Conditional Cooperation in Public Goods Games and Perception of Corruption: A Comparative Study between Nigeria and Canada

Abdulmalik Malcolm Obomeghie

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By: Abdulmalik Malcolm Obomeghie

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Signed by the final Examining Committee:

_____Examiner
Dr. Tatyana Koreshkova

_____Supervisor
Dr. Huan Xie

Approved by: _____
Dr. Christian Sigouin
Graduate Program Director

Date: _____ _____
Dr. Pascale Sicotte, Dean
Faculty of Arts and Science

Abstract

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Conditional cooperation is the tendency to cooperate if and only if others cooperate. This paper aims to ascertain the importance of conditional cooperation and the effect of perceived corruption and cultural environments on individuals' behaviors in the public goods games in a public game by replicating the seminal Fischbacher et al. (2001) experiment and comparing results between Nigeria and Canada. This thesis proposes to explore the reliability of classifying participants into distinct behavioral types – such as *conditional cooperators, free riders,* and *triangular* contributors – based on their contribution patterns. Additionally, a post-experiment questionnaire – which is modified based on the European Social Survey (ESS), Value Survey Model (VSM, 2013), and the United Nations Office on Drugs and Crime (UNODC) and National Bureau of Statistics (NBS) National Survey on Quality and Integrity of Public Services – is employed to explore how individuals in both countries perceive their cultural and socio-economic differences, and how perceptions, particularly regarding corruption, influence their cooperative behavior and contributions to public goods.

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1 INTRODUCTION

Researchers conduct public good experiments to explore the behavior of individuals in situations where personal benefits conflict with collective welfare. Results from public goods experiments often show that people exhibit higher levels of cooperation than the prediction of the standard economic theory that assumes rational and selfish individuals. Public good experiments show that individuals are willing to contribute to a public good that benefits all participants, even though they could benefit more in the short term by not contributing and free-riding on the contributions of others. This MA thesis proposes an experiment based on two seminal papers in the previous literature, Fischbacher et al. (2001, 2010), and aims to achieve the following objectives. First, the experiment serves as a replication study using different subject pools. Plott (2001) refers to replication as "the heart of experimental economics," explaining that replication studies are essential in experimental economics as they offer an opportunity to reevaluate, confirm or falsify previous findings. Second, unlike other replication studies that also base their work on Fischbacher et al. (2001, 2010), for instance, Herrmann & Thöni (2008), Dariel & Nikiforakis (2014), and Makowsky et al. (2014), this experimental design compares the results from two countries, Canada and Nigeria. The rationale for comparing Nigeria and Canada lies in their different and contrasting levels of perceived corruption. Culture is a significant determinant of cooperation (Gächter et al., 2010). Barr and Serra (2010) explain corruption as a *cultural phenomenon* that exists as a part of the values that justify and guide how social institutions function and their goals and modes of operation. Research indicates that individuals in societies with higher perceived levels of corruption tend to cooperate less than those with lower levels (Campos-Vazquez et al., 2016). Finally, in addition to the public goods game, the proposed experiment introduces a survey based on questions from the European Social Survey (ESS), Value Survey Model (VSM, 2013), and the United Nations Office on Drugs and Crime (UNODC) and National Bureau of Statistics (NBS) National Survey on Quality and Integrity of Public Services, which aims to evaluate each individual's perceived corruption. This MA thesis sheds light on the following questions based on this experimental design. First, *does a different cultural and corrupt environment affect an individual's behavior in the public goods games?* Second, *at the individual*

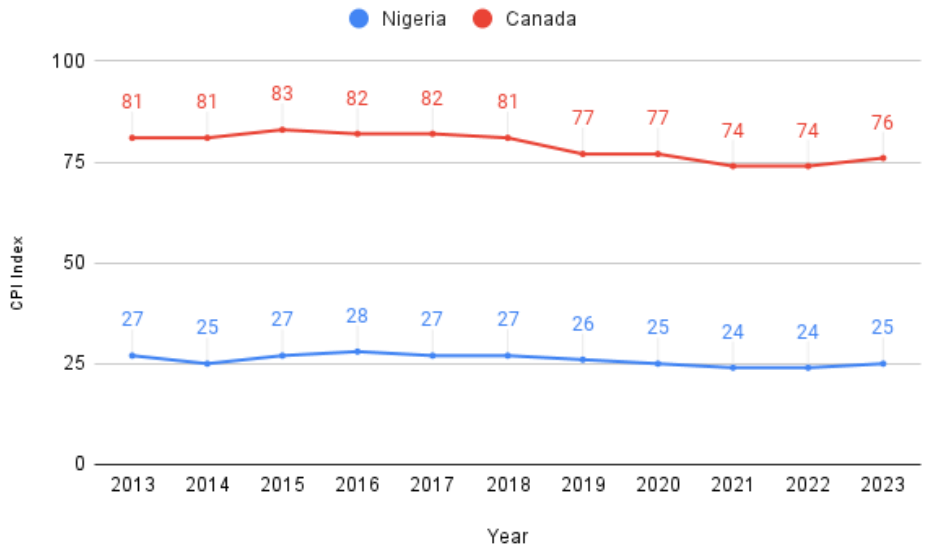
level, is the individual's perceived corruption of their country correlated to his/her behavior in the public goods game?

With over 5000 combined citations on Google Scholar, Fischbacher et al. (2001, 2010), henceforth FGF, are among the most impactful contributions on social dilemmas in experimental economics. Their experimental design has been widely replicated and serves as the standard tool to identify different types of players in public goods games. Fischbacher et al. (2001, 2010) experimented on students in Zurich, Switzerland, and their findings beg whether their results can be generalized to other subject pools and contexts. Their results raise the question of how robust the prevalence of conditional cooperation is across cultures. Replication studies play a crucial role in experimental economics and research by confirming result reliability, detecting errors, and ensuring findings' robustness and applicability across different contexts, ultimately strengthening theories and policies. Using the FGF design, several studies have been conducted across different cultures, finding that there is indeed sound evidence of the dominance of conditional cooperation preferences across different cultures (Martinsson et al., 2013; Amin, 2018). Not limited to solely culture based on where the experiment is conducted, evidence also shows that factors such as gender (Croson & Buchan, 1999) and corruption (Tsalikis & Nwachukwu, 1991) influence and impact social trust and cooperative behaviors in different social dilemmas and experiments. Corruption, specifically, breeds a lack of distrust amongst individuals. This distrust affects interactions with others in the community, as it leads to the assumption that everyone is acting out of self-interest or engaging in corrupt behavior. This diminishes willingness to cooperate, as cooperation relies on trust in others' reciprocation and a just system, for instance, in matching of charity donations and paying taxes. This MA thesis, thus, specifically looks at how different cultural environments with different perceived levels of corruption affect individuals' behaviors in public goods games.

By comparing experimental sessions conducted in Nigeria and Canada, the thesis sheds light on how corruption affects cooperative behavior in public good games by exploring how individuals in each country perceive their cultural and socio-economic differences, which may contribute to corruption. Nigeria, frequently grappling with high levels of corruption, provides a stark contrast to Canada, which is generally perceived to have relatively lower corruption levels. A comparison of existing corruption indices shows apparent differences between the perceived levels of corruption in Nigeria and Canada. Figure 1 provides an overview of the CPI scores of the

two countries over 10 years. In 2023, the CPI report ranks Canada in 12th place with a score of 76. Meanwhile, Nigeria ranks 145th with a score of 25 out of 100 (Transparency International, 2023). These indicate that considering Transparency International's compilation of data sources that consider the level of bribery, diversion of public funds, public sector red tape, etc., Nigeria is perceived to be a significantly corrupt society compared to Canada. These corruption indices report perceived corruption at an *aggregate level*, which may explain its impact on cooperative behaviors in these different societies. However, this MA thesis introduces a post-experiment survey to elicit perceived corruption at an *individual level* to observe a correlation between the perceived level of corruption and participants' behaviors in the public good experiment. This survey explores various aspects, including work, well-being, economic morality, and perception of corruption, providing a comprehensive understanding of the subjects' perspectives. The survey differs from Transparency International as it employs questions from the European Social Survey (ESS), Value Survey Model, and the United Nations Office on Drugs and Crime (UNODC) and the National Bureau of Statistics (NBS) National Survey on Quality and Integrity of Public Services, which all differ from the 13 survey sources employed by Transparency International (Álvarez-Díaz et al., 2018).

Figure 1: CPI Scores of Nigeria and Canada from 2013-2023



Source: Transparency International (2023)

The rest of the paper is structured as follows: The *Literature Review* section includes literature focusing on the conditional cooperation phenomenon in public goods experiments. The section also includes studies focusing on the effect of gender, culture, socio-economic and nationality differences on cooperation. In the *Experimental Design* section, the thesis will discuss all relevant details of the experimental design and procedure, and the post-experiment questionnaire. The *Analysis Strategy* section will use mock data from a replication paper to show the data analysis strategy and also, includes the hypotheses. The *Conclusion* section summarizes the objectives and methodology of the study. Lastly, *Appendix 1 and 2* will include the experiment instructions and the post-experiment questionnaire questions.

2 LITERATURE REVIEW

2.1 CONDITIONAL COOPERATION IN PUBLIC GOOD GAMES

Public good experiments provide insights into how individuals contribute to the provision of public goods, factors that encourage or discourage cooperation, and how issues like free-riding and social norms affect group outcomes. Participants in these experiments make decisions on how much they are willing to contribute to a collective resource even if they could benefit more from free-riding and still enjoy the benefits provided by others' contribution. The level of contribution by each individual to the public good, relative to the individual's given endowment, is considered as the individual's willingness to cooperate. For the entire group, the overall cooperation level is corresponding to the level of efficiency the group can achieve.

A commonly used linear payoff function in the public goods games is as follows, assuming there are 4 individuals in the group:

$$\pi_i = 20 - g_i + 0.4 \sum_{j=1}^{4} g_j,$$

where each individual is endowed with 20 tokens, g_i is individual i's contribution to the public good, and $\sum_{j=1}^{4} g_j$ is the sum of all contributions g_i. Each individual's total payoff consists of the payoff from the private account $(20 - g_i)$ and the payoff from the public account $(0.4 \sum_{j=1}^{4} g_j)$. The marginal return per capita (MPCR) equals 0.4, indicating that the individual's marginal return of each contributed token is less than the marginal return from the private account if the individual did not contribute the token ($0.4 < 1$), while the group return from the contributed token is larger

than the opportunity cost (0.4*4 > 1). Thus, under standard assumptions, the Nash equilibrium prediction is for all the individuals to be free riders, contributing nothing to the public good. However, the efficient outcome would require all the individuals in the group to contribute all the tokens to the public good. This simple payoff function captures the tension between the individual's self-interest and the group's collective benefit, a central theme in public good games.

Researchers have found that one major driving force of cooperation in the public good games is 'conditional cooperation,' where individuals' willingness to contribute depends on their perception or belief on others' contributions. Several studies have investigated the existence of conditional cooperators in experiments, with Sonnemans et al. (1999) being the first authors to use this term. As an innovative approach to the typical voluntary contribution mechanism (VCM), Sonnemans et al. (1999) expand upon Andreoni's (1988) *"partners" vs "strangers"* design by facilitating both "between subjects" and "within subjects" comparisons. The paper undergoes this by examining participants who remain within a group versus those who leave and by analyzing how individuals behave in the last period of an old group compared to the first period of a new group. The authors ultimately seek to ascertain the motivation behind individuals contributing to a public good, even when it is a dominant strategy not to do so. The paper finds that the number of contributions reduces when approaching a change in the group composition. The authors find strong evidence of conditional cooperation/reciprocators as they ultimately find that subjects contributed more when they expected more contributions from others. Based on the reported expectations/probabilities, the study reveals that, across all periods, individuals who contribute anticipate an average of 2 others also to contribute, whereas those who do not contribute expect an average of 1.15 others to contribute.

Similarly, Keser & Van Winden (2000) employed the experimental design by Andreoni (1988) by comparing the partners condition, *where the same small group of subjects plays a repeated public good game*, to a strangers' condition, *where subjects play this game in changing group formations to gain insight into the subjects' decision principles*. The study found that partners consistently contribute more than strangers across all periods. This disparity persisted from the first period, suggesting differences in behavior influenced by altruism, reputation building, and reciprocity, ultimately attributing the difference to motivational and cognitive processes influenced by partner and stranger environments. The paper's main contribution is recognizing that participants behave inherently conditionally rather than as free riders or altruists.

To directly ascertain the possible explanation as to why individual cooperation declines over time, Fischbacher et al. (2001) focus on experimentally investigating the importance of conditional cooperation in a one-shot public goods experiment. As the study in question is of seminal importance and has been widely replicated, it is deemed necessary to provide a detailed discussion of its findings. Unlike the two papers as mentioned above, Fischbacher et al. (2001) rely on the *"strategy method"* (Selten, 1967). The approaches differ as follows: Sonnemans et al. (1999) and Keser & Van Winden (2000) provide evidence of reciprocity in behavior by investigating the extent to which a participant's behavior and pattern is conditional on the **past behavior** of their peers. Here, all decisions are payoff-relevant.

On the contrary, Fischbacher et al. (2001) investigate participants' responses to their **own prior beliefs** about their peers' behavior. In this case, some decisions will not affect the participants' payoff. Unlike many public good games, the experiment was played once with 44 participants. These 44 participants formed 11 groups of 4, with each of these 4 participants having an endowment of 20 tokens that can either be invested in a public good or held for themselves. Participants are asked to make two contribution decisions: an unconditional contribution and a contribution table. An unconditional contribution was a single decision showing how much of the 20 tokens would be invested in the public good. The contribution table involved participants indicating for each of the 21 possible average contribution levels of the other group members (a vector of contributions), how much they are willing to contribute to the public good. To incentivize subjects to take both types of decisions seriously, reveal their truthful preferences and to ensure all decisions could contribute to a public good, after making both decisions, a random mechanism determined which decision would be relevant in determining actual payoffs. In each group, one randomly chosen subject has their contribution table as their relevant decision with the other three group members having their relevant decision to be their unconditional contribution. This ensures the payoff relevance of all entries in both decisions for all subjects. As previously stated, the experiment extends the "*strategy method*" (Selten, 1967) as three players are simultaneously chosen to make contribution decisions, with the fourth player learning the mean contribution of other players before making their contribution. The players learn if they are the fourth player; if they are not chosen, they do not learn who is. It is predicted that, for assured rationality and selfishness, it is optimal for the fourth player to contribute 0 regardless of what other players contribute. Furthermore, assuming common knowledge of the same traits, the other players who

must make simultaneous contribution decisions will contribute zero to the public good. In alignment with the main interests of the paper, which concern subjects' willingness to contribute given the average level of others, it is concluded that 50% of participants are conditional contributors. 30% of participants are classified as free riders as they submitted a contribution table that contained '0' in all 21 entries. Additionally, 14% of participants exhibited perfect conditional contribution levels up until 10 tokens in hand. From that point, they steadily reduce their contributions. The paper adds to the literature which seeks to understand why declining contributions in public good games occur. It argues that a significant explanation is given to the heterogeneity in player types. It observes that even among conditionally cooperative individuals, there is a tendency towards "self-serving", evident from the contributions profile slope falling below the 45-degree line. This indicates that while these participants aim to match the average contributions of others, they do not precisely mirror the group average dollar for dollar.

Building on this, Fischbacher and Gächter (2010) expanded their study to assess whether contributions decline due to cooperation preferences or belief formation. They achieve this by combining two experimental treatments. The first experiment, *the P-experiment*, obtains participants' preferences in a one-shot game to understand to what degree people are willing to cooperate, given other participants' degree of cooperation. Like Fischbacher et al. (2001), participants undergoing the P-experiment were tasked with making two decisions: an "unconditional contribution" and a "conditional contribution". The second experiment, *the C-experiment*, consists of 10 rounds with randomly shuffled groups. Participants in the second experiment make contribution choices in a repeatedly played linear public goods environment. Participants are asked to estimate the average contribution of the other group members at the end of each round. With a relatively higher number in comparison to the initial study, 140 participants were endowed with 20 tokens each and underwent six (6) sessions. In half of the sessions, participants played the P-experiment and then the C-experiment. In the remaining sessions, the sequence is reversed (C-P treatment). The individual payoff function remains consistent with the one utilized in the preceding paper. The study showed that contributions and beliefs declined in all six sessions. The paper finds that 55% of participants are conditional cooperators, 23% are free riders. Fischbacher and Gächter (2010) also conclude that a subject's belief in each period is a weighted average of what he or she believed about others in the previous period and his or her observation of others' contributions in the previous period. The 2-stage simulation process showed

that contributions decline because people are imperfect conditional cooperators, on average. It is also concluded that beliefs decline because contributions decline and not because people become inherently more pessimistic over time, irrespective of contribution behavior. Regardless of whether an entire group of participants are conditional cooperators, if each conditional cooperator contributes relatively less than the others, over time, the contributions will decrease. Using a simulation that relies on elicited beliefs, actual contribution patterns and the belief updating rule discovered from the data, they find that the prevalence of a "*self-serving bias*" in conditional cooperation is at the heart of the decay in contributions over time.

Fischbacher et al. (2001,2010) provided a paradigmatic approach, setting the stage for numerous studies within the literature. Several scholars, such as Burlando and Guala (2005), employed the Fischbacher method to test the robustness of conditional cooperation. They employ the Fischbacher et al. (2001) method, the 'Decomposed Game Technique' used by Offerman et al. (1996), various measures of behavior in a repeated linear Public Good (PG) game and a questionnaire in 2 sessions to test for the robustness of conditional cooperation and to establish the existence of different types of agents in public games and its relevance for the decay of overcontribution through purely experimental means. The experiment consists of 23 rounds: 3 for training (without payoffs) and 20 for real. The findings show that 35% were classified as reciprocators/conditional cooperators, 18% as unconditional cooperators, 32% as free-riders and the remaining 15% in the 'noisy' group. The paper concludes that frustrated attempts at reciprocation play a major role in the decay of contribution in PG experiments.

To assess the reliability of conditional cooperation while considering the potential impact of participants' backgrounds on their willingness to cooperate, Herrmann & Thöni (2008) measure attitudes towards cooperation by replicating the public good experiment pioneered by Fischbacher et al. (2001). The paper was conducted with 160 participants from four universities from rural and urban Russian cities (unlike the Fischbacher paper in Austria and Switzerland). The paper finds that the pattern of the subjects classified as conditional cooperators was very similar to that observed in Fischbacher et al. Most conditional cooperators contribute somewhat less than the average of the other subjects' contributions. The paper finds that 55.6% of the 160 participants were conditional cooperators (Ust-Kine; 47.7%, Kokino; 56.8%, Belgorod; 60%, Kursk; 59.6%), reporting a higher figure than Fischbacher et al. (50%). The paper results show that the socioeconomic environment within a society does not strongly affect people's preferences toward

conditional cooperation. However, it shows that cultural background influences attitudes toward cooperation.

In a cross-country study, Kocher et al. (2008) discovered significant differences in conditional cooperation across the United States, Austria, and Japan, highlighting cultural influences on cooperation. Similarly, to Herrmann & Thöni (2008), the paper employs the Fischbacher et al. (2001) method. The paper finds that the extent and existence of conditional cooperation is significantly higher in the United States than in Austria and Japan. The results show that 81% of participants in the United States are conditional cooperators, with Austria and Japan having 44% and 41% as conditional cooperators, respectively.

Similarly, various scholars have sought to investigate the effect of socioeconomic and cultural differences on cooperation using methods other than the Fischbacher et al. (2001) method. Wong and Hong (2005) tested whether priming of cultural symbols activates cultural, behavioral scripts and thus the corresponding behaviors, and whether the behaviors activated are context specific. This experiment had a 3 (prime: Chinese, American, neutral) X 2 (context: friend, stranger) between-subjects design. Participants were randomly exposed to pictures of Chinese cultural icons, American cultural icons, or neutral (geometric) drawings. Then, they were asked to play a Prisoner's Dilemma game with friends or strangers. Three dependent variables were measured: (a) choice of cooperation versus defect strategies in each trial, (b) expectation of cooperation from the game partners, and (c) motivation to maximize joint outcome. The findings supported the initial predictions of the authors, i.e., that Chinese culture primes activated more cooperation with friends than American culture primes did. In contrast, there was no systematic effect of prime on cooperation with strangers. Similarly, Butler & Fehr (2024) aim to provide causal evidence of culture's influence on cooperation by examining intra-cultural cooperation in a one-shot anonymous Prisoner's Dilemma game using participants with ties to both US and Chinese culture, i.e., first and second-generation Chinese immigrants studying at the University of California. By implementing a 2x2 factorial design between subjects, the paper finds that a Chinese identity induces a stronger preference to cooperate in the Prisoner Dilemma setting but with pessimistic beliefs about stranger cooperation. In contrast, a US identity puts less emphasis on cooperative preferences but induces more optimistic beliefs about cooperation.

Though there is evidence that cultural and socioeconomic differences can affect cooperation, other scholars have provided results that say otherwise. Frey (2019) aimed to find out

whether cultural background influences cooperation rates by operationalizing it with different dimensions that have been widely used to characterize cultural differences: (a) Individualism/Collectivism (IDV), (b)Masculinity, (c) Power Distance Index (PDI), (d) Uncertainty Avoidance Index (UAI). These dimensions were complemented by four economic indicators (Gross Domestic Product (GDP), GINI Index, Human Development Index (HDI), Corruption Perception Index (CPI)) and two religious indicators (Religious Diversity (RDI) and Religious Importance (RIM)). The paper finds small differences in cooperation rates between countries, ranging from 8.5% (Argentina) to 14.1% (Greece). Different cultural, economic, and religious backgrounds did not have a discernible influence on cooperation rates. Instead, individual differences seem to play a larger role.

To our knowledge, no empirical and experimental work has replicated the Fischbacher experiment using a comparative approach to examine if different cultural and corrupt environments affect an individual's behavior in the public goods games. By conducting experiments in Nigeria and Canada and eliciting perceived corruption at an individual level to observe a possible correlation between the perceived level of corruption and participants' behaviors in the public good experiment, the study proposes to contribute valuable findings to the ongoing discourse on cooperation behavior in diverse socio-cultural contexts.

Cameron et al. (2009) show evidence that corruption varies with different cultures. Further research also shows that unfavorable levels of perceived corruption in different cultures/societies have shown severe negative consequences for voluntary contribution and cooperation behavior (Cagala et al., 2017). Cagala et al. (2017) show the results of respondents who contribute to the private provision of public goods by volunteering for civic organizations. They find that 38% of individuals who perceive that corruption within their country's government is low identify themselves as contributors. Conversely, only 27% of individuals who perceive that corruption within their government is relatively high identify as contributors. This impact of corruption on voluntary contribution and cooperation can intuitively be shown through a *motivational effect*. Corruption might erode individuals' contributions to the private provision of public goods through a motivational effect that could be explained by concepts such as self-serving beliefs, reciprocity, or betrayal aversion.

The impact of corruption on voluntary contribution and cooperation worsens the scarcity of public goods and services due to the bureaucracy's misuse of public funds. Research shows that

access to public goods and services is an essential determinant of quality of life, especially in developing countries (Besley & Ghatak, 2006).

2.2 PERCEPTION OF CORRUPTION AND ITS CULTURAL DIMENSION

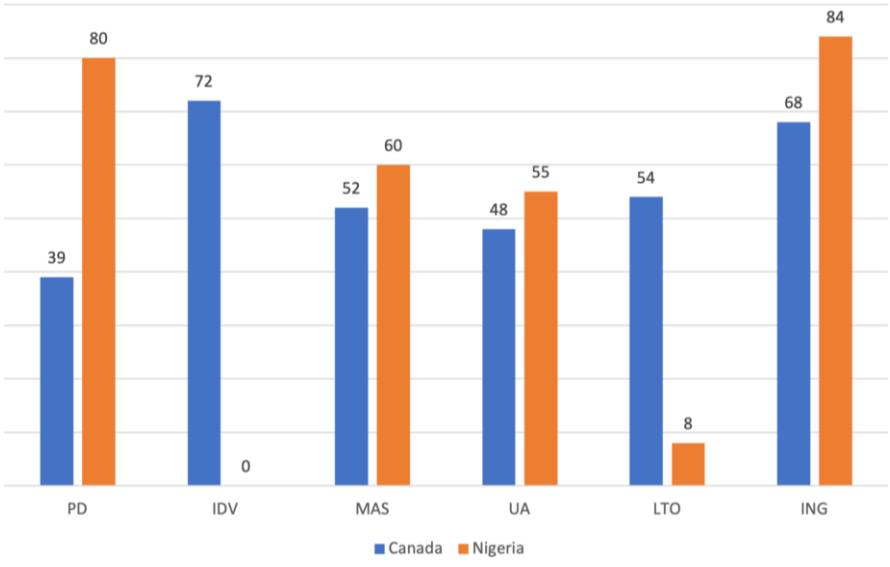
To explain the phenomenon of corruption, several studies have gone beyond classical economic explanations and analyzed the impact of cultural values, social norms, and attitudes on the economic behavior of people (Frey & Stutzer, 2012; Stiglitz et al., 2010). Husted (1999) contributes to the literature by arguing that certain cultural values may either foster or inhibit corruption within a group of people. The study examines the impact of national income, government size, and cultural variables on a country's perceived level of corruption and concludes that corruption is significantly associated with culture. Although culture is not the sole reason for corruption, it encompasses many traits of citizenship. This concept has been used to predict a group's general response to situations considered corrupt. (Davis & Ruhe, 2003; Park, 2003; Pena López & Sánchez Santos, 2014). Hofstede's (2011) Insights Model explains culture as "the collective mental programming of the human mind which distinguishes one group of people from another." – with the model measuring cultural differences and behavior in six dimensions: *Power Distance (PD), Individualism (IDV), Motivation towards Achievement and Success (MAS), Uncertainty Avoidance (UA), Long-Term Orientation (LTO), and Indulgence (ING)*. These cultural dimensions have been found to influence the level of corruption in a country (Guritno et al., 2020). Figure 2 shows a comparative summary of the Hofstede Insights scores on Nigeria and Canada. Nigeria's Hofstede cultural dimensions align with those of countries prone to higher levels of corruption (Kittova & Steinhauser, 2018).

In these societies prone to higher levels of corruption, it is important to understand how the people who make up these societies perceive the existence and effect of corruption around them. Thus, in addition to contributing to literature focusing on cooperation in different socio-cultural backgrounds, the study additionally seeks to ascertain the opinions and perception levels of corruptive activities, institutions, and its propensity. Several studies have analyzed the foundations of corruption perception using surveys. Employing the Citizenship of the 2004 survey carried out by the *International Social Survey Program* (ISSP), Melgar et al. (2010) concluded that personal characteristics played a relevant role in shaping corruption perception at the microlevel. Additionally, the study found that that the ranking of countries – following the survey results –

highly correlated with the corruption perceptions index (CPI), ultimately indicating that individual characteristics and social conditions are factors that influenced the respondent's perceptions of corruption.

Similarly, to determine what leads to an individual's acceptance of corrupt behavior, Truex (2011) developed an original survey coined as "Corruption Acceptance Survey" (CAS) to isolate attitudinal differences across seven dimensions of corruption. The results of the survey indicated substantial variation in attitudes toward different types of corrupt behavior. The respondents were significantly more accepting of specific behaviors such as favoritism and small-scale petty corruption. Tsalikis and Nwachukwu (1991) contributed to the literature by investigating the differences in the way bribery and extortion are perceived by American and Nigerian cultures using the Reidenbach-Robin instrument. The study concluded that ethical reactions to bribery and extortion varied by the nationality of the person offering the bribe, and the country where the bribe is offered. The paper ultimately found that Nigerians perceived some of the situation as less unethical than Americans.

Figure 2: Hofstede Insights Scores of Nigeria and Canada



Source: Hofstede Insights (2023)

The contributions to this literature by the aforementioned studies (Tsalikis & Nwachukwu, 1991; Truex, 2011) show the merit of corruption perception surveys. The secretive nature of corruption increases difficulty for researchers to measure corruption solely using 'hard data'. Instead, perception data can enable researchers to understand many aspects of corruption problems. The results from the questionnaire utilized in this paper will help to elicit the perception of corruption at an individual level to observe correlation between perceived level of corruption and participants' behaviors in the public good experiment. The results propose to contribute to the empirical proof of the importance of corruption perception surveys and their role in understanding corruption and the social environment in which it thrives.

3 EXPERIMENTAL DESIGN

This MA thesis proposes to achieve its objectives by conducting a **standard** FGF experimental design that attempts to observe the phenomenon of conditional cooperation (or "reciprocation") in two countries, Nigeria, and Canada. In the first part of the experiment, I will employ the exact same protocol as the FGF method, which allows for the elicitation of subjects' preferences regarding conditional cooperation. Subsequent, upon completion of the experiment, the thesis introduces a post-experiment questionnaire to elicit individual-level perception on corruption to ascertain a possible correlation between individuals' perception of corruption and their cooperation behaviors in the FGF public good experiment. The focus of the study is to make a comparison of the experimental results obtained from the two countries and examine whether different cultural and corrupt environment affect an individual's behavior in the public goods games.

3.1 FISCHBACHER, GÄCHTER & FEHR METHOD

Subjects will be endowed with 20 tokens each. A subject can either keep these tokens for herself or invest them into a so-called 'project'. The pecuniary payoff function adopted from Fischbacher et al. (2001) is given as:

$$\pi_i = 20 - g_i + 0.4 \sum_{j=1}^{4} g_j.$$

Specifically, subjects will be asked to make two types of contribution decisions. The first type of contribution decision is called the *'unconditional contribution',* which is a single decision of how much of the 20 tokens they wish to invest in the public good, and the second type of decision is the *'contribution table'*. The contribution table will be assessed after they make their unconditional contributions. It involves subjects indicating how much they are willing to contribute to the public good for each of the 21 possible [rounded] average contribution levels (0-20) of the other group members.

To give a [monetary] incentive to ensure that subjects take both decisions seriously and to ensure that potentially all decisions can become contributions to the public good, the experiment will go as follows. Subjects will be told that, *after* they have made both types of decisions, a random mechanism will determine which of the two decisions will become relevant for the determination of actual 4 payoffs. The random mechanism will start off with each group member, in every group, receiving a 'member number' between 1 and 4. At the beginning of the experiment, after subjects have been randomly allocated to the computers, one participant will be randomly selected to employ the random mechanism. After all decisions have been made, subjects will be told that this selected participant will throw a 4-sided die to determine for which group member 1 to 4 will have the contribution table as their relevant decision. Thus, for one randomly chosen subject, the contribution table became this subject's relevant decision. While the other three group members their unconditional contribution was their relevant contribution decision. The probability of each subject to have their contribution schedule as their payoff-relevant decision is $\frac{1}{4}$. This ensures that all entries in both decisions are potentially payoff-relevant for all involved.

The experiment will take place as follows: firstly, nature will select three players who simultaneously make their contribution decisions. The fourth player will learn the [rounded] average contribution of the other players and then decides how much to contribute. All players learn whether they are the fourth player or not. Though, when they are not chosen to be the fourth player, they do not learn who is. Assuming rationality and selfishness, it is optimal for the fourth player to contribute zero regardless of the contributions of the other players. With the same assumptions, the players who have to make simultaneous contribution decisions, contributing zero to the public good will be optimal. To ensure that subjects' willingness to be conditionally cooperative is unambiguous and these choices are not due to 'intertemporally' built habits e.g. reputation formation, bounded rationality, etc. – the experiment will be played *once*.

To ensure that subjects can undergo the experiment with full understanding of the public good game and payoff function, subjects will be required to successfully answer 10 control questions before they can begin the experiment.

The subjects that will take part in the experiment will consist of first and second-semester undergraduates from all departments, excluding economics. The subjects will be students at Concordia University in Montreal, Canada and Baze University in Abuja, Nigeria. The payoffs will be calculated in Canadian Dollar (CAD) and will be converted to Nigerian Naira (₦) for the subjects in Nigeria. Given the disparity in the standard of living between the two countries, participants may find differences in what they can purchase with their payoffs.

This study employs the method in Fischbacher et al (2001) to elicit subjects' preferences, without intermingling preferences with strategic considerations. Though the results have been widely replicated, it is employed here to robustly test if their results can be generalized to subject pools that are yet to be investigated. The full instructions of the experiment are listed in detail in Appendix 1.

3.2 POST-EXPERIMENT QUESTIONNAIRE

At the end of the experiment, subjects will be asked to complete a questionnaire that aims to elicit their personal perception on corruption to ascertain a possible correlation between their perception of corruption and their cooperation behaviors in the public good experiment. The identity of the respondents will be kept confidential. The questionnaire will employ a modified version of the European Social Survey (ESS), Value Survey Model (VSM), and the United Nations Office on Drugs and Crime (UNODC) and National Bureau of Statistics (NBS) National Survey on Quality and Integrity of Public Services. The questionnaire will explore various aspects, including work, well-being, economic morality, and perception of corruption, providing a comprehensive understanding of the subjects' perspectives. The questionnaire will consist of 21 questions, which are listed in Appendix 2.

The questionnaire will utilize a number of questions from each of the previously mentioned surveys. The first section, adopted from the UNODC and NBS survey, will employ questions investigating subjects' opinions on corruption, its frequency, level, and methods of occurrence in various institutions and sectors. Adopting questions from the same survey, the second section will focus on experiences with public service. Here, the questions will focus on subjects' experiences

with public service officials, their propensity to involve in corruptive practices and experiences with bribery.

The ESS will serve as a foundation for the third section of the survey, providing questions to elicit subjects' views on economic morality, trust and interactions between producers and consumers.

Lastly, for statistical purposes and to better understand the replies received, the questionnaire will employ questions from the VSM pertaining to subjects' personal/general information including, age, sex, marital status, level of education, nationality, and occupation.

Unlike the Transparency International Corruption Perception Index that assesses perception of corruption at an aggregate-level, this MA thesis' survey focuses on individual perception of corruption. Moreover, this MA thesis' survey is based on the 4 aforementioned surveys that differ from the 13 surveys employed by Transparency International.[1]

The questionnaire is imperative as measuring corruption perceptions might be a questionable method, as it is not clear whether the public can know the real levels of corruption in a country. Perceptions are used because corruption – whether its frequency or amount – is largely a hidden activity that is difficult to measure (Transparency International, 2010). Thus, it is extremely difficult to find 'hard data' to measure the extent of corruption. Individual perceptions often play a constitutive role instead.

4 ANALYSIS STRATEGY

To achieve the main objective of the paper, similarly to Fischbacher et al. (2001), the data from the contribution table will be used to classify the subjects into four categories' *conditional cooperators*, *free riders*, *triangle contributors*, and others. **Conditional cooperators** will be classified as subjects whose contribution table indicate a monotonically increasing contribution

[1] African Development Bank Governance Ratings (AFDB), Bertelsmann Stiftung Governance Indicators (BF-SGI), Bertelsmann Stiftung Transformation Index (BF-BTI), Economist Intelligence Unit Country Risk Service (EIU), Freedom House Nations in Transit (FH), Global Insight Country Risk Ratings (GI), IMD World Competitiveness Center World Competitiveness Yearbook Executive Opinion Survey (IMD), Political and Economic Risk Consultancy Asian Intelligence (PERC), The PRS Group International Country Risk Guide (ICRG), World Bank — Country Performance and Institutional Assessment (WB), World Economic Forum Executive Opinion Survey (WEF), World Justice Project Rule of Law Index Expert Survey (WJP), Varieties of Democracy Project's Political Corruption Index (V-Dem).

pattern or shows a significant positive slope ($p < 0.01$, *Spearman rank correlation*). **Free riders** are classified as subjects who contribute nothing always (their contribution is zero) whereas **triangle contributors** are classified as subjects who have a significantly increasing pattern up to some maximum with a subsequent significantly decreasing pattern. Lastly, **others,** include all remaining subjects.

In this MA thesis, I employ a dataset from Herrmann and Thöni (2008) as to demonstrate the analytical approach.[2] Herrmann and Thöni (2008) replicate the Fischbacher et al. (2001) experiment in four different universities in Russia namely, Ust-Kinel, Kokino, Kursk and Belgorod. To serve as a preliminary step to validate the methods that will be applied to future research, this MA thesis selects a subset of the data from Herrmann and Thöni (2008) with the cities of Ust-Kine and Kursk indicating Nigeria and Canada respectively.

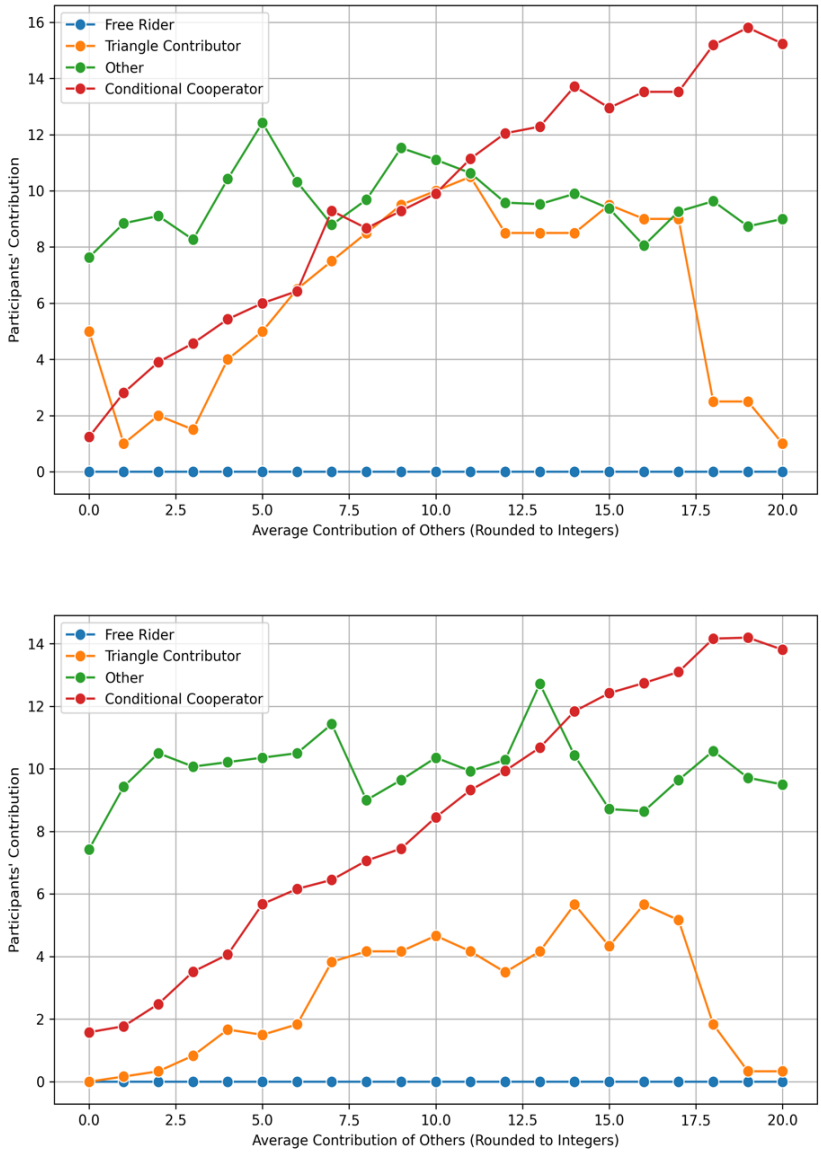
Table 1: Distribution of types in the two locations and the subset of data extracted from from Herrmann and Thöni (2008).

	Nigeria (Ust-Kine)	*Canada (Kursk)*	*Total*	*Fischbacher et al.*
n	44	52	96	44
Conditional Cooperators	47.7%	59.6%	54.2%	50.0%
Free Riders	4.5%	1.9%	3.1%	29.5%
Triangular Contributors	4.5%	11.5%	8.3%	13.6%
Others	43.2%	26.9%	34.4%	6.8%

The subjects classified as *conditional cooperators* show a similar pattern observed in Fischbacher et al. (2001). Most conditional cooperators contribute somewhat less than the average of the other subjects' contributions. Figure 3 shows the average contribution according to the contribution table of the subjects classified as *conditional cooperators*, *free riders*, *triangle contributors* and *others* across Nigeria (Ust-Kine) and Canada (Kursk), respectively.

[2] The data is extracted from Herrmann and Thöni's supplementary material: https://static-content.springer.com/esm/art%3A10.1007%2Fs10683-008-9197-1/MediaObjects/10683_2008_9197_MOESM1_ESM.xls.

Figure 3: Average contribution according to the contribution table, total and for selected types in Nigeria (Top) and Canada (Bottom)



Source: Generated by the author using Python

By employing the same methods used above and including the results of the post-experiment questionnaire to observe a possible correlation between cooperative behavior in the

public good game and individual-level perception of corruption, the thesis proposes to test the following hypotheses[3]:

Hypothesis 1. *Participants can be reliably classified into distinct behavioral types—such as conditional cooperators, free riders, and triangle contributors—based on their contribution patterns in a public good game.*

Hypothesis 2. *There will be a higher proportion of conditional cooperators and a lower proportion of free riders in Canada compared to Nigeria, reflecting cultural differences in cooperative behavior and perceptions of corruption.*

Hypothesis 3. *Participants who perceive a lower level of corruption are more likely to be conditional cooperators. Participants who perceive a higher level of corruption are more likely to be free riders.*

Hypotheses 1 and 2 will be based on the same data analysis strategy as shown above in *Table 1* and *Figure 3*. However, to test Hypothesis 3, the thesis will employ two Probit regression models. These models will estimate the probability that an individual is a conditional cooperator, or a free rider based on several key factors, including their *unconditional contribution, individual perception of corruption*, and demographic and socio-economic characteristics obtained from the survey. The *individual perception of corruption* will be quantified using an index generated from survey responses, as detailed in **Appendix 3**.

The Probit regression equation is as follows:

$$P(Y_1 = 1|X_1, X_2, X_{age}, X_{gender}, X_{employment}, X_{country}) = \phi(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_{age} + \hat{\beta}_4 \hat{X}_{gender} + \hat{\beta}_5 \hat{X}_{employment} + \hat{\beta}_5 \hat{X}_{country}$$

- Φ(.) denotes the cumulative distribution function (CDF) of the standard normal distribution.
- Y_1 denotes the binary outcome variable, where Y_1= 1 if the individual is identified as a conditional cooperator, and Y_1 = 0 if otherwise.
- X_1 is the variable representing the *unconditional contribution.*
- X_2 is the variable representing the *individual corruption perception index*.

[3] To test the hypotheses related to perception of corruption and cooperative behavior, the thesis will only focus on two player types, *free rider* and *conditional cooperator*.

- X_{age} serves as a control variable representing age.
- $\hat{X}_{gender}$ and $\hat{X}_{employment}$ serve as vectors of dummy variables representing gender and employment status, respectively, that can be matched with selected survey questions.[4]
- $\hat{X}_{country}$ serves as a vector of dummy variables capturing the country where the respondent participated in the experiment (0 for Nigeria and 1 for Canada), their immigrant status and CPI category (low, medium, or high) of the respondent's birth nationality.[5]

The study will conduct another similar Probit regression to estimate the probability that the participant is identified as a free rider. The dependent variable is Y_2, where Y_2= 1 if the individual is identified as a free rider, and Y_2= 0 if otherwise. [6] The study will examine the sign and statistical significance of the estimated coefficients, using a p-value threshold of 0.05 to determine whether the results support the hypothesis.

5 CONCLUSION

Various studies have investigated the role of conditional cooperators in public good experiments. This study aims to investigate this phenomenon, whether culture plays a significant role in determining the levels of corruption in countries and how this corruption level affects cooperation behaviors in a public good experiment.

It is challenging to draw generalized conclusions about cultural patterns in comparison between countries based on aggregated cultural macro data. Hence, this comparative approach focusing on Nigeria and Canada provides an allowance for understanding the role of socio-economic and cultural factors in shaping cooperation behaviors amongst experiment subjects of the respective countries. Relative cultural dimensions of Hofstede's model are used to gauge the cultural dimensions of corruption in both countries. Similarly, the Corruption Perceptions Index

[4] Survey questions 16 and 19 are for gender and employment, respectively. Gender and employment status, which have multiple response options, will be represented in the analysis by vectors of dummy variables, with each dummy corresponding to one of the respective categories.

[5] The variables will be matched to survey questions 20 and 21, respectively. The answers in question 21 will be categorized into low/medium/high levels of corruption according to the respective country's published Transparency International CPI.

[6] It is understood for any given individual, Y_1 and Y_2 cannot both be 1 simultaneously. However, Y_1 cannot be inferred from Y_2 perfectly and vice versa. It is also possible for both Y_1 and Y_2 to be 0, as there are other player types beyond the captured dependent variables.

(CPI) is used to measure the relative levels of perception of corruption between the countries. To achieve its objective, this study will replicate the experimental design of Fischbacher et. al (2001) to observe the phenomenon of conditional cooperators. Additionally, the study will introduce a post-experiment questionnaire, eliciting individuals' perceptions of corruption in their respective societies and cultural contexts to explore a possible correlation between their perceptions of corruption and their behavior towards voluntary contribution and cooperation. Although there is a large and recent literature that focuses on conditional cooperation, this thesis is, to my knowledge, the first study to directly explore how perceived corruption possibly influences the willingness to cooperate, adding a novel dimension to the understanding of conditional cooperation.

This study aims to replicate the one-shot public goods game from Fischbacher et al. (2001) to compare conditional cooperation across two different cultural contexts – Nigeria and Canada. However, it did not explore the dynamics of cooperation over time, which is studied in classical public goods experiments. Fischbacher et al. (2010) conducted simulations to explore how changes in belief processes, subject preferences, and heterogeneous compositions of participants' types contribute to the dynamic pattern of cooperation when the public goods game is played multiple times. Specifically, with the presence of conditional cooperators, the public good provision is found to start at a relatively high level. However, after interacting with free riders in the group, conditional cooperators choose to decrease their contribution over time, generating a pattern of decay of cooperation. In line with the work by Fischbacher et al. (2010), in future research, I could expand on this by conducting a similar dynamic simulation study, using players' type classification across different cultural contexts to determine whether perceptions of corruption also play a significant role in the decay of cooperation over time.

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APPENDIX 1: INSTRUCTIONS FOR THE PUBLIC GOODS GAME ADAPTED FROM FISCHBACHER AND GÄCHTER (2001)

INSTRUCTIONS

You are now taking part in the experiment. The money you earn in this experiment will be added to what you earned in the first one. As before, we will not speak of currency during the experiment, but rather of points. At the end, the total number of points you have earned will be converted to the relative equivalent at the following rate:

1 point = £0.2

These instructions are solely for your private information. **You are not allowed to communicate during the experiment**. If you have any questions, please raise your hand. A member of the experimental team will come to you and answer them in private. All participants will be divided into groups of four members. **Only the experimenters will know who is in which group**.

THE DECISION SITUATION

We first introduce you to the basic decision situation. Then, you will complete a pre-study questionnaire on the screen in front of you, which is intended to help you understand the decision situation. In each group, every member must decide the allocation of 20 tokens. You can put these 20 tokens into your **private account**, or you can put some or all of them into a **project**.

YOUR INCOME FROM THE PRIVATE ACCOUNT

You will earn 1 point for each token you put into your private account. For example, if you put all 20 tokens into your private account, your income from your private account would be 20 points. If you put 6 tokens into your private account, your income from this account would be 6 points. **No one except you earns anything from tokens you put in your private account**.

YOUR INCOME FROM THE PROJECT

Each group member will profit equally from the amount you or any other group member put into the project. The income for each group member from the project will be determined as follows:

Income from the project = 0.4 × sum of all contributions

If, for example, the sum of all contributions to the project by you and your other group members **is 60 tokens**, then you and each other member of your group would earn **60 × 0.4 = 24** points out of the project. If four members of the group contribute a total of 10 tokens to the project, you and the other members of your group would each earn **10 × 0.4 = 4** points.

TOTAL INCOME

Your total income is the sum of your income from your private account and from the project:

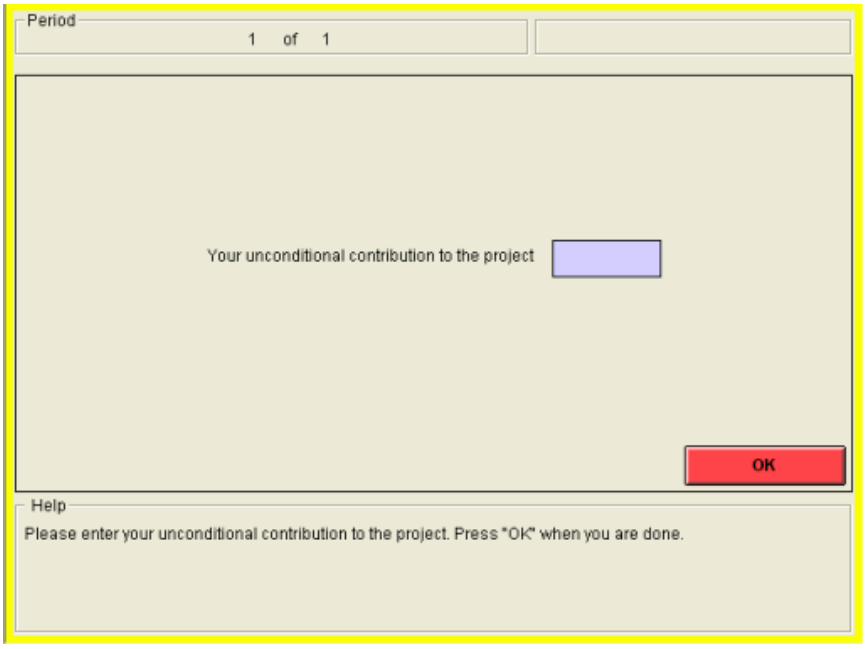
Your Total Income = Income from your private account + Income from the project

=20 – your contribution to the project + 0.4 × sum of all contributions to the project

THE EXPERIMENT

The experiment is based on the decision situation just described to you, conducted once. You will enter your decisions on the screen in front of you. As you know, you will have 20 tokens at your disposal. You can put them into a private account or into a project. Each subject must make two types of decisions in this experiment, which we will refer to below as the *"unconditional contribution"* and the *"contribution table"*.

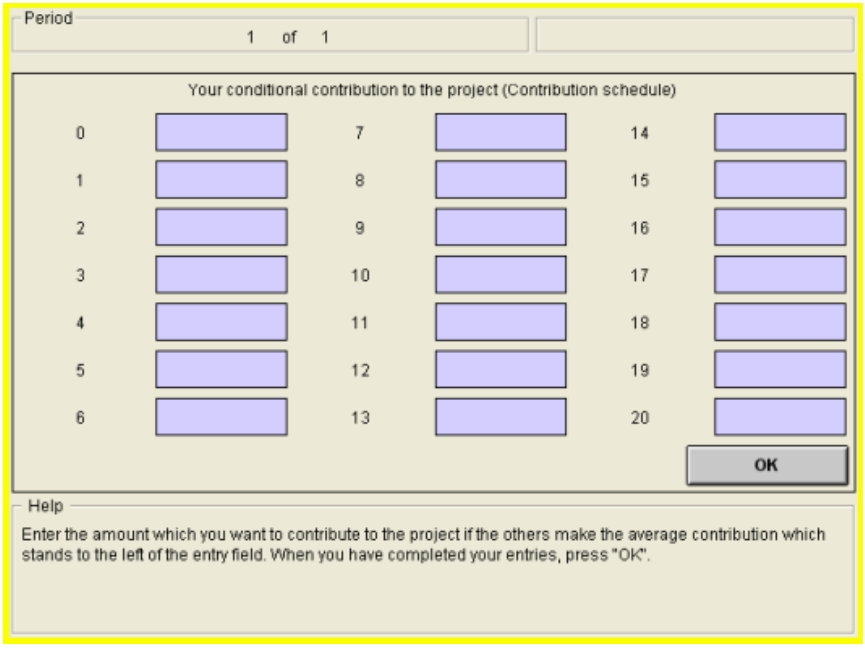
- In the unconditional contribution you simply decide how many of the 20 tokens you want to put in the project. Please indicate your contribution in the following screen:



After you have determined your unconditional contribution, please click “OK”.

- Your second task is to fill in a **“contribution table”** where you indicate how many tokens **you want to contribute** to the project **for each possible average contribution of the other group members (rounded to the next integer).** Here, you can condition your contribution on that of the other group members. This will be immediately clear to you if you look at the following table.

  This table will be presented in the experiment:



The numbers to the left of the blue cells are the possible (rounded) average contributions of the other group members to the project. You must insert how many tokens you want to contribute to the project into each input box – conditional on the indicated average contribution by the other members of your group. **You must enter a number between 0 and 20 inclusive in each input box.** For example, you must indicate how much you contribute to the project if the others contribute 0 tokens on average to the project; how much you contribute if the others contribute 1, 2, or 3 tokens on average; etc. Once you have made an entry in each input box, click “OK”.

After all participants of the experiment have made an unconditional contribution and have filled in their contribution table, a random mechanism will select one member from every group. For this group member, it is his **contribution table** that will determine his actual contribution; whereas, for the **other three** group members, it is their unconditional contributions that will

determine their actual contributions. You will not know whom the random mechanism will select when you make your **unconditional contribution** and fill in your contribution table. You must therefore think carefully about both decisions because either could determine your actual contribution. Two examples should make this clear.

EXAMPLE 1: Suppose that the **random mechanism selects you**; and that the other three group members made unconditional contributions of 0, 2, and 4 tokens, respectively. The average contribution of these three group members is, therefore, 2 tokens. If you indicated in your contribution table that you will contribute 1 token if the others contribute 2 tokens on average, then the total contribution to the project is given by 0+2+4+1=7 tokens. Each group member would, therefore, earn 0.4×7=2.8 points from the project plus their respective income from their own private account. If, instead, you indicated in your contribution table that you would contribute 19 tokens if the others contribute 2 tokens on average, then the total contribution of the group to the project would be given by 0+2+4+19=25 tokens. Each group member would earn 0.4×25=10 points from the project plus their respective income from their own private account.

EXAMPLE 2: Suppose **that the random mechanism does not select you**; and that your unconditional contribution is 16 tokens, while those of the other two group members not selected by the random mechanism are 18 and 20 tokens respectively. Your average unconditional contribution and that of these two other group members is, therefore, 18 tokens. If the group member whom the random mechanism did select indicates in her contribution table that she will contribute 1 token if the other three group members contribute on average 18 tokens, then the total contribution of the group to the project is given by 16+18+20+1=55 tokens. Each group member will therefore earn 0.4×55=22 points from the project plus their respective income from their own private account. If, instead, the randomly selected group member indicates in her contribution table that she contributes 19 if the others contribute on average 18 tokens, then the total contribution of the group to the project is 16+18+20+19=73 tokens. Each group member would therefore earn 0.4×73=29.2 points from the project plus their respective income from their own private account.

The random selection of the group member whose contribution table will determine his actual contribution will be made as follows. Each group member is assigned a **Group Member ID** between 1 and 4, which denote his/her number inside his group. Moreover, participant number 2 was randomly selected at the very beginning of the experiment. This participant will draw a ball from an urn **after** all participants have made their unconditional contribution and have

filled out their contribution table. Each ball in the urn has a different colour and each colour corresponds to a Group Member ID: orange = 1, blue = 2, yellow = 3, green = 4. The resulting number will be entered into the computer. If participant 1 draws the Group Member ID that was assigned to you, then your contribution table will determine your contribution, and their unconditional contributions will determine the contribution of the other group members. Otherwise, your unconditional contribution determines your contribution.

QUIZ QUESTIONS (COMPUTERIZED)

1. Each group member has 20 tokens. Assume that none of the four group members (including you) contributes anything to the project.
   a) What will your total income (in points) be?
   b) What will the total income (in points) of each of the other group members be?
2. Each group member has 20 tokens. You contribute 20 tokens in the project. Each of the other three members of the group also contributes 20 tokens to the project.
   a) What will your total income (in points) be?
   b) What will the total income (in points) of each of the other group members be?
3. Each group member has 20 tokens. The other three members contribute a total of 30 tokens to the project.
   a) What will your total income (in points) be, if - in addition to the 30 tokens contributed by others - you contribute 0 tokens to the project?
   b) What will your total income (in points) be, if - in addition to the 30 tokens contributed by others - you contribute 8 tokens to the project?
   c) What will your total income (in points) be, if - in addition to the 30 tokens contributed by others - you contribute 15 tokens to the project?
4. Each group member has 20 tokens. Assume you invest 8 tokens to the project.
   a) What will your total income (in points) be, if the other group members - in addition to your 8 tokens - contribute another 7 tokens to the project?
   b) What will your total income (in points) be, if the other group members - in addition to your 8 tokens - contribute another 12 tokens to the project?
   c) What will your total income (in points) be, if the other group members - in addition to your 8 tokens - contribute another 22 tokens to the project?

APPENDIX 2: POST-EXPERIMENT QUESTIONNAIRE

Survey on Perception of Corruption

1. In your opinion, what are the most important problems your country is facing today? Please mark up to three items, ranking from 1 (most important) to 3(less important)

   Mark only one oval.

   - ◯ Corruption
   - ◯ Crime and insecurity
   - ◯ Ethnic or communal conflict
   - ◯ Unemployment
   - ◯ Poor performance of education system
   - ◯ Performance of Government
   - ◯ Condition of infrastructures
   - ◯ Enviromental degradation
   - ◯ Other: _____

2. What is your personal opinion about these behaviours that are widespread in many countries?

Mark only one oval per row.

	Always Acceptable	Usually Acceptable	Sometimes Acceptable	Not Acceptable
A doctor asking for some money /gift to provide better treatment	◯	◯	◯	◯
Offering money to a civil servant to speed up administrative procedures	◯	◯	◯	◯
An elected official taking public funds for private use	◯	◯	◯	◯
A public offer being recruited based on family ties and friendship networks	◯	◯	◯	◯
A law enforcement officer (police, army, navy, etc) asking for a bribe	◯	◯	◯	◯

3. How frequent are these practices among **public officials** in your country?

Mark only one oval per row.

	Very Often	Often	Not very frequent but not unusual	Rarely	Never	Do not know
Requesting sexual favors in return for preferential treatment	◯	◯	◯	◯	◯	◯
Hiring of friends and relatives	◯	◯	◯	◯	◯	◯
Requesting money or gifts for public services that should have been provided for free	◯	◯	◯	◯	◯	◯
Influencing the award of government contracts to friends and relatives	◯	◯	◯	◯	◯	◯

4. How frequent are these practices among **elected representatives** in your country?

Mark only one oval per row.

	Very Often	Often	Not very frequent but not unusual	Rarely	Never	Do not Know
Manipulating electoral processes/electoral fraud	◯	◯	◯	◯	◯	◯
Using public funds for personal or family use	◯	◯	◯	◯	◯	◯
Taking bribes or gifts to influence public decisions	◯	◯	◯	◯	◯	◯
Facilitating career advancement of collaborators based on loyalty instead of merit	◯	◯	◯	◯	◯	◯

5. Compared to 4 years ago, do you think that the overall level of corruption in your country has increased or decreased?

Select ONE answer only

Mark only one oval.

- ◯ Increased
- ◯ Remained stable
- ◯ Decreased

6. According to you, how frequently do corrupt practices/behaviours take place in these various sectors in your country?

Mark only one oval per row.

	Very often	Often	Not very frequent but not unusual	Rarely	Never	Do not know
Parliament/Legislature	◯	◯	◯	◯	◯	◯
Customs/Immigration Service	◯	◯	◯	◯	◯	◯
Tax Office	◯	◯	◯	◯	◯	◯
Political Parties	◯	◯	◯	◯	◯	◯
NGOs	◯	◯	◯	◯	◯	◯
Law courts/Tribunal	◯	◯	◯	◯	◯	◯
Police	◯	◯	◯	◯	◯	◯
Central Government	◯	◯	◯	◯	◯	◯
Public Hospitals	◯	◯	◯	◯	◯	◯
Private Companies	◯	◯	◯	◯	◯	◯

Experience with public services

7. In the last 12 months, have you ever had contacts with any of the following civil servants/public officials, including through an *intermediary*, for example to use a public service, to ask for information/assistance, to request a document, or while processing an administrative procedure?

Mark only one oval per row.

	Yes	No
Police officers	◯	◯
Judges	◯	◯
Members of parliament/legislature	◯	◯
Members of the Armed Forces	◯	◯
Embassy/Consulate officers of foreign countries	◯	◯
Teacher/Lecturers (from public schools)	◯	◯
Doctors, Nurses or Midwifes (from public sector)	◯	◯
Public utilities officers (electricity, water, sanitation, etc)	◯	◯
Car registration/ Driving license agency officers	◯	◯
Other public officials	◯	◯

8. In general terms, for the civil servants you dealt with during last 12 months (see the previous list) are you satisfied with the way they dealt with you?

Select ONE answer

Mark only one oval.

- ◯ Yes, always (skip the next question)
- ◯ Sometimes yes, sometimes no (go to the next question)
- ◯ No (go to the next question)

9. In those cases where you were not satisfied, which was the most important reason for you not being satisfied?

Select ONE answer

Mark only one oval.

- ◯ They didn't do enough
- ◯ They didn't treat me politely
- ◯ They were incompetent
- ◯ They were poorly equipped
- ◯ They didn't solve the problem
- ◯ They let me understand that they wanted me to offer money or a gift
- ◯ Other: _____

10. For the civil servants you dealt with during last 12 months (see the previous list), do you think that they provided you with enough information to understand the procedures

Select ONE answer

Mark only one oval.

- ◯ I received all the information I needed and I can manage procedures
- ◯ I did not receive enough information to understand the procedures
- ◯ I did not receive any information
- ◯ I do not know

Economic morality

11. How much do you agree or disagree with each of these statements?

Mark only one oval per row.

	Agree strongly	Agree	Neither agree nor disagree	Disagree	Disagree strongly	Do not know
Citizens should spend at least some of their free time helping others	⬭	⬭	⬭	⬭	⬭	⬭
Society would be better off if everyone just looked after themselves	⬭	⬭	⬭	⬭	⬭	⬭
Citizens should not cheat their taxes	⬭	⬭	⬭	⬭	⬭	⬭

12. How much would you trust the following groups to deal honestly with people like you?

Mark only one oval per row.

	Distrust a lot	Distrust	Neither trust nor distrust	Trust	Trust a lot	Do not know
Plumbers, builders, car mechanics and other repair people	⬭	⬭	⬭	⬭	⬭	⬭
Financial companies such as banks	⬭	⬭	⬭	⬭	⬭	⬭
Public officials	⬭	⬭	⬭	⬭	⬭	⬭

13. How often, if ever, have each of these things happened to you in the last five years? Use this card for your answers.

Mark only one oval per row.

	Never	Once	Twice	Three or more times	I do not know
A plumber, builder, car mechanic or other repair person overcharged you or did unnecessary work	◯	◯	◯	◯	◯
You were sold food that was packed to conceal the worse bits	◯	◯	◯	◯	◯
You were sold something secondhand that quickly proved to be faulty	◯	◯	◯	◯	◯
A public official asked you for a favour or bribe in return for a service	◯	◯	◯	◯	◯

14. How wrong, if at all, do you consider the following ways of behaving to be?

Mark only one oval per row.

	Not wrong at all	A bit wrong	Wrong	Seriously wrong	I do not know
Selling something secondhand and concealing some or all of its faults	◯	◯	◯	◯	◯
Making an exaggerated or false insurance claim?	◯	◯	◯	◯	◯
Exaggerated or false insurance	◯	◯	◯	◯	◯
A public official asking someone for a favour or bribe in return for their services?	◯	◯	◯	◯	◯

15. How much do you agree or disagree with these statements about how people see rules and laws?

Mark only one oval per row.

	Agree strongly	Agree	Neither agree nor disagree	Disagree	Disagree strongly	I do not know
If you want to make money, you cannot always act honestly	◯	◯	◯	◯	◯	◯
You should always strictly obey the law even if it means missing good opportunities	◯	◯	◯	◯	◯	◯
Occasionally, it is acceptable to ignore the law and do what you want to	◯	◯	◯	◯	◯	◯

General Information

I would now like to ask you to provide
some general information about yourself. It will help in better understanding the replies received. Please
be reassured that all information will be confidential.

16. How do you currently describe yourself?

Mark only one oval.

- ◯ Male
- ◯ Female
- ◯ Genderfluid
- ◯ Nonbinary
- ◯ Transgender
- ◯ Prefer not to say
- ◯ Other: _____

17. How old are you?

Mark only one oval.

- ◯ Under 20
- ◯ 20-24
- ◯ 25-29
- ◯ 30-34
- ◯ 35-39
- ◯ 40-44
- ◯ 45-49
- ◯ 50 and over

18. Educational attainment

Mark only one oval.

- ◯ No educational title
- ◯ Primary school education
- ◯ Lower secondary school education
- ◯ Upper secondary school education
- ◯ Post-secondary non-tertiary education
- ◯ Tertiary education
- ◯ Masters degree/doctoral title

19. **If** you have or have had a paid job, what kind of job is it / was it?

Mark only one oval.

- ◯ No paid job (includes full-time students)
- ◯ Unskilled or semi-skilled manual worker
- ◯ Generally trained office worker or secretary
- ◯ Vocationally trained craftsperson, technician, IT-specialist, nurse, artist or equivalent
- ◯ Academically trained professional or equivalent (but not a manager of people)
- ◯ Manager of one or more subordinates (non-managers)
- ◯ Manager of one or more managers

20. Are you an immigrant?

Mark only one oval.

- ◯ Yes
- ◯ No

21. What was your nationality at birth (if different)?

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APPENDIX 3: GENERATION OF INDIVIDUAL CORRUPTION PERCEPTION INDEX (ICPI)

This appendix outlines the method and methodology used to generate the index of individual perceptions of corruption based on the survey responses.

SURVEY STRUCTURE

The survey consists of four sections, with two sections specifically designed to assess different aspects of corruption perception:

1. Perception of Corruption: This section includes six questions asking respondents how often public officials and elected representatives engage in corrupt activities and the moral acceptability of certain corrupt practices. The responses range from "Always Acceptable" to "Not Acceptable" and "Very Often" to "Never".
2. Economic Morality: This section asks questions centered on economic morality and trust, using a Likert scale to gauge respondents' trust levels and moral views. The responses range from "Agree Strongly" to" Disagree Strongly", "Distrust a lot" to "Trust a lot", "Never" to "Three or more times", and "Not wrong at all" to "Seriously Wrong".

The two other sections will not be employed to generate this index as the Experience with Public Services section will be exclusively used to generate summary and descriptive statistics. Whereas, the General Information section will be used to better understand the survey responses, with selected questions serving as control variables in the regression models.

NUMERICAL SCORING

For each section, responses are assigned numerical values to facilitate quantitative analysis:

1. Perception of Corruption:
    - **For question 3, 4 & 6 –** "Very Often" = 5, "Often" = 4, "Not very frequent but not unusual" = 3, "Rarely" = 2, "Never" = 1.
    - **For question 2 –** "Always Acceptable" = 4, "Usually Acceptable" = 3, "Sometimes Acceptable" = 2, "Not Acceptable" = 1.
    - **For question 5 –** "Increased" = 5, "Remained Stable" = 3, "Decreased" = 1.
2. Economic Morality:

- **For question 11 –** "Disagree Strongly" = 5, "Disagree" = 4, "Neither agree nor disagree" = 3, "Agree" = 2, "Agree Strongly" = 1.
- **For question 12 –** "Distrust a lot" = 5, "Distrust" = 4, "Neither trust nor distrust" = 3, "Trust" = 2, "Trust a lot" = 1.
- **For question 13 –** "Three or more times" = 4, "Twice" = 3, "Once" = 2, "Never" = 1.
- **For question 14 –** "Not wrong at all" = 4, "A bit wrong" = 3, "Wrong" = 2, "Seriously wrong" = 1.
- **For question 15 [first and last items] –** Agree Strongly" = 5, "Agree" = 4, "Neither agree nor disagree" = 3, "Disagree" = 2, "Disagree Strongly" = 1.
- **For question 15 [second item] –** "Disagree Strongly" = 5, "Disagree" = 4, "Neither agree nor disagree" = 3, "Agree" = 2, "Agree Strongly" = 1.

I will use a two-step procedure to calculate the individual perception of corruption.

STEP 1: NORMALIZATION OF SCORES

Each respondent's raw score for each section will be calculated by summing the numerical values of their responses. To ensure compatibility across respondents, these raw scores will be normalized on a scale from 0 to 200 using the following formula.

$$Normalized\ Section\ Score = \frac{Raw\ Section\ Score - Minimum\ Possible\ Score}{Maximum\ Possible\ Score - Minimum\ Possible\ Score} \times 100$$

The minimum and maximum possible scores are determined by the number of questions in the sections and their assigned values.

STEP 2: GENERATION OF THE INDIVIDUAL CORRUPTION PERCEPTION INDEX

The final Individual Corruption Perception Index (ICPI) for each respondent is generated by averaging scores across the two sections:

$$ICPI = \frac{Normalized\ Score\ from\ Section\ 1 + Normalized\ Score\ from\ Section\ 2}{2}$$

The resulting index will be categorized into 5 levels to interpret the individual-level perception of corruption:

- 0-20%: Very Low Perception of Corruption

- 21-40%: Low Perception of Corruption
- 41-60%: Moderate Perception of Corruption
- 61-80%: High Perception of Corruption
- 81-100%: Very High Perception of Corruption

Respondents who select “Don’t know” will have their responses replaced by the average score for that question in the sub-sample where the experiment is conducted.