
Degree	-0.001	0.165	0	1	0.996	0.999
Employed	-0.179	0.163	1.202	1	0.273	0.836
Saudi	-0.364	0.237	2.353	1	0.125	0.695
Constant	-1.704	0.284	35.898	1	0.000	0.182

As can be seen from Table 34, men were more likely to gamble than their female counterparts. There is no statistical significance in the other variables. Gambling by itself represents a type of risk taking, hence, this finding goes along with what is in the literature about men and risk taking. Since gambling is prohibited in Islam, playing such games is considered to be risk-taking behavior. The result reflects how willing a Saudi is to participate in a lab experiment that involves gambling.

Odds Ratio:

Males were found more willing to gamble with real money compared to their female counterparts. Specifically, the odds of gambling with real money for the male participants were 2.154 times higher than the odds of participation of the female group. All other variables reported non-statistically significant distributions, hence, the odds ratios were not interpretable.

Table 35

Odds ratio for participants' willingness to gamble with real money

(Intercept)	Male	35More	Degree	Employed	Saudi
0.182	2.154	0.806	0.999	0.836	0.695

Average Marginal Effects:

On average, the probability that male participants would gamble with real money was 9.4 percentage points higher than that of the female participants. This suggests that men in Saudi Arabia are more open than women to gambling with real money. That being said, the percentage of men who are willing to gamble with real money remains a minority.

Table 36

Average marginal effects for participants' willingness to gamble with real money

(Intercept)	Male	35More	Degree	Employed	Saudi
-0.210	0.094	-0.026	-0.00009	-0.022	-0.0449

3.4.E. Participants willingness to be part of a gambling-type game that doesn't use real money

More than 43% of the survey participants responded to the question with "no", they were not willing to participate in experiments that have gambling without money. 528 participants (75.32% of them) were unwilling to participate and gave the reason to be their religious beliefs. While 159 participants (22.68%) described it as a waste of time, and 11 participants (1.56%) chose not to participate due fear of loss, the rest (0.44%) chose other reasons like being unlucky in games, as a way to lead to gambling with real money, or seeing no benefits of participating in such games.

Table 37

Participants who are willing to gamble without real money

Would you participate in an experiment that has gambling but without real money?		
Answer	**Freq**	**%**
No	701	43.6%
Yes	906	56.4%
Total	1607	100%

Below is the regression analysis for the question about the willingness to participate in experiments that have gambling without money:

Table 38

Binary logistic regression for participants' willingness to gamble without real money

Variables	B	S.E.	Wald	df	Sig.	Exp(B)
35 and more	-0.480	0.110	18.941	1	**0.000**	0.619
Male	0.770	0.116	44.182	1	**0.000**	2.16
Degree	0.287	0.123	5.443	1	**0.020**	1.332
Employed	0.053	0.119	0.200	1	0.654	1.055
Saudi	-0.234	0.189	1.531	1	0.216	0.792
Constant	-0.666	0.44	2.295	1	0.130	0.608

From the analysis age, gender, and education were all significant in participating in gambling games without money ($X^2(5) = 69.03$, $p<.001$; $p<.001$; $p<.05$ respectively). The other variables were not significant. Older people tend to be less willing to participate in such games than the younger group, whereas, educated males were more willing to participate in that type of experiment than less educated males or the female groups.

Odds Ratio:

Table 39

Odds ratio for participants willingness to gamble without real money

(Intercept)	Male	35More	Degree	Employed	Saudi
0.608	2.16	0.619	1.332	1.055	0.792

The older group was found less willing to participate in an experiment that involved gambling without money compared to the younger group. The odds of gambling without real money for the younger group were 1.615 (1/0.619) times higher than the odds of participation for the older group. Moreover, males were found more willing to gamble without real money compared to their female counterparts. Specifically, the odds of gambling without real money for the male participants were 2.16 times higher than the odds of participation of the female group. In the same vein, the odds of participation of the educated people were 1.332 times higher than the less educated group. All other variables reported non-statistically significant distributions, hence, the odds ratios were not interpretable.

Average Marginal Effects:

Table 40

Average marginal effects for participants willingness to gamble without real money

(Intercept)	Male	35More	Degree	Employed	Saudi
-0.117	0.182	-0.113	0.068	0.013	-0.0551

On average, the probability that male participants would gamble without money was 18.2 percentage points more than that of the female participants. This tells us that males in Saudi Arabia are more willing than females to participate in experiments that have gambling with[15] or without money. In a similar manner, on average, the probability that educated people would gamble without money was 6.8 percentage points higher than that of less educated people. Furthermore, on average, the probability that older people would participate in an experiment that has gambling without money was 11.3 percentage points lower than that of their younger counterparts.

From the results of about gambling with and without real money, the third null hypothesis cannot be rejected.

3.4.F. Uncertainty and participant's willingness to participate in experiments:

To analyze people's decisions towards their willingness to participate in experiments that have uncertainty, an example and a question in the questionnaire were included as follows:

"There is a potential deal between you and someone else but you do not know the other party's decision. Would you participate in the deal?"

And the results are:

[15] As reported in Table 34

Table 41

Participants who are willing to participate in an experiment with uncertainty

Would you participate in the deal?		
Answer	**Freq**	**%**
No	1264	78.66%
Yes	343	21.34%
Total	1607	100%

From the sample, there are 1,264 (78.66%) participants who chose "No", which means the majority of the Saudi people won't participate in experiments that have uncertainty. As mentioned earlier, this result could be driven by the effect of their religion, which prohibits uncertainty in trading. Uncertainty in the Arabic language is translated into "Gharar" which means trading with an amount of uncertainty. More precisely, it reflects the meaning of trading as something that has unknown consequences. Abu Huraira, a companion of the Prophet Muhammad said: "The Prophet warned of Gharar selling" which means selling under uncertainty like selling fish in the sea, or birds in the sky." Next, participants' answers were compared with the results of Hofstede's model about Saudi Arabia, more specifically, the Uncertainty Avoidance which the author defines as "*The extent to which the members of a culture feel threatened by ambiguous or unknown situations and have created beliefs and institutions that try to avoid these*" (Hofstede, 2001).

Hofstede's model results show that Saudi Arabia scores 80 on the uncertainty avoidance dimension, whereas 78.66% of Saudis in this study reported the same attitude. Those 2 figures are relatively close to each other and both of them represent a high score in which people in Saudi Arabia tend to avoid uncertainty. These results confirm that religion plays a role in decision making and more precisely in avoiding uncertainty. Hence, the fourth hypothesis is rejected.

3.5. How do participants suggest they play if they were taking part in the Ultimatum game?

Participants were shown an ultimatum game scenario, in which they were asked that if they were the second player, what would be their decision. The scenario shown was:

"*There are 2 players (A) and (B). The first player (A) receives an amount of money (e.g. 10 SAR) and s/he can decide how this money should be divided between him/her and the second player (B). Player (B) can accept or reject the dividing decision made by player (A). If player (B) accepts, both will get what player (A) decided. If player (B) rejects, both will get zero. If you were the 2nd player, who has the ability to accept or reject the offer, and the total money was 10 SAR, would you accept or reject it if the offer was:*"

	Yes, I would accept	No, I would reject
6 or more	○	○
5	○	○
4	○	○
3	○	○
2	○	○
1	○	○
0	○	○

Table 42: Ultimatum Game answer choices shown to participants

The responses were classified based on participants answers in a matrix. Then a ranking on how *easygoing* a person is was introduced by computing his/her answers. The ranking starts from "Agitated", in which player B rejects all the options, they represent only 4.42% of the whole sample. Then, Low+ ranking which means that Player B is not easygoing and s/he only accepts the offer if it gets her/him a higher payoff than player A. The Medium+ ranking means that the player is in the middle between rejecting all offers and accepting all of them, hence, the player accepts 3 and more but rejects 2 and less. In addition, the High ranking means that players in that classification are the easiest going people, in that they do not reject any offer even if it was a zero. Those types of people are totally altruistic, they care about others' payoffs more than their

own, and they represent nearly 17% of the sample. Furthermore, the Medium- represents the opposite of Medium+, people in the Medium- ranking are people who reject to be better off and accept low offers. Whereas Low- refers to those who reject all positive offers but accept zero. The vast majority of people who are in the Low- rejected to gamble due to their religious beliefs. Hence, it is seen that they do not want to be rewarded and at the same time do not want to prevent others from gaining rewards. Both the Medium- and Low- can also be described as irrational or those strategies were chosen by misunderstanding the game rules. Lastly, people who rejected all the choices except 5 are classified as Fair-share and they represent almost 11% of the whole sample.

Matrix of decisions made by respondents:

Table 43

Matrix of participants' choices in the Ultimatum Game as the second player (B)

	Offer choices by respondents									
N	6	5	4	3	2	1	0	Freq	%	Easygoing
1	No	No	No	No	No	No	No	71	4.42%	Agitated
2	Yes	No	No	No	No	No	No	59	3.67%	Low+
3	Yes	Yes	No	No	No	No	No	**279**	17.36%	
4	Yes	Yes	Yes	No	No	No	No	239	14.87%	
5	Yes	Yes	Yes	Yes	No	No	No	104	6.47%	Medium+
6	Yes	Yes	Yes	Yes	Yes	No	No	24	1.49%	
7	Yes	Yes	Yes	Yes	Yes	Yes	No	164	10.21%	
8	Yes	Yes	Yes	Yes	Yes	Yes	Yes	273	16.99%	High
9	No	Yes	Yes	Yes	Yes	Yes	Yes	16	1.00%	
10	No	**No**	Yes	Yes	Yes	Yes	Yes	3	0.19%	
11	No	No	**No**	Yes	Yes	Yes	Yes	4	0.25%	Medium-
12	No	No	No	**No**	Yes	Yes	Yes	1	0.06%	
13	No	No	No	No	**No**	Yes	Yes	0	0.00%	
14	No	No	No	No	No	**No**	Yes	38	2.36%	Low-
15	No	**Yes**	No	No	No	No	No	174	10.83%	Fair-share
				Total				1449	90.17%	

From the matrix above, participants represent slightly over 90% of the whole sample with a total number of 1,449. Whereas the shown percentages were reported based on the whole sample size (1,607).

From the analysis, on average, participants reject offers below 3.6 of the money, as shown in the chart below. A binary logistic regression was run and found that there is a significant relationship between participants' choices and their gender, employment status, education and age, as shown in Table 41. Surprisingly, the employment status (being employed) was positively correlated when the offers were zero or one, and negatively correlated when the offers were four or higher, and there was no correlation when the offers were two or three. Additionally, there was a significant relationship between choosing the response One and being an employed man who holds a degree and is aged 35 or above. Plus, being a male is significantly correlated with choosing the answers One, Two, Three, Four, and Six but not Zero or Five.

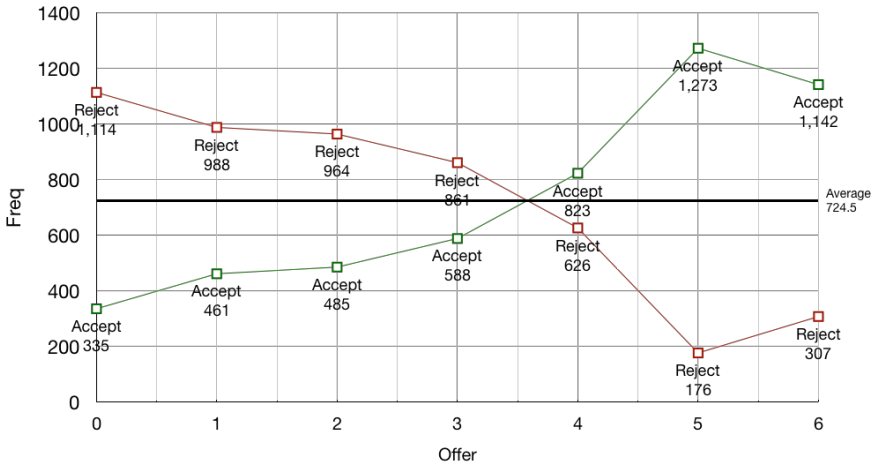


Chart1: Ultimatum Game Scenario: frequency of acceptances and rejections

Table 44

Binary logistic regression of variables and responders' choices

Variable	Offers shown to Player						
	0	1	2	3	4	5	6
Employed	Sig +	Sig +	-	-	Sig -	Sig -	Sig -
Male	-	Sig +	Sig +	Sig +	Sig +	-	Sig +
Hold a degree	-	Sig +	-	-	-	-	Sig +
Age (35+)	-	Sig +	-	Sig +	-	-	-
Nationality	-	-	-	-	-	-	-

(+): positively correlated; (-): negatively correlated.

3.6. Limitations

Firstly, this study was conducted in a single Islamic country, Saudi Arabia. This study encourages others to investigate other Islamic countries or societies to draw a wider understanding of the effect of religion on individuals' attitudes towards participating in economic lab experiments. Secondly, running an experiment that explicitly uses some of the prohibited terminologies might show different results compared to other societies. Lastly, conducting a comparative study between two or more societies from different religious backgrounds would strengthen the effect of religion on behavioral economics experiments.

3.7. Conclusion

Despite the fact that experimental economics is being used widely to understand the decision-making ways of humans, religion in some societies remains uninvestigated. Saudi Arabia as an Islamic country is one of those societies. This study has investigated the individual attitudes in an Islamic country, Saudi Arabia, towards participating in lab experiments that may run against their religious beliefs. This study found that the majority of the surveyed people tend to reject participation in such experiments especially when some terminologies are used like gambling, uncertainty, interest (Riba), and also to some extent when the rewards are in cash forms. The findings also confirm the uncertainty in the Hofstede model, in which Saudis are not in favor of

uncertain deals. This study introduced how easygoing a player might be in the ultimatum game by ranking the responses from Agitated, Low+, Medium+, High, Medium-, and Low-. Finally, researchers are recommended to pay attention when designing their future studies in Islamic societies or in interpreting subjects' behaviors in certain decisions where religion might be the cause of a certain action and not that the participant is risk averse or any other interpretation.

CONCLUSIONS

This thesis discussed what a researcher in the field of experimental economics need to be aware of when conducting an experimental economic study, especially, if it is abroad or a cross-cultural. Laboratory experiments are considered to mimic real life situation with the ability to control of all other unneeded factors that might affect the results or that are impossible to be controlled in real life situations. As discussed in the three chapters, cultural differences play a major role in shaping people's attitudes towards certain decisions based on how people perceive allocations, their preferences, and whether they act according to the influence of their society's hierarchal structure or due to their desire to extend their property rights. In addition, this thesis focused on the cultural differences when a single variable, exerting effort, was introduced to the UG, which showed how people from different cultures had behaved differently.

The First Chapter focused on the impact of effort on subjects' behavior in the UG. Two lab experiments (UGT and UGC) were run in Italy, China, and Saudi Arabia. In the UGT, responders had to exert a certain amount of effort to be able to claim an amount of the endowment whereas responders in the UGC experiment had an option to claim a proportion without exerting effort. These experiments were used to observe the extent to which hierarchy or property rights have an impact on subjects' behavior. This study found that when Italian responders exert effort, they significantly reject low offers more than when effort is not exerted. Also, this study concluded that endowments in the Italian experiments were observed as property rights, while Saudis were influenced by hierarchy. On the other hand, the Chinese experiments revealed an approach towards endowments which lay mid-way between the approach in Italy and in Saudi Arabia. This study also found that when Italian responders exert effort, proposers

significantly lower their offers more than when effort is not exerted. The latter behavior was not detected in the Chinese and Saudi experiments.

The Second Chapter focused on proposers' efforts in the UG. Introducing effort to the UG has enabled us to detect cultural differences, in other words, to what extent proposers' behavior was driven by cultural differences. Two different experiments were run in three different countries, Italy, China, and Saudi Arabia. The first experiment included two different choices, the first one was with the exerting effort component (UGT-Choice1), while the second choice was without exerting effort (UGT-Choice2). Whereas the second experiment had the effort component as compulsory (UGC). The UGT-Choice2 was used as a control group for the other two experiments (UGT-Choice1 and UGC). Results from Saudi experiments revealed unpredicted behavior towards exerting effort, that is, no one exerted effort and had the highest rejection rates even when the offers were generous. Unlike Saudi Arabia, results of Italian and Chinese experiments showed that proposers exerted adequate amount of effort in both experiments, nonetheless, when proposers exerted effort optionally they offer more to the responders they matched with than when they did not exert effort. The latter result tells us that proposers who chose to exert effort optionally were more risk-averse than those who chose not to exert effort. When the effort component was included in the experiment, as in the UGT-Choice1 and UGC, hardly any of the proposers offered a low proportion in all the three countries. Choosing to exert effort in the UGT-Choice1 was interpreted as buying an insurance to convince responders to accept proposers' offers. This study concluded that experiments with the same design differed significantly between the three examined cultures, which confirms the hypothesis that culturally driven phenomenon impact on the proposers' behavior.

The Third Chapter investigated the impact of Islam religion on people's attitudes in Saudi Arabia towards participating in laboratory experiments. Results show that the majority of the surveyed people tend to reject to participate in experiments that might run against their religious beliefs. Rejections were also found for other than religious motives, for instance, some commented the reason for not participating was because they are afraid of losing, waste of time, or it may lead to addiction. In addition, some of the behavioral economics' terminologies were not of a favor to be used in experimental economic studies, for example, gambling, uncertainty, and interest. On the contrary, Saudis are okay to participate in experimental studies only if they are not against their religious beliefs. Furthermore, survey results confirm the Uncertainty Avoidance dimension of the Hofstede model about the Saudi Arabian society, that is, Saudis were highly avoidants to uncertainty in decision-making. A ranking was introduced for how easygoing a player might be in the UG based on offers acceptance rates a player would choose. Results show that 40% of Saudis reject offer below 4. In the easygoing ranking this study classified participants as Agitated to Low+. In addition, 17% were classified as High in the easygoing ranking because they accepted all the offers sent by proposers. Furthermore, only 10.83% were classified as Fair-share, that is, responders only accept fifty-fifty share. Lastly, researchers are recommended to pay attention in interpreting experimental studies' results when they are conducted in a society where religious beliefs have an influence on people's decision-making preferences.

Appendix A

Proposals difference of means between the UGT and UGC:

A- Italy:

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
IT.Proposal	Equal variances assumed	9.297	0.003	-2.823	68	**0.006**	-0.8934	0.3164	-1.5247	-0.262
	Equal variances not assumed			-3.169	67.764	0.002	-0.8934	0.2819	-1.4559	-0.3308

B- China:

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Ch.Proposal	Equal variances assumed	0.981	0.332	-1.595	24	0.124	-0.7778	0.4877	-1.7843	0.2287
	Equal variances not assumed			-1.78	17.748	0.092	-0.7778	0.4369	-1.6965	0.1409

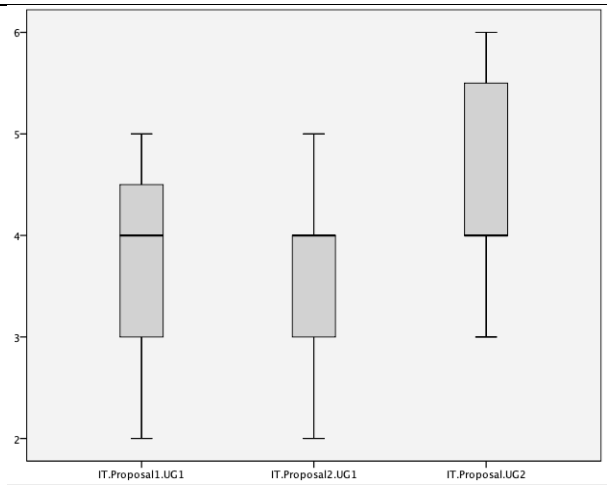
C- Saudi Arabia

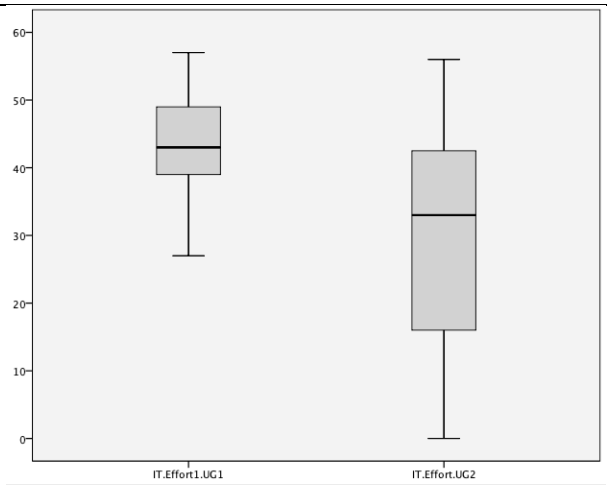
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
SA.Proposal	Equal variances assumed	0.689	0.41	-0.287	56	0.775	-0.1238	0.4319	-0.989	0.7414
	Equal variances not assumed			-0.288	55.82	0.774	-0.1238	0.43	-0.9853	0.7376

Appendix B:

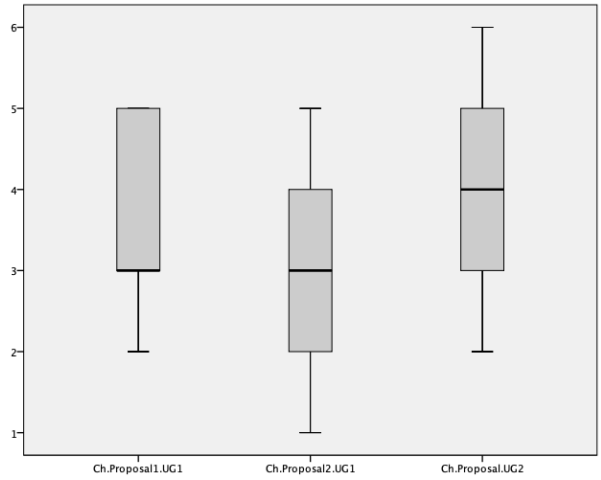
1- Box Plot:

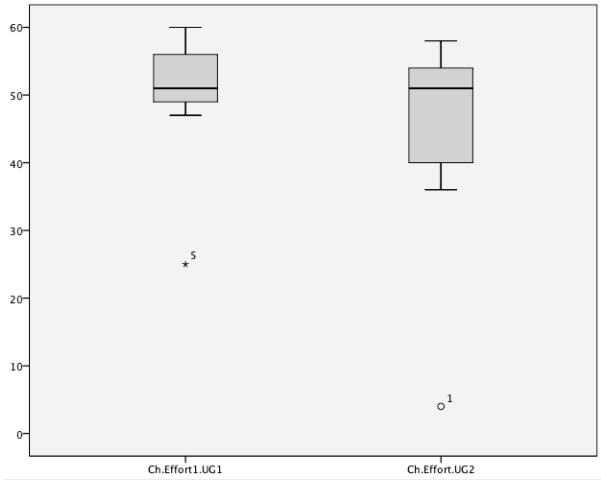
Italy



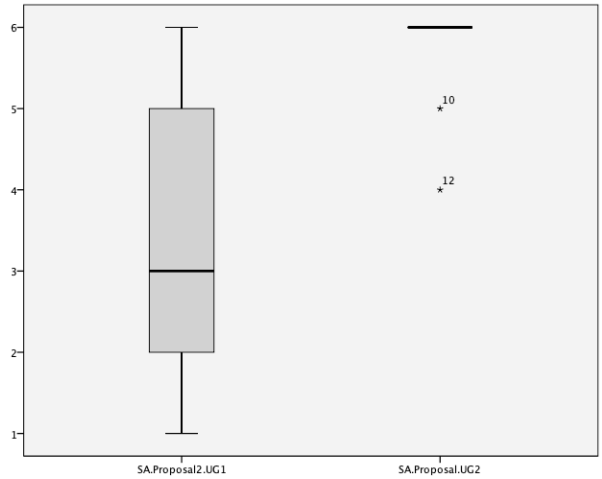


China





Saudi Arabia



Effort in Saudi Arabia is inapplicable due to the none or low amount of exerted effort

Proposals in UGT1, UGT2, and UGC

Efforts in UGT1, UGT2, and UGC

2- Model 1: Analysis of the three countries combined

$$y = B_0 + B_1 Variable1 + B_2 Variable2 + \cdots + \varepsilon$$

UGT-Choice1 and UGC:

$$Offer = B_0 + B_1 Effort + B_2 PropGender + B_3 Country + \varepsilon$$

$$Accept = B_0 + B_1 Effort + B_2 RespGender + B_3 Country + \varepsilon$$

UGT-Choice2:

$$Offer = B_0 + B_1 PropGender + B_2 Country + \varepsilon$$

$$Accept = B_0 + B_1 RespGender + B_2 Country + \varepsilon$$

Results:

UGT-Choice1: Dependent variable is Proposal

Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	5.704	0.932		6.121	0.000
Effort.UGT1	-0.048	0.014	-0.591	-3.318	**0.003**
PropGender.UGT1	0.008	0.37	0.004	0.021	0.983
Country.UGT1	0.156	0.324	0.085	0.483	0.634
a Dependent Variable: UGT-Choice1.Proposal					

UGT-Choice1: Dependent variable is Accept

Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.239	0.549		2.256	0.036
Effort.UGT1	-0.012	0.008	-0.338	-1.427	0.17
Proposal.UGT1	0.006	0.079	0.017	0.075	0.941
Resp.Gender.UGT1	0.224	0.14	0.333	1.598	0.127
Country.UGT1	-0.12	0.146	-0.176	-0.82	0.422
a Dependent Variable: UGT-Choice1.Accept					

UGT-Choice2: UGT-Choice1: Dependent variable is Proposal

Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	4.375	0.899		4.865	0
PropGender.UGT2	-0.368	0.43	-0.124	-0.855	0.396
Country.UGT2	-0.215	0.233	-0.133	-0.921	0.361
a Dependent Variable: UGT-Choice2.Proposal					

UGT-Choice1: Dependent variable is Accept

Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.05	0.255		4.122	0
Proposal.UGT2	0.042	0.033	0.173	1.256	0.215
Resp.Gender.UGT2	-0.121	0.099	-0.177	-1.23	0.225
Country.UGT2	-0.067	0.056	-0.173	-1.196	0.237
a Dependent Variable: UGT-Choice2.Accept					

UGC: UGT-Choice1: Dependent variable is Proposal

Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	5.232	0.455		11.505	0
Effort.UGC	-0.045	0.005	-0.777	-9.969	**0.00**
PropGender.UGC	0.255	0.175	0.095	1.459	0.148
Country.UGC	0.147	0.129	0.09	1.139	0.258
a Dependent Variable: UGC.Proposal					

UGT-Choice1: Dependent variable is Accept

Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.887	0.24		3.692	0
Effort.UGC	0.002	0.002	0.189	0.951	0.344
Proposal.UGC	0.038	0.034	0.212	1.111	0.27
Resp.Gender.UGC	-0.067	0.056	-0.137	-1.198	0.234
Country.UGC	-0.041	0.039	-0.141	-1.037	0.303
a Dependent Variable: UGC.Accept					

3- Model 2: Analysis of each country

$$y = B_0 + B_1 Variable1 + B_2 Variable2 + \cdots + \varepsilon$$

UGT-Choice1 and UGC:

$$Offer = B_0 + B_1 Effort + B_2 PropGender + \varepsilon$$

$$Accept = B_0 + B_1 Effort + B_2 Proposal + B_3 RespGender + \varepsilon$$

UGT-Choice2:

$$Offer = B_0 + B_1 PropGender + \varepsilon$$

$$Accept = B_0 + B_1 Proposal + B_2 RespGender + \varepsilon$$

Results:

Italy: UGT-Choice1 - Proposal

Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	6.19	1.417		4.369	0.001
IT.Effort.UG1	-0.061	0.027	-0.547	-2.273	**0.042**
IT.PropGender.UG1	0.168	0.447	0.09	0.375	0.714
a Dependent Variable: UGT-Choice1.IT.Proposal					

Italy: UGT-Choice1 - Accept

Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.389	0.683		2.034	0.067
IT.Effort.UG1	-0.013	0.01	-0.436	-1.308	0.218
IT.Proposal.UG1	-0.013	0.092	-0.047	-0.138	0.892
IT.Resp.Gender.UG1	0.125	0.148	0.236	0.847	0.415
a Dependent Variable: UGT-Choice1.IT.Accept					

Italy: UGT-Choice2 - Proposal

Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3.804	0.778		4.888	0
IT.PropGender.UG2	-0.089	0.483	-0.051	-0.185	0.856
a Dependent Variable: UGT-Choice2.IT.Proposal					

Italy: UGT-Choice2 - Accept

Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.913	0.451		2.024	0.066
IT.Proposal.UG1	0.043	0.084	0.152	0.516	0.615
IT.RespGender.UG1	-0.087	0.149	-0.171	-0.582	0.571
a Dependent Variable: UGT-Choice2.IT.Accept					

Italy: UGC - Proposal

Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	5.997	0.77		7.794	0
IT.Effort.UGC	-0.048	0.009	-0.785	-5.032	**0.00**
IT.PropGender.UGC	-0.065	0.364	-0.028	-0.179	0.86
a Dependent Variable: UGC.IT.Proposal					

Italy: UGC - Accept

Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.418	0.353		4.013	0.001
IT.Effort.UGC	-0.004	0.003	-0.392	-1.233	0.23
IT.Proposal.UGC	-0.046	0.053	-0.277	-0.868	0.395
IT.RespGender.UGC	-0.084	0.078	-0.217	-1.067	0.297
a Dependent Variable: UGC.IT.Accept					

China: UGT-Choice1 - Proposal

Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	6.476	2.334		2.775	0.032
Ch.Effort.UG1	-0.041	0.039	-0.389	-1.064	0.328
Ch.PropGender.UG1	-0.438	0.818	-0.196	-0.535	0.612
a Dependent Variable: UGT-Choice1. Ch.Proposal					

China: UGT-Choice1 - Accept

Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.408	1.298		0.314	0.766
Ch.Effort.UG1	-0.006	0.017	-0.143	-0.35	0.741
Ch.Proposal.UG1	-0.012	0.173	-0.029	-0.067	0.949
Ch.RespGender.UG1	0.458	0.379	0.548	1.211	0.28
a Dependent Variable: UGT-Choice1. Ch.Accept					

China: UGT-Choice2 - Proposal

Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	4.333	1.423		3.046	0.019
Ch.PropGender.UG2	-0.833	1.006	-0.299	-0.828	0.435
a Dependent Variable: UGT-Choice2. Ch.Proposal					

China: UGT-Choice2 - Accept

Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.576	0.514		1.119	0.306
Ch.Proposal.UG1	0.133	0.083	0.556	1.599	0.161
Ch.RespGender.UG1	-0.074	0.22	-0.117	-0.336	0.748
a Dependent Variable: UGT-Choice2. Ch.Accept					

China: UGC - Proposal

Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3.552	1.019		3.484	0.002
Ch.Effort.UGC	-0.029	0.014	-0.357	-2.131	**0.043**
Ch.PropGender.UGC	0.949	0.419	0.38	2.268	**0.032**
a Dependent Variable: UGC. Ch.Proposal					

China: UGC - Accept

Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.426	0.221		1.925	0.066
Ch.Effort.UGC	0.002	0.002	0.163	0.844	0.407
Ch.Proposal.UGC	0.085	0.03	0.549	2.831	**0.009**
Ch.RespGender.UGC	0.085	0.066	0.227	1.297	0.207
a Dependent Variable: UGC.Ch.Accept					

Saudi Arabia: UGT-Choice1 – Proposal

(inapplicable, because there was only 1 proposer)

Saudi Arabia: UGT-Choice1 – Accept

(inapplicable, because there was only 1 responder)

Saudi Arabia: UGT-Choice2 - Proposal

Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3.818	0.952		4.012	0
SA.PropGender.UG2	-0.409	0.725	-0.108	-0.564	0.577
a Dependent Variable: UGT-Choice2. SA.Proposal					

Saudi Arabia: UGT-Choice2 - Accept

Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.898	0.249		3.601	0.001
SA.Proposal.UG1	0.026	0.046	0.112	0.57	0.574
SA.RespGender.UG1	-0.123	0.166	-0.145	-0.742	0.465
a Dependent Variable: UGT-Choice2. SA.Accept					

Saudi Arabia: UGC - Proposal

Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	6.062	0.171		35.389	0
SA.Effort.UGC	-0.037	0.008	-0.735	-4.803	**0.00**
SA.PropGender.UGC	-0.036	0.143	-0.038	-0.25	0.804
a Dependent Variable: UGC. SA.Proposal					

Saudi Arabia: UGC - Accept

Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.393	1.181		1.179	0.249
SA.Effort.UGC	0.019	0.011	0.496	1.761	**0.09**
SA.Proposal.UGC	0	0.194	0	0.002	0.999
SA.RespGender.UGC	-0.45	0.147	-0.634	-3.066	**0.005**
a Dependent Variable: UGC.SA.Accept					

Appendix C

1- Binary logistic regression of variables and respondents' choices in the Ultimatum Game scenario:

Table 45

Binary logistic regression of the Ultimatum Game Scenario of the choice Zero

Variables	B	S.E.	Wald	df	Sig.	Exp(B)
35 and more	0.179	0.122	2.159	1	0.142	1.196
Male	0.094	0.127	0.55	1	0.458	1.099
Degree	-0.031	0.134	0.053	1	0.819	0.97
Employed	0.34	0.131	6.771	1	0.009	1.406
Saudi	0.16	0.205	0.615	1	0.433	1.174
Constant	-1.974	0.487	16.409	1	0	0.139

Table 46

Binary logistic regression of the Ultimatum Game Scenario of the choice One

Variables	B	S.E.	Wald	df	Sig.	Exp(B)
35 and more	0.203	0.116	3.06	1	0.08	1.226
Male	0.364	0.122	8.859	1	0.003	1.44
Degree	0.264	0.132	4.023	1	0.045	1.302
Employed	0.232	0.126	3.396	1	0.065	1.261
Saudi	0.017	0.201	0.007	1	0.934	1.017
Constant	-2.166	0.473	20.934	1	0	0.115

Table 47

Binary logistic regression of the Ultimatum Game Scenario of the choice Two

Variables	B	S.E.	Wald	df	Sig.	Exp(B)
35 and more	0.155	0.113	1.862	1	0.172	1.167
Male	0.318	0.119	7.132	1	0.008	1.375
Degree	0.154	0.127	1.47	1	0.225	1.167
Employed	0.138	0.123	1.254	1	0.263	1.148
Saudi	0.031	0.196	0.025	1	0.875	1.031
Constant	-1.626	0.459	12.581	1	0	0.197

Table 48

Binary logistic regression of the Ultimatum Game Scenario of the choice Three

Variables	B	S.E.	Wald	df	Sig.	Exp(B)
35 and more	0.186	0.109	2.933	1	0.087	1.205
Male	0.363	0.114	10.115	1	0.001	1.438
Degree	0.153	0.122	1.585	1	0.208	1.166
Employed	0.008	0.118	0.004	1	0.948	1.008
Saudi	0.06	0.189	0.1	1	0.751	1.062
Constant	-1.242	0.44	7.977	1	0.005	0.289

Table 49

Binary logistic regression of the Ultimatum Game Scenario of the choice Four

Variables	B	S.E.	Wald	df	Sig.	Exp(B)
35 and more	0.106	0.108	0.954	1	0.329	1.111
Male	0.262	0.112	5.433	1	0.02	1.299
Degree	0.182	0.12	2.316	1	0.128	1.2
Employed	-0.203	0.116	3.047	1	0.081	0.816
Saudi	-0.069	0.187	0.137	1	0.711	0.933
Constant	0.051	0.433	0.014	1	0.906	1.052

Table 50

Binary logistic regression of the Ultimatum Game Scenario of the choice Five

Variables	B	S.E.	Wald	df	Sig.	Exp(B)
35 and more	-0.049	0.156	0.101	1	0.751	0.952
Male	-0.052	0.161	0.103	1	0.748	0.95
Degree	0.27	0.164	2.706	1	0.1	1.31
Employed	-0.486	0.166	8.595	1	0.003	0.615
Saudi	0.29	0.294	0.971	1	0.324	1.337
Constant	1.87	0.63	8.82	1	0.003	6.491

Table 51

Binary logistic regression of the Ultimatum Game Scenario of the choice Six

Variables	B	S.E.	Wald	df	Sig.	Exp(B)
35 and more	-0.005	0.124	0.002	1	0.967	0.995
Male	0.257	0.128	4.038	1	0.044	1.293
Degree	0.259	0.134	3.742	1	0.053	1.295
Employed	-0.323	0.132	5.948	1	0.015	0.724
Saudi	-0.261	0.205	1.632	1	0.201	0.77
Constant	1.264	0.489	6.684	1	0.01	3.541

Questionnaire:

Dear participants:

Thank you for your kind participation in this survey, which has been designed for academic purposes as part of a doctoral dissertation in Behavioral Economics. The survey data will remain confidential and your responses are anonymous as it will not ask for your personal information (e.g., your name, phone number, email, or any other personal information).

The survey is likely to take seven minutes only. Your participation is very valuable and we appreciate you taking the time to complete the survey.

Thank you,

Bassim Allaheeb
PhD Candidate
University of Trento, Italy
Email: bassim.allaheeb@unitn.it

Questions:

1. Have you heard of Behavioral Economics?
- Yes
- No

2. Would you participate in an experiment that violates your religion's teachings?
- Yes
- No

3. Would you participate in an experiment that does not violate religion's teachings?
- Yes
- No

4. Have you heard of Experimental Economics?
- Yes
- No

5. Since you have heard of Experimental Economics, have you participated before in an experiment in Economics?
- Yes
- No

6. When you participated, did you get paid for your participation?

- Yes
- No

7. If there would be an experiment in Economics, would you participate in?

- Yes
- No

8. If you participated in an experiment, and you won, what kind of rewards do you prefer to be given?

- Money
- A letter of appreciation
- Physical goods
- Any of Above
- Nothing

9. What if in an experiment you could exert an amount of effort to gain more money, would you like to participate in?

- Yes
- No

10. Have you heard of Ultimatum Game?

- Yes
- No

11. Since you have heard of Ultimatum Game, have you participated before in Ultimatum Game experiment?

- Yes
- No

12. Given that your answer was Yes, did you get paid for your participation?

- Yes
- No

13. Scenario

There are 2 players (A) and (B).
The first player (A) receives an amount of money (e.g. 10 SAR) and s/he can decide how this money should be divided between him/her and the second player (B).
Player (B) can accept or reject the dividing decision made by player (A).
If player (B) accepted, both will get what player (A) decided.
If player (B) rejected, both will get zero.

If you were the 2nd player, who has the ability to accept or reject the offer, and the total money was 10 SAR, would you accept or reject if the offer was:

	Yes, I would accept	No, I would reject
6 or more	○	○
5	○	○
4	○	○
3	○	○
2	○	○
1	○	○
0	○	○

Gambling Definition

We mean by Gambling here according to this situation: players receive an amount of money from an external source and can decide to play a lottery, in which they can gain or lose the money with a given probability.

14. Would you participate in a game if you know that there is Gambling with real money?

- Yes
- No

15. Given that you chose not to participate in a Gambling game with real money, why not?

- Because of my religion beliefs
- I hate losing in gambling games
- Other

16. If you chose Other, could you please write why:

17. Would you participate in a Gambling Game but without real money?

- Yes
- No

Given that you do not want to participate in Gambling without real money, why not?

- Because of my religion beliefs
- I hate losing in gambling games
- It is a waste of my time
- Other

19. If you chose Other, could you please write why:

20. Interest

Interest Definition: Here we define Interest as an extra money received by a participant more than the original price taking into account time, and Interest rate.

Would you participate in an experiment where you can get interest payment?

- Yes
- No

21. Given that you do not want to participate in a game with Interest, why not?

- Because of my religion beliefs

- I don't like to play games that has real money
- Other

22. If you chose Other, could you please write why:

23. There is a potential deal between you and someone else but you do not know what's the other party's decision. Would you participate in the deal?

- Yes
- No

24. Would you participate in a game where you can get an interest payment based on your decisions?

- Yes
- No

25. Given that you don't want to participate in a game where you can get Interest payment based on your decisions, why not?

- Because of my religion beliefs
- I am not good in games
- I don't like games that has to deal with real money
- Other

26. If you chose Other, could you please write why:

27. Would you participate in an Economic experiment that will last:

	Yes	No
15 minutes	○	○
30 minutes	○	○
1 hour	○	○
2 Hours	○	○

28. What's your Gender?

- Male
- Female

29. Your age:

30. What's your Education level?

- High School
- Diploma
- Bachelor's Degree
- Masters
- PhD
- Other

31. Where do you live in Saudi Arabia?

- Central
- Eastern

- Western
- Northern
- Southern
- I don't live in Saudi Arabia

32. Religiously, are you a:

- Muslim
- Christian
- Jewish
- Buddhist
- Hindu
- No religion
- Other

33. Given that you are a Muslim, to which branch do you belong?

- Sunny
- Shi'i
- Other

34. Since you are a Muslim, would you prefer that in experiments there should be a statement (Shariah compliant)?

- Yes
- No
- I don't care

35. Religiously, you consider yourself a:

- Conservative
- Moderate
- Liberal
- I don't know

36. What's your occupation?

- Student
- Private Sector
- Public Sector
- Unemployed
- Other

37. What's your nationality?

- Saudi
- GCC Countries (Kuwait, UAE, Bahrain, Oman, Qatar)
- Other Arabian countries
- Other

38. Do you have suggestions about running experiments? (Time, money, religion, culture, ... etc.)

End of the questionnaire.

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