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A Comparative Study on Cooperation in Public Good Game between Italy and Turkey

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ABSTRACT

The aim of this study is to examine cooperation behavior in one-shot Public Good Game in two different countries: Italy and Turkey. The study looks at the relationship between culture and trust and its effects on cooperative behavior. Studying the influence of individualism-collectivism on the level of cooperation via the amount of trust the culture generates, this research found that there is a significant relationship between General Trust and cooperation in Public Good Games. However, the cultural impact was not found to be directly related to cooperative behavior.

INTRODUCTION

Trust is an essential component of building and maintaining relationships. It helps people to initiate cooperation and thus achieve the establishment of networks that help societies function better (Balliet & Van Lange, in press; Fukuyama, 1995; La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 1997; Putnam, 1993, as cited in Balliet & Van Lange, 2012). Since trust is a crucial concept in understanding how individuals make decisions in their social interactions with others, it has received much attention from researchers (Kocher et al., 2014; Gächter, Herrmann, & Thöni, 2004; Irwin, 2009; Putnam, 1993; Scholz & Lubell, 1998). Research across disciplines has shown different explanations about how trust impacts decisions that contain conflict of interest, like social dilemmas. Some indicate that people generally act selfishly to secure their gains from a conflicting situation. In contrast, others suggest that people tend to act in ways displaying trust for others and cooperate to secure the good of the group (Dawes, 1980). This study will primarily try to understand how General Trust affects the cooperation behavior in a Public Good Game to explain if trust is a variable that impacts the extent to which people will act in self or group interest in such social dilemmas.

Previous research has also drawn attention to how culture has an impact on trust in societies, especially by analyzing the impact of the individualism-collectivism dimension of culture (e.g., Zeffane, 2017; Lowry et al., 2009; Realo et al., 2008; Yamagishi, Cook, & Watabe, 1998; Yamagashi & Yamagashi, 1994). Researchers have found two main outcomes of the individualism-collectivism effect on trust; one of the perspectives is that as collectivism increases, trust in others increases. The reason for this relation is that collectivistic cultures are generally thought to put more importance on relationships, harmony within people, and the achievement of group goals (Triandis 1989, 1995; Hofstede 1980). Some scholars, on the other hand, claim that the discriminatory nature of collectivism for out-groups fosters lower

trust among individuals as it promotes people to trust those who are closer to them rather than those who are farther away in their social networks (Yamagishi, 1994; Fukuyama, 1995; Greif,1994). Since individualism and collectivism dimension has such a relationship with trust, people's decisions in public good games in a country can be assumed to be affected by their culture. Therefore, this study will also examine the effects of individualism and collectivism on trust as well as look at the effect of individualism and collectivism on people's decisions in a single-shot public good game, comparing Italy and Turkey, which are found to be individualistic and collectivistic cultures, respectively (Hofstede Insights, 2022).

LITERATURE

Social Dilemmas

Humans are highly social beings depending on each other to coexist harmoniously. This dependence brings about the need for cooperation, which is essential in many social interactions (Nature Human Behavior, 2018). Cooperation is not easy to achieve, especially when there are conflicting interests among the members of a society or when individuals behave in their self-interest (Kollock, 1998). Social Dilemmas occur when there is a conflict between the individual and the group or collective interests (Komorita & Parks, 1995, as cited in Irwin & Berrigan, 2013).

While a group of people is working together to accomplish a certain goal that cannot be accomplished individually, we might expect different behaviors from the individuals in the group. Some might contribute more or less than others, while some might prefer not to contribute at all. At the end of such situations, when the common goal is accomplished, everyone in the group, even the ones who did not contribute to it, can benefit from it (Olson, 1965). More interestingly, however, if an individual acts selfishly in such settings, they can benefit even more (Olson, 1965). If an individual does not contribute to the common goal, but the other members of the group do, the individual gains the highest benefit from this situation (Ostrom, 1990). Of course, this would not be a very cooperative choice but still be considered as 'rational' (a choice that pays the most individual pay-off) by some theorists (Liebrand, 1983; Kollock, 1998). But, if every person in the group pursued their own self-interest, all members of the group would benefit way less than if everyone had worked collaboratively towards the common goal (Liebrand, 1983; Kollock, 1998). The real dilemma arises from the question if the person should do what is best for themselves in the short term by defecting from collaboration and anticipating that the rest of the group will work hard or the person

should do whatever is best for the group and trust that the rest of the group will not take advantage of their efforts (Dawes, 1980; Ostrom, 1990, Kollock, 1998).

Social dilemmas vary based on how many people are included in them. When two individuals are included, they are called dyadic or two-person dilemmas; when multiple individuals (more than two people) are included, they are called N-person dilemmas (Kollock, 1998). There has been important research in the literature to observe how people behave in social dilemmas through experiments and games. Some of the important experiments and games in the literature are prisoners' dilemma, assurance, commons dilemma, and the public good game (Kollock, 1998).

Public Good Games

The Public Good Game (PGG) is a game that allows observation of people's behavior when individual interests and group interests conflict with each other (Henrich et al., 2005). Public good games are mostly described as being non-rival and non-excludable in their essence. Non-rivalness means that all the goods or resources can be used by all the participants (Cornes & Sandler, 1996), and non-excludability implies that everyone can benefit from a resource regardless of their contribution (Kollock, 1998), meaning that the individual may decide to free-ride. We can see versions of public good games in real life as well, and a good example is given by Robyn M. Dawes and David M. Messick (2000) in their paper 'Social Dilemmas';

> Imagine that you and a group of seven casual acquaintances are having a dinner out. You all agree in advance of the meal to share the cost of the meal equally. As you examine the menu and the wine list you see a number of options that are very tempting but also that are very expensive. You realize that if you order an expensive main course and an expensive bottle of wine you will only have to pay one eighth of the cost yourself with the additional seven eighths being distributed equally among the others. This cost sharing obviously presents an opportunity for you to enjoy yourself without having to pay the full cost. When every person at the table reasons in the same manner, however, all are collectively and individually stunned by the bill. It is far more than any one of you would have guessed (p. 112).

Public good games are used in experimental research to better understand the decision-making processes in cooperation and the kind of mechanisms that may lay behind these decisions (Ledyard, 1995). There are many ways to implement the experiment through different types of manipulations. The most basic version of the game is when a group of more

than two participants comes together in a room (Ledyard, 1995). Each of them is initially given the same amount of endowment and told by the experimenter that each participant has a private account as well as a public account that they hold together with other participants. Then, they are informed that their total pay-off at the end of the simulation is dependent on their own decisions as well as the decisions of the other participants (Ledyard, 1995). The experimenter explains that once all participants make their decisions, the total amount of money collected in the public account will be multiplied by a factor greater than one to suggest and ensure that the benefit from the public account will be higher than the initial investment (Economic & Political Weekly, 2011). Then, the total amount is divided by the number of participants and added to what each participant already has in their private account, regardless of their contribution to the public account. After the explanation of the game, they are asked to decide whether they would like to allocate any or none of the money they are given to the public account (Ledyard, 1995). Each participant decides what to put in the public account simultaneously without discussing anything with the other participants, and their decisions remain anonymous. The experimenter collects the decisions on contributions and, after the calculations, distributes the total amount amongst the participants. Each participant may also learn the total amount of contributions, but they are not given any information about others' contributions. (Ledyard, 1995)

There are different theories about what to expect in public good game experiments. Economic models and theories of free-riding suggest that people will follow their self-interest, and everyone will free-ride (Fehr & Schmidt, 1999; Andreoni, 1995). They assume that humans are solely rational beings, and their decisions will not be affected by sex, age, culture, or social norms (Ockenfels & Weimann, 1999). Therefore, the motivation behind every decision is to maximize the individual pay-off, which is compatible with the competitive economic environment (Economic and Political Weekly, 2011). However, in the literature, there are many studies that show opposite results on how people cooperate in public good games (e.g., Dawes & Thaler, 1988; Bohm, 1972, Dawes, McTavish, & Shaklee, 1977). Especially in one-shot public good games, where the game is played only once, there are studies that show contribution mean around 40 to 60% among students (Henrich et al., 2005). Sociological-psychological models predict that the behavior can be affected by altruism, social norms, or group identification, and every participant will contribute something (Ledyard, 1995).

In the public good experiments one of the important reasons that an individual decides to contribute to the public account and not to free-ride is when the individual trusts that the other players will cooperate as well (Gächter, Herrmann, & Thöni,2004). We also see a

positive correlation between trust in strangers and contributions in a public goods experiment in other studies (Kocher et al., 2015).

Trust

Interpersonal factors such as trust have always been in the central role of the studies that aim to understand how a specific member of a group will behave in social dilemmas (Putnam, 1993; Scholz & Lubell, 1998). Trust has been seen as an important factor in why people contribute to public good games rather than free-riding (Gächter, Herrmann, & Thöni,2004). There are different aspects of trust. Generalized Social Trust indicates people's unconditional beliefs about the goodwill of other people (Yamagishi & Yamagishi, 1994). More specific forms of trust, which Yamagishi mentions as 'Assurance,' usually depend on people's expectations of situational, personal, or institutional factors (Yamagishi & Yamagishi, 1994). Whom we trust, and the extent of our trust can vary based on what we currently think of others and our past experiences with them (Murray, 2015). As another facet of trust, Institutional trust is about people's belief in the authority of institutions to induce trustworthy behavior in others (Irwin, 2009).

Trust is affected by individuals' general belief about others' cooperativeness and the trust that they hold for others in society (Kocher et al., 2014). For example, individuals who have higher social trust towards other people in their society tend to perform collective actions like recycling and greater tax compliance (Sampson et al., 1997; Putnam, 2000; Hammar, Jagers & Nordblom, 2009; Sønderskov, 2009). Similarly, Leonard, Croson, and de Oliveira (2010) have found that self-reported trust increases cooperative behavior. Scholz and Lubell (1998) have also found in their research on tax payments in the United States that the taxpayers will obey the rules, although they feel the temptation not to as long as they trust that others and the political leaders do their share.

The social capital theory also tries to understand how trust influences cooperative behavior between people in societies (Coleman, 1988). The aim of the theory is to explain how social institutions perform and what kind of mechanism lies behind social cohesion. It has put elements of trust or trustworthiness at its core to explain how trust has an important role in increased cooperation (Putnam, 2000).

Social capital is found to be associated with economic growth, social cohesion, and norms of civic cooperation (Knack & Keefer, 1997). Pierre Bourdieu (1986) explains social capital as "the sum total of the resources, actual or virtual, that accrue to an individual (or a group) by virtue of being enmeshed in a durable network of more or less institutionalized relationships

of mutual acquaintance and recognition (p. 248)." Putnam (2000) is mostly known for his work on social capital theory in which he explains social capital as "connections among individuals—social networks and the norms of reciprocity and trustworthiness that arise from them (p.19)."

On the other hand, Fukuyama (2001) takes a different stance and proposes that concepts of trust networks and civic society come out as an outcome of social capital and not the social capital itself. Fukuyama (2001), in his paper, explains social capital as;

> The definition I will use in this paper is: social capital is an instantiated informal norm that promotes cooperation between two or more individuals. The norms that constitute social capital can range from a norm of reciprocity between two friends, all the way up to complex and elaborately articulated doctrines like Christianity or Confucianism. They must be instantiated in an actual human relationship: the norm of reciprocity exists in potentia in my dealings with all people, but is actualized only in my dealings with my friends. By this definition, trust, networks, civil society, and the like which have been associated with social capital are all epiphenominal, arising as a result of social capital but not constituting social capital itself (p.3).

Social trust and trustworthiness seem to be important consequences of social capital. Specifically, general social trust has a critical role in having a strong civic society and democracy. Putnam (1993) says that generalized social trust is particularly important for increased cooperation and solidarity. In a society, trust and cooperation norms are established by repeated interactions among the members of the group. When there is not any information regarding a particular person available, 'general trust' plays an important role in guiding the behavior of individuals (Yamagashi et al., 1999, p.146). It can help individuals to be able to interact with other individuals outside their close circle of relationships in which they can achieve similar cooperation that exists in their closer circle (Yamagishi & Yamagishi ,1994). High 'generalized social trust' creates social capital for the communities and makes it possible for the individual to have relations outside their inner circle of friends and family (Putnam, 2000).

When the role of an external authority, such as government sanctions or regulations is incompetent and the mechanism to monitor free riders is lacking, social dilemmas may arise in these societies (Putnam, 1993). In situations like this, trust serves as a mediator to solve problems and facilitate cooperation within society, especially when communication is not possible (Putnam, 1993, 2000; Luhmann,1988; Rothstein, 2000; Ostrom, 2003). Therefore, societies with high levels of trust are not dependent on institutions as much as societies with

low levels of trust (Stephen Knack & Philip Keefer, 1997). Based on previous studies on the relationship between trust and cooperation, the first research question that is aimed to be answered is;

Q1: Do high levels of general social trust, interpersonal trust, and institutional trust influence high levels of cooperation at the public good games?

Culture: Individualism-Collectivism

The role of culture has been studied to understand if there is a correlation between culture and its impact on individuals' trust levels. As explained in the previous section, trust has an important role in fostering cooperation; therefore, we can make an assumption that culture can influence the degree of cooperation because of the amount of trust that the culture promotes (Yamagishi & Yamagishi, 1994). There are many dimensions of culture that can be used to compare different cultures. However, the individualism-collectivism dimension has been the most frequently researched.

Individualism-collectivism dimension tries to explain how integrated individuals are to the group they belong. Geert Hofstede notes characteristics of individualism as important in personal achievement and freedom, value given in individuals' own personal choices, emphasis on the individual to only take care of themselves and immediate family, and individuals being responsible for making decisions only for themselves (Hofstede, 2001). In comparison, collectivism is characterized by intense social ties and emphasis on the achievement of group goals (Hofstede, 1980). The relationship between the individual and the collective, especially the in-group, is what distinguishes the individualist culture from the collectivist one. Individuals are only expected to care for themselves and their immediate family in individualistic societies (Hofstede, 2001). Contrarily, in collectivistic societies, people are expected to allow the interests of the collective to take precedence over their own goals and remain closely connected to organizations (Hofstede, 2001). In contrast to collectivism, individualism is more concerned with one's own rights and objectives than with one's obligations to the group. According to Hofstede's approach, countries can be ranked along the individualism-collectivism dimension. For example, US and UK would be ranking high in individualism scores, whereas Japan and South Korea would be ranking low in individualism scores (Hofstede Insights, 2022).

Individualism-collectivism dimension's impact on trust has been studied across the literature. There are different views about the correlation between trust levels and the individualism-collectivism dimension. Many authors propose that trust is high in collectivistic societies and

low in individualistic societies. One can expect that because of the characteristics of collectivism, like the importance of collective goals, group harmony, and close relationship ties, collectivistic culture can promote higher trust. In a study done in the United Arab Emirates, collectivistic tendencies were found to be strongly associated with a propensity of trust (Zeffane, 2017). Lowry et al. (2009) found that individualism had a negative impact on interpersonal trust in Chinese and US participants when they were in a culturally homogenous group, whereas in heterogenous groups, individualism had a positive impact. Van Dyne et. al. (2000) found that trust and collectivism were positively correlated with each other, and in the case of individualism, the relationship was found to be negative.

However, there is also some evidence that proposes the contrary. Yamagishi and Yamagishi (1994) hypothesized that collectivistic cultures have lower general levels of trust compared to individualistic cultures. They have found that participants from the US, where the culture is considered an individualistic one, are more trusting than participants from Japan, where the culture is considered collectivistic. This may seem counterintuitive in the beginning since collectivistic cultures are characterized by intense group ties and how it is more important for an individual that the group's interests are accomplished over their own individual interests (Hofstede, 2001; Yamagishi, 1994). Nonetheless, Yamagishi proposes that trust does not develop further beyond group boundaries because of these intense group ties.

Emancipation Theory by Yamagishi and Yamagishi (1994) attributes differences in general social trust between countries to cultural variations in individualism and collectivism. They provided a proposition that is having strong and stable social relations within the immediate circle of the individual, such as friends and family, provides security; however, trust does not pass beyond these relations and stays limited within the immediate circle of the individual.

In addition to Yamagishi's studies, Hofstede (2001) has found in his research in 26 different cultures that as the country's individualism index increases, the level of trust and tolerance increases as well. Allik and Realo (2004), when analyzing the relationship between individualism-collectivism and social capital in 42 countries, have found that the countries like Finland, Norway, Sweden, Denmark, the Netherlands, Canada, and the United States, in which the highest levels of interpersonal trust existed, are characterized by high levels of individualism. In Van Hoorn's study (2015), individualism is found to be associated with a broader radius of trust, whereas collectivism is found to be associated with a narrower radius of trust.

As cross-cultural research became more prominent in the research field, a variety of individualism-collectivism measures emerged to have a better understanding of the cultures.

Triandis proposed that there are multiple kinds of individualism and collectivism, and he argued that American individualism is different from Swedish individualism; likewise, the collectivism of the Israeli kibbutz is different from Korean collectivism (Triandis, 1995; Triandis & Gelfand, 1998). Triandis and Gelfand (1998) differentiated two additional cultural patterns for individualism and collectivism based on social relationships; horizontal and vertical patterns, which focus on different beliefs/perceptions of equality/inequality among members of a culture.

Horizontal patterns emphasize the individuals who see themselves as more or less like every other self. The person with high scores on the horizontal dimension values their freedom without comparison to others and supports equality (Triandis & Gelfand, 1998). Vertical patterns consist of hierarchies, and one is different from the other selves (Triandis & Gelfand, 1998). Triandis and Gelfand (1998) elaborate by giving more specific definitions for the combined four distinct patterns; Horizontal Individualism (HI), Vertical Individualism (VI), Horizontal Collectivism (HC), and Vertical Collectivism (VC):

 More specifically, in HI, people want to be unique and distinct from groups, are likely to say "I want to do my own thing," and are highly self-reliant, but they are not especially interested in becoming distinguished or in having high status. In VI, people often want to become distinguished and acquire status, and they do this in individual competitions with others. They are likely to say "I want to be the best." In HC, people see themselves as being similar to others (e.g., one person, one vote) and emphasize common goals with others, interdependence, and sociability, but they do not submit easily to authority. In VC, people emphasize the integrity of the in-group, are willing to sacrifice their personal goals for the sake of in-group goals, and support competitions of their in-groups with out-groups. If in-group authorities want them to act in ways that benefit the in-group but are extremely distasteful to them, they submit to the will of these authorities.

As seen above, there is no unified view among researchers about how the individualism-collectivism index affects trust in individuals. The second research question will try to find answers to this problem;

Q2: Does individualistic or collectivistic culture generate more trust?

Culture and Public Good Games

In the literature, many studies have investigated how culture makes a difference in public good games. There are mixed results in previous economic experiments regarding the role of culture in contribution levels on a public good game. Brandts et al. (2000) found no

significant differences in his study on a public good game between Japan, Spain, the United States, and the Netherlands. The studies that have been done in Israel by Rapaport et al. (1995) have observed infrequent cooperation in Israeli subjects, similar to the behavior observed in American subjects. Parks and Vu (1994) proposed that culture plays a significant role in cooperative behavior when the position of the culture on the individualism-collectivism dimension is at its extreme. They found in their public good experiments that Vietnamese subjects who belonged to collectivistic culture cooperated more and American subjects who belonged to an individualistic culture cooperated less (Parks & Vu, 1994). Burlando and Hey (1997) reported a strong effect on cooperative behavior resulting from national differences between the United Kingdom and Italy. They have found British participants to be free-riding more than Italians. Another study that has been conducted by Massimo Finocchiaro Castro (2008) with Italian and British participants studied the cultural differences in contributions in a public good experiment with homogenous and heterogenous groups and found different results on free-riding behavior. All subjects contributed more to a homogenous treatment (subjects playing with the same nationality of their own) than a heterogeneous treatment (subjects playing with different nationalities than their own). Contrary to the former study, in homogenous groups, British subjects contributed more than Italian subjects. Weimann and Ockenfels (1994) have found that eastern German subjects are more selfish than western German subjects in public goods and solidarity experiments. They conclude that culture-specific norms, which are affected by opposing economic and social histories of east and west Germany, strongly influence the cooperation and solidarity behavior of the participants. Weimann (1994) found that in repeated public good games, American students are less cooperative than German students.

It is seen that there are mixed results from previous cross-cultural studies of the public good games in terms of cooperative behavior differences. This study will focus on differences between Italian and Turkish subjects in a one-shot public good game. Turkey is considered a collectivistic culture, and Italy is generally considered a moderately individualistic culture (Suh, Diener, Oishi, & Triandis, 1998; Hofstede, 1980). In the World Value Survey, when people were asked if they think most people can be trusted, 84.1 percent of Turkish participants and 71.3 percent of Italian participants answered 'Need to be very careful' (World Value Survey, 2018). Because of these differences in two countries there might be a different result for both for trust measure and the degree that participants contribute to the public good game.

The final question that will be answered in this study is:

Q3: Does a country's individualism-collectivism dimension has an impact on the contribution to the public good game via the amount of trust it generates?

METHOD

Participants. In total, 229 people participated the study (n=229); 90 of them participated in the Italian survey, and 139 participated in the Turkish survey. The valid responses were 87 from Italy and 133 from Turkey, an overall total of 220 valid responses (see Table 1).

Table 1. Demographics

	Italy (N=87)	Turkey (N=133)	Overall (N=220)
Public Good Game			
Mean (SD)	5.55 (2.96)	5.10 (2.92)	5.28 (2.94)
Median [Min, Max]	5.00 [0, 10.0]	5.00 [0, 10.0]	5.00 [0, 10.0]
Age			
Mean (SD)	29.0 (12.3)	34.7 (14.1)	32.4 (13.7)
Median [Min, Max]	24.0 [18.0, 70.0]	29.0 [18.0, 65.0]	25.0 [18.0, 70.0]
Missing	0 (0%)	4 (3.0%)	4 (1.8%)
Gender			
Male	33 (37.9%)	44 (33.1%)	77 (35.0%)
Female	54 (62.1%)	89 (66.9%)	143 (65.0%)
Education			
Mean (SD)	3.80 (1.01)	4.10 (0.991)	3.98 (1.01)
Median [Min, Max]	4.00 [2.00, 6.00]	4.00 [2.00, 8.00]	4.00 [2.00, 8.00]
Work Status			
Full time	22 (25.3%)	38 (28.6%)	60 (27.3%)
Part time	0 (0%)	7 (5.3%)	7 (3.2%)
Self employeed	11 (12.6%)	24 (18.0%)	35 (15.9%)
Student	47 (54.0%)	48 (36.1%)	95 (43.2%)
Retired	2 (2.3%)	12 (9.0%)	14 (6.4%)
No answer	5 (5.7%)	4 (3.0%)	9 (4.1%)
Income			
Mean (SD)	3.22 (1.94)	4.19 (1.86)	3.80 (1.95)
Median [Min, Max]	3.00 [1.00, 6.00]	5.00 [1.00, 6.00]	5.00 [1.00, 6.00]
Religion			
Mean (SD)	4.54 (2.57)	5.27 (1.69)	4.98 (2.11)
Median [Min, Max]	6.00 [1.00, 7.00]	6.00 [2.00, 7.00]	6.00 [1.00, 7.00]
Missing	0 (0%)	4 (3.0%)	4 (1.8%)

The mean age of the total sample was 32.4 with an *SD* of 13.7; the mean age of the Italian sample was 29.0 with an *SD* of 12.3, and the mean age of the Turkish sample was 34.7 with an *SD* of 14.1. The youngest participant in both samples was 18 years old; the oldest participant was 70 and 65 in the Italian and Turkish samples, respectively. In total, 65 % of the participants were female, and 35% were male; 62.1% were female, 37.9% were male in the Italian sample, and 66.9 % were female and 33.1% male in the Turkish sample. All the participants were asked to complete a questionnaire created through Qualtrics. Turkish participants received the questionnaires in Turkish and Italian participants received the questionnaires in Italian. Ethical principles were respected following the Declaration of Helsinki, and all participants gave informed consent.

Materials and procedure. Online data collection took place between the 10th of November and the 30th of December 2022. After participants gave their informed consent for the study, they were introduced to an online single-shot public good game followed by a questionnaire. The data was collected anonymously.

In the single-shot public good game, the participants were asked to imagine having 10 Euro/TL and decide how much they would distribute between private and public accounts. They were told that they would be playing with a group of 5 participants, including them and the other four had already made their decisions. The money collected in the public good account was said to be multiplied by three and divided and distributed evenly among 5 participants regardless of individual contributions. To motivate and ensure a more real-life-like situation, at the beginning of the study, the participants were told that after playing the game, some would be chosen randomly and have the chance to win the money they gained during the game. After the public good game, participants' general trust, interpersonal trust, institutional trust, and individualism/collectivism index were measured. Finally, some demographics (i.e., age, gender, and education) were assessed. Completion of the questionnaire took around 10 minutes.

Public Good Game. The game was distributed and played anonymously only one time, online. Unlike a regular public good game, the participants did not play actively with a group of other participants. The final pay-off amount each participant was going to make was fixed before the experiment took place, and it was the same for every participant. However, to prevent laboratory effects, the participants were told that they would play with a group of 5 participants, and the other 4 participants had already contributed with their decisions. Then, how their total pay-off would be calculated was explained (their contribution added to the rest of the group's contribution multiplied by three and divided by 5). They were told that their

final pay-off depended on their decisions and other participants' decisions. They were asked to imagine having 10 Euro/TL and requested to allocate any amount from 0 to 10 Euro/TL to the public account. After their decision, they were asked to complete the surveys while being told that a calculation was taking place, and they learned about their total pay-off at the end of the study (which was the same number for everyone).

General Trust. Participants' General Trust towards most people was assessed with three questions taken from the European Social Survey, Round 3 (2006), the core module for trust. They were asked to report if they 'generally find most people to be trusted,' if they think that 'most people would try to take advantage of them,' and finally, if they think 'most of the time people try to be helpful or if they are primarily looking out for themselves.' Participants provided their ratings on an 11-point scale ranging from 0 (*You can't be too careful/ Most people would try to take advantage of me/ People mostly look out for themselves*) to 10 (*Most people can be trusted/ Most people would try to be fair/ People mostly try to be helpful)*. Aggregate Cronbach's alfa was found to be 0.72.

Interpersonal Trust 1. Module B from OECD guidelines was used to measure participants' interpersonal trust. The first four questions, taken from the German Socio-Economic Panel (Naef & Schupp, 2009), are used to capture Interpersonal Trust and caution in dealing with others. Participants were asked to what extent they agreed or disagreed with the following statements; 'In general, you can trust people,' 'Nowadays, you can't rely on anybody,' 'How much do you trust strangers you meet for the first time,' 'When dealing with strangers, it's better to be cautious before trusting them.' They reported their answers on a 4-point scale from 1(*Disagree strongly*) to 4 (*Agree strongly*).Aggregate Cronbach's alfa was found to be 0.68.

Yes or No Interpersonal Trust. Two additional questions from Module C from OECD guidelines (Gallup World Poll) were added. Participants were asked about their expectations as to what would happen if they lost their wallet or something holding their identification or address and it was found by someone else. Participants answered "*yes*" or "*no*" depending on if they thought their wallet would be returned to them if it were found by a neighbor or a stranger. 60% of the Italian sample answered "*yes*" to both of the questions, whereas 55% of the Turkish sample answered "*yes*" to both questions.

Interpersonal Trust 2. The next three questions focused more on whom the participant trusts. This part is derived from the World Values Survey, adjusted into line with the 0-10 scale in Module B from OECD Guideline. Participants reported how much they trust their 'family,' 'people in their neighborhood,' 'people they work or go to school with,' and 'strangers' on an

11-point scale ranging from 0 (*not at all*) to 10 (*completely*). Aggregate Cronbach's alfa was found to be 0.68.

Institutional Trust. Whether participants trusted various institutions in their countries was assessed through 10 questions derived from the World Values Survey and Wave 6 of the European Social Survey in Module B from the OECD Guideline. Participants were asked to report how much they trust on an 11-point scale ranging from 0 (*not at all*) to 10 (*completely*) for the following institutions: 'The Country's Parliament,' 'The courts', 'Political parties', 'Politicians,' 'The police,' 'The Armed Forces,' 'The Civil Service,' 'The Media,' 'The Banks,' and 'Major Companies.' Aggregate Cronbach's alfa was found to be 0.92.

Individualism/collectivism: Measurement of Horizontal and Vertical Individualism and Collectivism by Triandis, H. C. & Gelfland, M. J. (1998) was used to assess individualism-collectivism. The measurement consists of two dimensions of individualism and collectivism: Vertical and Horizontal. Therefore, there are four constructs that focus on different aspects of individualism and collectivism to evaluate cultural patterns. Specifically: i) *Horizontal Individualism* dimension assesses whether individuals consider themselves fully autonomous and believe that equality between individuals is the ideal (α= 0.92); ii) *Vertical Individualism* dimension assesses if the individuals consider themselves fully autonomous but recognize that inequality will exist among individuals and that accepting this inequality (α= 0.72); iii) *Horizontal Collectivism* dimension assesses whether the individuals see themselves as part of a collective but perceive all the members as equal (α= 0.92); iv) *Vertical Collectivism* dimension assesses if the individuals see themselves as a part of a collective and are willing to accept hierarchy and inequality within that collective (α=0.82). Participants answered a total of 16 items, with each structure having four items, on a 9-point scale, ranging from 1 (never) to 9 (always).

RESULTS

Descriptive Statistics. The overall mean of the contribution to the public-good game was not different in the two countries. Even though the mean of the Italian sample was slightly higher than the Turkish sample, Participants in both groups behaved similarly by contributing approximately half of their endowment to the public account. This might be the result of the single-shot public good game. In the literature, it has been observed consistently that when the game is played only once, the mean contribution is around half of the given endowment (Dawes & Thaler, 1988).

Table 2. Descriptive Statistics

	Italy (N=87)	Turkey (N=133)	Overall (N=220)
Public Good Game			
Mean (SD)	5.55 (2.96)	5.10 (2.92)	5.28 (2.94)
Median [Min, Max]	5.00 [0, 10.0]	5.00 [0, 10.0]	5.00 [0, 10.0]
General Trust			
Mean (SD)	5.74 (1.73)	4.94 (1.81)	5.25 (1.82)
Median [Min, Max]	6.00 [1.67, 9.00]	5.00 [1.00, 8.67]	5.33 [1.00, 9.00]
Interpersonal Trust 1			
Mean (SD)	2.35 (0.471)	1.98 (0.510)	2.12 (0.527)
Median [Min, Max]	2.50 [1.25, 3.25]	2.00 [1.00, 3.50]	2.00 [1.00, 3.50]
Interpersonal Trust yes-no			
Mean (SD)	0.603 (0.351)	0.556 (0.286)	0.575 (0.313)
Median [Min, Max]	0.500 [0, 1.00]	0.500 [0, 1.00]	0.500 [0, 1.00]
Interpersonal Trust 2			
Mean (SD)	6.93 (1.39)	6.67 (1.69)	6.77 (1.58)
Median [Min, Max]	7.00 [3.00, 9.50]	6.75 [1.00, 10.0]	7.00 [1.00, 10.0]
Institutional Trust			
Mean (SD)	4.80 (1.56)	3.10 (1.62)	3.77 (1.80)
Median [Min, Max]	5.00 [1.30, 9.00]	2.90 [1.00, 7.50]	3.80 [1.00, 9.00]
HI			
Mean (SD)	6.97 (1.26)	2.72 (1.37)	4.40 (2.46)
Median [Min, Max]	7.00 [3.50, 9.00]	2.50 [1.00, 7.25]	3.88 [1.00, 9.00]
VI			
Mean (SD)	4.55 (1.85)	4.57 (1.65)	4.57 (1.73)
Median [Min, Max]	4.50 [1.00, 9.00]	4.50 [1.00, 8.00]	4.50 [1.00, 9.00]
HC			
Mean (SD)	6.78 (1.44)	2.62 (1.28)	4.26 (2.44)
Median [Min, Max]	6.75 [3.50, 9.00]	2.25 [1.00, 7.25]	3.75 [1.00, 9.00]
VC			
Mean (SD)	6.22 (1.58)	3.37 (1.60)	4.50 (2.12)
Median [Min, Max]	6.50 [2.25, 9.00]	3.00 [1.00, 7.25]	4.50 [1.00, 9.00]

In Table 2, we can see that average trust levels on all trust measures were higher in the Italian sample. In both samples, participants show an average level of General Trust. Both Turkish and Italian participants seem to have higher trust in their interpersonal circle and lower trust in institutions in their countries. Turkey's score of 37 is a collectivistic society on Hofstede's Individualism-Collectivism Index, whereas Italy is described as an individualistic society with a score of 76 (Hofstede Insights, 2022). Hence, Turkey was expected to display more collectivistic characteristics. The surprising finding was the higher collectivism levels both for Horizontal and Vertical Collectivism in the Italian sample compared to the Turkish

sample. In the results, Turkish samples did not show any particular inclination to any of the cultural dimensions except the Vertical Individualism dimension.

Correlations

In both samples separately and in the overall correlation analysis, General Trust was found to be significantly positively correlated to Public Good Game contribution. The General Trust has significant moderate positive correlations with Interpersonal Trust 1, Interpersonal Trust 2, and Institutional Trust. Countries displayed different correlations between Trust scores and Individualism-Collectivism indexes. In the Italian sample, HI and VI had a significant weak negative correlation to General Trust. However, in the Turkish sample, HI was not significantly correlated to General Trust, and VI had a significant weak positive correlation to General Trust. In the Turkish sample, HC was only positively correlated with Institutional Trust, whereas, in the Italian sample, HC had a significant positive correlation with General Trust, Interpersonal Trust 1, 2, and no significant correlation with Institutional Trust.

Table 3. Correlations Between Trust Measures, Culture, Demographics, and Country.

Turkey \ Italy	pgg	general trust	i trust 1	i trust 2	trust inst	HI	VI	HC	VC	age	education	income	religion
pgg	-	0,23*	0,17	0,06	-0,03	-0,07	-0,18	0,03	-0,14	-0,1	-0,12	-0,12	0.23*
general trust	0.25**	-	0.55***	0.39***	0.48***	-0,26*	-0,24*	0,23*	-0,15	0,1	0,19	-0,16	0,22*
i trust 1	0.2*	0.67***	-	0.36***	0,2	-0.4***	-0,26*	0,29**	-0,09	0,14	0,28**	-0,13	0,18
i trust 2	0.26**	0.55***	0.46***	-	0,39***	-0,01	-0,12	0,23*	0,1	0,14	0,23*	0,13	0,08
trust inst	0,1	0.31***	0,22	0,26**	-	-0,11	0,06	0,12	-0,1	-0,01	0,31**	0,13	0,05
HI	0,11	0,15	0,11	0,13	0,21*	-	0,24*	0	0,19	0,05	-0,05	0,24*	-0,06
VI	0,08	0,18*	0,14	0,19*	-0,06	0,22*	-	-0,1	0,14	-0,12	-0,06	0,22*	-0,04
HC	-0,05	-0,13	0,01	-0,11	0,19*	0,11	0,13	-	0,4***	0,05	0,12	-0,07	0,04
VC	0,09	0,08	0,06	-0,1	0	-0,03	0,23**	0,47***	-	0,18	0,01	-0,05	-0,35***
age	0	0,16	0,17	0,24**	0,09	0,01	0,04	0,11	-0,14	-	0,42***	0,11	-0,04
education	0,06	0	0,05	0,02	-0,02	-0,2*	-0,03	0,04	-0,02	0,37***	-	0,05	0,09
income	-0,06	-0,02	0,06	0,05	0,17	0,08	-0,03	0,07	-0,12	0,18*	0,03	-	-0,01
religion	0,01	0,11	0,09	-0,02	0,18*	-0,14	0,17	0,03	0,3***	-0,16	0,03	-0,01	-

*Note: *p <.05, **p <.01, ***p <.001*

Regression Models

A multiple linear regression was used to test whether the Country, General, Interpersonal, and Institutional Trust significantly predicted the Public Good Game contribution. The overall regression was statistically significant ($R2 = 0.074$, $F (5, 214) = 3.45$, $p = 0.005$). The results shown in Table 4 revealed that only General Trust significantly impacted the contribution of the Public Good Game ($\beta = 0.31$, $p = 0.04$).

Table 4. Multiple Linear Regression Model of Pubic Good Game and Country, General Trust, Interpersonal Trust 1, Interpersonal Trust 2, and Institutional Trust.

Residuals:

Min	1Q	Median	3Q	Max
-5,93	-1,97	-0,39	1,98	6,52

Coefficients:

	Estimate	Std.Error	t value	Pr(>|t|)
(Intercept)	2,44	1,15	2,13	0.03*
CountryTurkey	-0,24	0,47	-0,50	0,62
General Trust	0,32	0,15	2,06	0.04*
Interpersonal Trust 2	0,17	0,15	1,18	0,24
Interpersonal Trust 1	0,26	0,51	0,51	0,61
Institutional Trust	-0,10	0,13	-0,78	0,44

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 2.8603 on 214 degrees of freedom

Multiple R-squared: 0.074687, Adjusted R-squared: 0.053067

F-statistic: 3.4546 on 5 and 214 DF, p-value: 0.0050484

Then, another multiple regression was made with trust measures with the addition of demographics (age, gender, education, income, and religion) as independent variables. The overall regression was statistically significant ($R2 = 0,097$, $F (10, 201) = 2.15$, $p = 0.02$). Again, in Table 5, it can be seen that only General Trust was found as a significant predictor for contribution ($\beta = 0.33$, $p = 0.03$).

Table 5. Multiple Linear Regression Model of Pubic Good Game and Country, General Trust, Interpersonal Trust 1, Interpersonal Trust 2, Institutional Trust and Demographics

Residuals:

Min	1Q	Median	3Q	Max
-5,68	-2,07	-0,39	1,77	6,70

Coefficients:

	Estimate	Std.Error	t value	Pr(>|t|)
(Intercept)	3,33	1,41	2,36	0.02*
CountryTurkey	-0,09	0,51	-0,18	0,86
General Trust	0,34	0,16	2,08	0.04*
Interpersonal Trust 2	0,13	0,16	0,79	0,43
Interpersonal Trust 1	0,34	0,53	0,65	0,52
Institutional Trust	-0,15	0,15	-1,05	0,30
Age	-0,02	0,02	-1,04	0,30
Gender	-0,65	0,44	-1,46	0,15
Education	-0,01	0,22	-0,04	0,96
Income	-0,06	0,11	-0,50	0,62
Religion	0,11	0,10	1,08	0,28

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 2.8567 on 201 degrees of freedom
 (8 observations deleted due to missingness)
Multiple R-squared: 0.097008, Adjusted R-squared: 0.052083
F-statistic: 2.1593 on 10 and 201 DF, p-value: 0.021708

Subsequently, a single regression model was made to see the Country's effect on General Trust. The Country where the participant was from is a significant predictor of General Trust (β =-0.79, p = 0.001).

Table 6. Single Linear Regression Model General Trust and Country

Residuals:

Min	1Q	Median	3Q	Max
-4,07	-1,12	0,06	1,30	3,73

Coefficients:

	Estimate	Std.Error	t value	Pr(>|t|)
(Intercept)	5,74	0,19	30,05	0.00***
CountryTurkey	-0,80	0,25	-3,25	0.00**

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 1.7806 on 218 degrees of freedom
Multiple R-squared: 0.04625, Adjusted R-squared: 0.041875
F-statistic: 10.572 on 1 and 218 DF, p-value: 0.0013306

Another multiple regression was run to test the impact of Individualism-Collectivism on General Trust. In multiple linear regression, Country, overall HC, VC, HI, VI, country-

specific HC, VC, HI, VI, and demographic variables were used to test if they significantly predicted General Trust. The overall regression was statistically significant ($R2 = 0.22$, $F (14, 197) = 4.02$, $p = 0.00$). The most important predictor for General trust was the Country-specific HC ($\beta = -0.71$, $p = 0.0003$). Country-specific VC ($\beta = 0.42$, $p = 0.02$) and Country-specific HI ($\beta = 0.50$, $p = 0.008$) also significantly predicted General Trust.

Table 7. Multiple Linear Regression Model of Pubic Good Game and Country, General Trust, Interpersonal Trust 1, Interpersonal Trust 2, Institutional Trust, Education, Income and Religion

Residuals:

Min	1Q	Median	3Q	Max
-4,38	-0,96	0,10	1,30	3,76

Coefficients:

	Estimate	Std.Error	t value	Pr(>|t|)
(Intercept)	5,86	1,47	3,99	0.00***
CountryTurkey	-3,51	1,52	-2,31	0.02*
HC	0,33	0,14	2,34	0.02*
VC	-0,21	0,14	-1,53	0,13
HI	-0,26	0,15	-1,73	0,09
VI	-0,10	0,10	-0,95	0,34
Age	0,02	0,01	2,35	0.02*
Gender	0,02	0,26	0,06	0,95
Education	0,04	0,13	0,34	0,73
Income	-0,03	0,06	-0,53	0,60
Religion	0,10	0,06	1,68	0.1.
CountryTurkey:HC	-0,71	0,20	-3,60	0.00***
CountryTurkey:VC	0,43	0,18	2,33	0.02*
CountryTurkey:HI	0,50	0,19	2,64	0.01**
CountryTurkey:VI	0,27	0,14	1,88	0.06.

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 1.6658 on 197 degrees of freedom
 (8 observations deleted due to missingness)
Multiple R-squared: 0.2222,   Adjusted R-squared: 0.16693
F-statistic: 4.02 on 14 and 197 DF, p-value: 0.0000041962

In the slope analysis, we can see in Figure 1 that the HC had a different relationship with General Trust depending on the Country. When the HC was high in Turkey, the General Trust levels decreased. However, in Italy, General Trust increased when the HC was high. Therefore, the participant who scored high on the HC in Turkey had lower levels of General Trust, whereas Italian participants who scored high on the HC had higher levels of General Trust.

Figure 1. General Trust and Horizontal Collectivism.
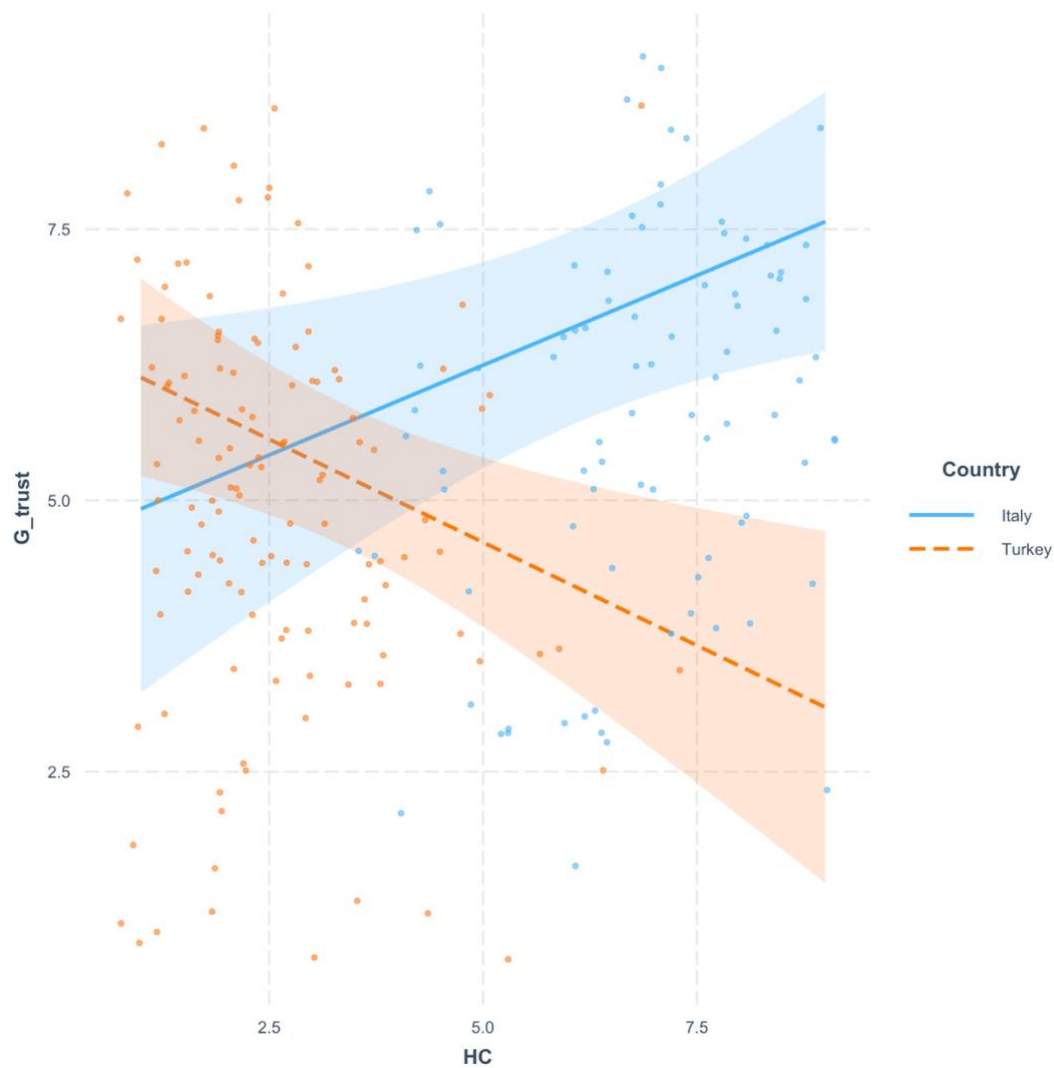
In the other slope analysis for VC, HI, and General Trust, there were opposite patterns between Turkey and Italy. Nevertheless, they were not as significant as the differences in the previous slope analysis.

Mediation Analysis

Since the correlation between Country and Public Good Game is weak, the relationship between Country and Public Good Game contribution is much better explained by General Trust, and therefore, there is an indirect effect despite the lack of a direct effect.

Table 8. Public Good Game, General Trust, and Country.

Regressions:

	Estimate	Std.Err	z-value	P(>|z|)
Public Good_Game				
General trust (b)	0.401	0.108	3.722	0.000
Country (c)	-0.133	0.400	-0.333	0.739
General Trust				
Country (a)	-0.798	0.244	-3.266	0.001

Variances:

	Estimate	Std.Err	z-value	P(>|z|)
Public Good Game	8.045	0.767	10.488	0.000
General Trust	3.142	0.300	10.488	0.000

R-Square:

	Estimate
Public Good Game.	0.065
General Trust	0.046

Defined Parameters:

	Estimate	Std.Err	z-value	P(>|z|)
ind	-0.321	0.131	-2.455	0.014
total	-0.454	0.403	-1.126	0.260

Figure 2. Public Good Game, General Trust, and Country.
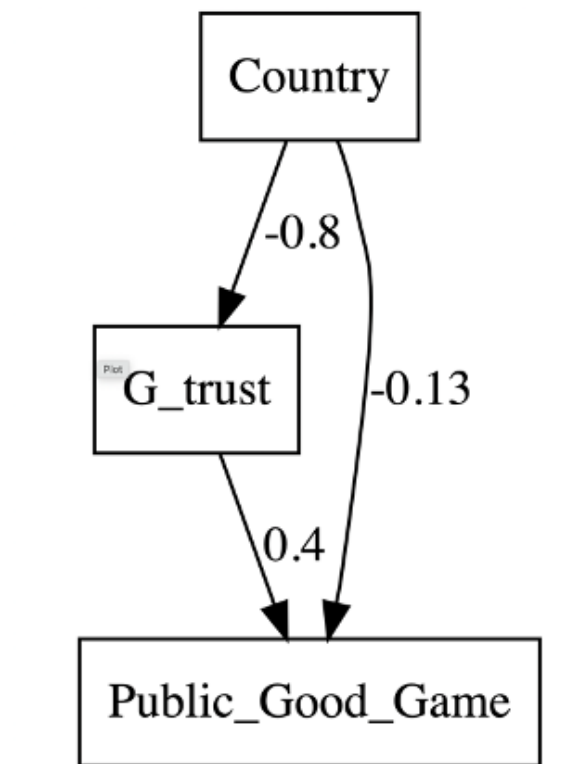
DISCUSSION AND CONCLUSION

One of the surprising findings is that collectivism in the Italian sample was higher than in the Turkish sample. Given their stance on the Individualism dimension of Hofstede's measures (Hofstede Insights, 2022), Italy appears to be higher on the individualism scale with a score of 76 and Turkey as 37. This might be partly explained by the Turkish participants coming from similar backgrounds such as coming from urban cities and not really representing the whole culture. Another explanation might be that some authors in the literature have also previously found that the Turkish culture might not be placed distinctively on one side of the individualism-collectivism dichotomy (Görgenli, 1997); the Turkish culture in this study was displaying a mixture of collectivistic and individualistic characteristics. And even the Horizontal Collectivism (HC) dimension seemed similar in both samples, the impact on General Trust was in the opposite direction. The Italian sample's General Trust increased as they scored higher on the HC dimension, and the Turkish sample's General Trust decreased as they scored higher on the HC dimension.

Overall, General Trust was the most critical variable affecting the Public Good Game contribution, which answered our first research question partly: "Do high levels of General Social Trust, Interpersonal trust, and Institutional trust influence high levels of cooperation at the Public Good Games?". The effect of General Trust was also more substantial than any other type of trust measured in the study. In fact, all other trust measures were found to be significantly correlated with General Trust. The second question regarding the effect of countries' individualism-collectivism dimensions on General Trust was not completely answered since the results indicated mixed and contrasting trends between countries. The Country's effect on General Trust was significant, but it had no significant impact on the contribution to the Public Good Game.

One of the limitations of this study might be considered as the relatively small sample, not representing both cultures thoroughly. For example, most of the data from the Turkish sample came from big cities like Istanbul (65 % of the participants were residents of Istanbul). Another limitation of this study can be considered as the medium that the game was played in; the game was distributed through a link on various channels using the internet, and the players were not able to ask any questions, or it wasn't clear how much they understood how the game was run amongst other participants that were told to be contributing to the game. One other limitation might be seen as the currency difference between Italy and Turkey. Both samples worked with a value of 10 Euros and 10 TL, but at the time played, 1 Euro was

around 20TL, which might have had an impact on the Turkish participants as playing with a seemingly very disposable amount (0.5 Euro), leading them not to take it seriously enough to put a meaningful value to the amount of money they are allocating to the public account. Despite the limitation of the study, the analysis confirmed the first research question; specifically, General Trust has a relationship with the contribution in Public Good Games.

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