
Erasmus University Rotterdam

Erasmus School of Economics

Master thesis submitted to obtain the degree of
Master of Science in Economics and Business, with a specialization in Behavioural Economics

Investigating The Impact of Nonviolent Communication on Cooperation

Name student: Chiara Lo Valvo

Student ID number: 604963

Supervisor: Chen Li

Second assessor: Peter P. Wakker

Date final version:

Abstract

This master thesis investigates the impact of nonviolent communication and empathy on the cooperative behaviour of people in a Public Good Game setting. Previous research has shown that communication, in social dilemma settings, stimulates cooperation among participants, including in Public Good Game contexts. My research adds onto the existing literature the implementation of nonviolent communication style. That is, my thesis aims at answering whether nonviolent communication style can further increase cooperation among people. We adopted an online economic experiment in which participants were randomly divided into two groups, based on which they received either a nonviolent communication message or a friendly message, and analysed whether this leads behavioral differences between the two groups.

The results show that (1) nonviolent communication leads to a higher level of cooperation, compared to the other group, and that (2) empathy also plays a role in the cooperative inclination of individuals.

Keywords: nonviolent communication, cooperation, online social dilemma experiment.

*To my Supervisor, **Chen Li**, for whom I feel deep esteem and to whom I am immensely grateful. For showing me the tools on this path of growth, and for supporting me with her words and affection during difficult moments of this journey. Words that I will keep in my heart.*

*To my Professor **Sebastiano Bavetta**, who introduced me to Behavioral Economics, believed in my qualities and in what I could achieve.*

*To my mother, **Caterina**, and my father, **Valerio**, who always encouraged me and taught me every weakness is a starting point to become stronger. You believed in me before I did, and supported me in this extraordinary life accomplishment.*

*To my precious sister **Margherita**, for your endless kindness. To always accompanied me in every little step of my growth and cared for me with your boundless love.*

*To my best friend and boyfriend **Riccardo**, for your presence, patience, love, and for remembering me that the ultimate goal is where one draws the strength to move forward.*

To those who were with me from day one until the end.

*To **Thijmen, Tijn, Linde, Sara, Cor, Nicolas, Ioana, Maria Paula, Roberta, Sandra and Julia**, who have been my family here in the Netherland, and have enriched my heart with unforgettable moments.*

*To my friends **Nicolò, Aspasia, and Eftychia**, for your affection, gratitude, and altruism.*

*To **Arianna and Margherita**, for your support and generosity. For showing me your ambition to aim higher. And to **Ginevra**, who remembered me that there is always a ray of sun that must be lived.*

Table of Contents

Table of Contents	4
Introduction	5
1. Literature Review	8
1.1 The value of Communication	8
1.2 Nonviolent Communication	10
1.3 Implementation of Nonviolent Communication	12
1.4 Communication and Cooperation	14
2. Methods	19
2.1 Treatment	20
2.2 Empathy and Altruism	23
2.3 Sample	26
3. Results	28
3.1 Treated and Control group	28
3.2 Treatment analysis	31
3.3 Empathy statistical analysis	33
3.4 Altruism statistical analysis	35
4. Discussion and Limitations	38
5. Conclusion	41
References	42
Appendix A. Survey	52
Appendix B. Descriptive statistics	57
Appendix C. Tabulation of variables	57

Introduction

The functional coexistence of communication and cooperation is undeniable, whether it is among family members, friends, colleagues, between you and your employer, or, broadly, between companies. Throughout this master thesis, we want to take a step further, and enrich the current literature, about the potentiality of nonviolent communication on cooperation. To do so, we implement the nonviolent communication style (*Rosenberg, 2002*) in a mixed-motives dilemma setting. We conducted an online economic experiment where respondents were randomly assigned to a treatment by which they received in the pre-game phase a written message that was based on the nonviolent communication style. We assumed that this had an impact on people's level of cooperation, compared to the control group who did not receive the nonviolent communication structure. Before getting into the core of this thesis, we provide a background of this project.

A wide variety of studies available supports the positive relationship between communication, both verbal and written, and cooperation, as communication leads to a higher level of cooperation among individuals (*Miller, Butts, & Rode, 2002*). Miller, Butts, & Rode (2002) found, through a Prisoner's dilemma experiment, that communication is an impactful factor that allows cooperation to emerge. Research has shown that individuals are more inclined to cooperate if they are given the opportunity to interact first before making a choice, compared to a no-communication setting (*Jensen et al., 2000*). Communication is broad in its meaning; thus, in this thesis project we narrow the scope to the communication style. Alongside social evolution, there has been the development of different communicative styles that are consistent with the cultural background of individuals (*Gächter, Herrmann, & Thöni, 2010*). Communication styles refer to the linguistic style by which people choose to express themselves and relate to others, and this reveals personal aspects of individuals, regardless of their native language (*de Vries, R. E., Bakker-Pieper, A., Konings, F. E., & Schouten, B., 2013*).

In this master's thesis, we work with the communication model proposed by Marshall Rosenberg, "Nonviolent Communication" (NVC). The author's goal is to provide a linguistic framework, based on empathy and compassion, that allows individuals to relate to one another, avoiding the emergence of judgmental attitudes. This communicative method is fundamental for current and future generations, as it would promote human ties that foster healthy and collaborative communication and, above all, can be a starting point, and strength, for the progress of humanity (*Rosenberg, 2002*). Over the years, generations have witnessed many selfish attitudes, aimed at satisfying and fulfilling a personal desire or need (*Yu, 2011*). A layer of selfishness is intrinsic to the individual and, very often, is a symptom of a defence mechanism (*Caporael, L. R., Dawes, R. M., Orbell, J. M., & Van de Kragt, A. J., 1989*). However, nonviolent communication may prevent the

emergence of dysfunctional and unhealthy relationships, potentially based on opportunism (Rosenberg, 2002).

In general, nonviolent communication could be identified as a model of self-expression, that aims to create authentic connections. One fundamental assumption is the presence of compassion in all human beings, who are bearers of basic needs; these internal factors belong to every human being, regardless of social environment or cultural heritage (Rosenberg, 2002). In social interactions, where each party tries to assert the right to its own needs and interests, conflicts may often arise. We are responsible for *how* we listen to *what* others say, and vice versa. This communication style is characterised by four components: observation, feelings, need, request. On the basis of each of these components, the interlocutor formulates his speech, which is, however, free of tones or terms that may be offensive or harmful. In this way, the openness of individuals is stimulated to find a common ground characterised by all common needs and feelings. However, so far, there are no studies that have implemented NVC in the context of mixed-motive dilemmas settings.

To measure how much NVC influences the willingness to cooperate, we conducted an online economic experiment, a mixed-motives dilemma game, and analysed the attitude of subjects to cooperate. Thus, we studied whether NVC can, indeed, stimulate higher levels of cooperation, and whether other aspects, such as empathy, altruism and cultural differences, affect this. In this thesis, we refer to “cooperation” as the inclination of the participant in transferring the endowment in benefits of the counterpart and themselves. Further explanations will be presented throughout the thesis.

The relevance of this research answers the need to make social interactions healthier and respectful. In our generation, globalisation is marked and cultural distances, in its broader meaning, have been shortened (Suarez-Orozco, M., & Qin-Hilliard, D. B. (Eds.), 2004), it is necessary to build a harmless communication channel, through which everyone can express their needs, without these being detrimental to each other. Moreover, thinking also of contexts closer to us, such as family, school and work contexts, the mastery of the nonviolent communication style can facilitate and improve social relationships. This can lead to beneficial outcomes, greater cooperation, compassion and empathy, which result in greater cooperation and respect between individuals (Rosenberg, 2002).

We face several challenging global problems, such as the fight in favour of sustainable energies, several attempts in order to control and limit climate change, or the need to conclude international deals, whether for social, economic or political purposes. Thus, we can wish for more cooperation among organizations, or companies, to fasten the transition to sustainable and ecological systems, and to achieve the most efficient deals. These types of social problems could be better dealt with a higher level of cooperation, among the involved parties, which have substantial impact in the

economic and environmental sector (*Paulo, S., 2014*). Moreover, cooperation can enhance economic growth, such as lower costs, research and development, better partners synergy, and perhaps, by reducing global poverty. In the bureaucratic domain, one could strive for improving organisational collaboration, less harmful competition or better conflict management (*Askari, M., Noah, S. B. M., Hassan, S. A. B., & Baba, M. B., 2012*), and peace treaties, all around the world (*Hoffmann, J., 2014*)

Although we found through this thesis project evidence that nonviolent communication has influence on the cooperative behaviour of individuals, as in any research projects, we were confronted with limitations. First of all, lack of resources and time scale. Furthermore, we are aware that individuals relate and judge each other differently depending on whether the interaction took place via a screen or face-to-face (*Okdie, B. M., Guadagno, R. E., Bernieri, F. J., Geers, A. L., & Mclarney-Vesotski, A. R., 2011*). The limitation of knowledge background regarding the topics, as they are vast, affected the performance of this thesis.

Through the following chapters we cover the literature review (section 1), introducing the three main topics of this thesis, i.e. the value of communication, nonviolent communication, the implementation of nonviolent communication and, finally, the joint forces of communication and cooperation. Further on, we introduce the methods (section 2), with related treatment, variables and sample analysis. Finally, we present the results of treatment and the variables of our model (section 3) and draw conclusions and outline limitations (section 4).

1. Literature Review

The aim of this literature review is to offer a detailed analysis of the concept of communication style, and how we communicate is strictly related with internal values and personality traits, the relevance of communication trainings, as this thesis tries to encourage higher sensitivity to the communication style, and a deepened analysis about the factors that lead cooperation to arise in social interactions. All the information provided is meant to build a scenario in which this thesis offers a distinctive approach, with the aim to enrich the literature.

1.1 The value of Communication

Communication has facilitated the development of social life, the expansion of social units, and organised systems of mutual dependency, worldwide (Cherry C., 1966). It is the bridge that allows people to interact, it is the flow of sharing thoughts, ideas, feelings, and emotions.

In 1966, Colin Cherry described “communication” as a social fair, as humans developed a series of communication systems to make life evolution possible. We assume that there is a difference between one's native language and the way one expresses it. In fact, regardless of one's mother tongue, what is distinctive is the way people articulate and formulate their thoughts, and we refer to the concept of communication styles. Alongside human evolution, there has been the evolution of different communication styles. De Vries, R.E., Bakker-Pieper, A., Alting Siberg, R., Van Gameren, K. & Vlug, M., p.2, (2009), defined “communication style” as “*the characteristic way a person sends verbal, paraverbal, and nonverbal signals in social interactions denoting (a) who he or she is or wants to (appear to) be, (b) how he or she tends to relate to people with whom he or she interacts and (c) in what his or her messages should usually be interpreted.*”. This master’s thesis focuses on interpersonal communication behaviours, as this above-quoted definition does. De Vries, R.E., Bakker-Pieper, A., Alting Siberg, R., Van Gameren, K. & Vlug, M., (2009), precise that their definition of communication, puts attention on the lexical content of the message, and not on its interpretation itself as Norton (1983) and Gudykunst et al., (1996) do.

Throughout the years, the need to build a tool that would allow us to compare these different communication styles has arisen and, thus, different scales have been published to obtain a “communication measure”. The pioneer has been Norton (1978) with his Communication Style Measure (CSM), and later on, Burgoon and Hale (1987) proposed the Relational Communication Scale (RCS). Both scales narrow the attention on the tone, but present different benchmarks: CSM distinguishes *friendly* (non-directive communicative) from *dominance* (directive communicative) communications, meanwhile, RCS distinguishes: “(1) dominance-submission, (2) emotional arousal, (3) composure-noncomposure, (4) similarity-dissimilarity, (5) formality-informality, (6) task vs. social orientation, (7) intimacy and subcomponents of intimacy, (8) depth (or familiarity), (9)

affection (attraction and liking), (10) inclusion-exclusion, (11) trust, and (12) intensity of involvement” (*Burgoon & Hale, p.19, 1987*). By adopting a functional perspective, “communication measure” provides a useful way to comprehend communication in wider contexts, either professional or friendly/intimate. Intuitively, the communication style used to relate to a family member might differ when relating to a professional interlocutor, or in a delicate dialogue between young people and adults (*De Vries, R.E., Bakker-Pieper, A., Alting Siberg, R., Van Gameren, K. & Vlug, M., 2009*).

Later, de Vries, R. E., Bakker-Pieper, A., Konings, F. E., & Schouten, B., (2013) developed the Communication Styles Inventory (CSI). The authors conducted a lexical study, by investigating adjectives and verbs that describe communication styles, assuming that language is a reflection of how people communicate and that it can provide insight into the nuances of communication. It implies that by examining language, we can gain a deeper understanding of how people interact and convey meaning.

Related to this, it is crucial to highlight that there exists a connection between cultural orientation and communication style (*Honeycutt, 1993*). This connection is linked to two primary functions of communication: the first one is *functional*, and aims at reducing uncertainty among speakers, while the other is *relational*, with the aim of fostering connections (*Honeycutt, 1993*); we acknowledged that culture influences individuals' preferences for *functional* versus *relational* modes of communication and the exchange of information is deeply connected to their self-perception (*Pekerti, A. A., & Thomas, D. C., 2003*). In addition to that, Pekerti, A. A., & Thomas, D. C., (2003), emphasised how *task-oriented* communication adopts a *functional* approach and prioritises the achievement of specific goals. In “Communication in intercultural interaction: An empirical investigation of idiocentric and socio-centric communication styles”, the authors concluded that the manner in which we share ideas and information is connected to each own self-perception and the nature of our relationships with others (*Pekerti, A. A., & Thomas, D. C., 2003*). Moreover, one of the reasons why each of us develops different self-concepts is derived from the interpretive approach of external information, that is in line with internalised cultural values (*Pekerti, A. A., & Thomas, D. C., 2003*).

Back in 1996, in “The Neglected”, McCloskey highlights that communication education is a process that helps to deal with minorities in societies and to support the personal, educational, and professional growth of students. McCloskey believes that communication studies play a central role in interdisciplinary research and education. The five major themes in his bibliography that support the efficiency of communication education are:

- I. *Personal Development*: enhancing relationships with oneself, others, and society and improving related communication skills play a role in promoting self-development.

- II. *Educational Enterprise Improvement*: it is crucial for improving the quality of the classroom environment and fostering successful collaboration.
- III. *Empower citizens, both socially and culturally*: the development of skills and sensitivities, through communication, is essential for shaping social and political lives, promoting positive social evolution, and breaking down cultural barriers.
- IV. *Success at work*: communication education is a foundational aspect to lead to career success and eases upward mobility across several professions.

(McCloskey, 1966).

To conclude, among the benefits of communication education, both personal and relational, results report improvement among individuals in interacting with peers, parents, and authorities (Reed, McLeod, & McAllister, 1999). Recently, findings indicate that communication education leads to greater social inclusions and contributes to individual growth and development, improves the quality of academic education, cultivates responsible global citizenship, facilitates career success, and drives success in business (Morreale, S. P., Osborn, M. M., & Pearson, J. C. 2000). Moreover, strong oral communication skills can enhance individuals' social integration, leading to more fulfilling interpersonal relationships. In contrast, inadequate communication abilities can lead to negative perceptions and reduce the number of friendships (Morreale, S. P., Osborn, M. M., & Pearson, J. C. 2000). Emphasising and promoting the efficiency of communication education could be a crucial asset for future generations.

1.2 Nonviolent Communication

As this thesis is centred in evaluating the effectiveness of nonviolent communication, compared to a friendly communication style, i.e. non-directive (Norton, 1978), we want to provide a detailed overview of this communication style.

In the 1960s, psychologist Marshall Rosenberg developed this approach called Nonviolent Communication (NVC), which emphasises the use of non-judgmental, honest language and avoiding blame or criticism. The nonviolent communication style lies in two main ways to enhance connections. The first one relates to honestly expressing personal feelings and needs. The second move, towards a better connection, is being able to listen with empathy to others: being able to perceive others' state of feelings. Empathy and self-expression enhance understanding among individuals, leading to several benefits among people (Cabrera, E. F., & Cabrera, A., 2005). Marshall Rosenberg, throughout his studies, understood that communication, for the sake of communicating, lacks clear intentions, it does not produce desirable results, and often it ends in miscommunication and conflicts. Moreover, he was aware that by clarifying our intentions, the quality of our

communication and, as a consequence, our relationships will significantly increase. To continue, the majority of people, when feeling unhappy, find the source of their frustration in the nature and shapes of their relationships, either with partners, friends, and relatives (Whitton, S. W. et al, 2008; Whitton, S. W., & Whisman, M. A., 2010; Whitton, S. W., & Kuryluk, A. D., 2012).

NVC involves expressing one's own feelings and needs while being sensitive and caring about the feelings and needs of others. The aim is to ease peaceful and harmonious dialogues, by stimulating empathy and compassion among humans. Marshall Rosenberg elaborated this communicative structure based on four main components:

- I. *Observation*: limit your thought process to what you see. Absence of judgments, opinions or labels. For instance: I see... , I hear... , I notice...
- II. *Feelings*: putting into words a state of feelings perceived. In turn, this concept should be divided into two contexts. The first, refers to the situation in which one's needs are met, for example: “I feel confident”, “I feel hopeful”, “I feel calm” and so on. The second possible context is whenever needs are not met, for instance: “I feel annoyed”, “I feel vulnerable”, “I feel embarrassed”.
- III. *Needs*: human needs free of strategies. Broadly, it refers to the needs perceived by the individual that the individual itself would like to accomplish. Some examples could be the need for respect, empathy, safety, support, acceptance, and so on.
- IV. *Request*: that is sharing one’s own wish or request with the counterpart. This should not be intended as a demand or imposition. One example of expressing a request would be “Would you be willing to ..?”. It could be interpreted as promoting action by the other party.

Marshall Rosenberg founded a global organisation called “The Center for Nonviolent Communication”, where they provide training, workshops, and resources to help people in learning and applying NVC in their personal and professional daily life. The benefits of Nonviolent Communication (NVC) can encompass:

1. *Improved relationships*: NVC can help people in establishing genuine and more lasting connections with others, by encouraging empathy, comprehension, and compassion.
2. *Wider understanding*: NVC stimulates active listening, which can help individuals to better understand and connect with each other.
3. *Reduced conflict*: NVC may decrease miscomprehensions and conflicts, by promoting a clear and respectful dialogue.

4. *Greater personal satisfaction*: NVC can help individuals to feel heard and welcomed, leading to a greater sense of personal fulfilment.
5. *Enhanced teamwork*: NVC can improve teamwork by promoting harmless and open communication, a higher inclination to collaborate, and mutual respect.
6. *Improved decision-making*: NVC can lead to a better decision-making approach by fostering more collaborative and respectful reasoning in problem-solving.

This model can be seen as a harmless bridge connecting different perspectives, which perhaps are in conflict and as a tool to boost the development of prosocial skills. Indeed, the nonviolent communication style allows to create a universal communication channel, regardless of the native tongue. Consequently, with respect to the experimental design brought up in this master research, we do expect that NVC may have an influence on the willingness of people to cooperate.

Based on this, here is the first hypothesis of this master's thesis:

H₁: "higher amount of money ceded from the respondent who received a NVC message, compared to the control group"

We do expect that the NVC message may impact the attitude of the respondents in the way they are more inclined to cooperate with the, imaginary, counterpart.

1.3 Implementation of Nonviolent Communication

In 2004, Sitzman suggested the use of NVC as a creative approach to foster positive outcomes in a healthcare work environment, since in these professional environments there are frequent violent episodes. In fact, studies have already proved the presence of aggressive episodes and violent behaviours in healthcare professions (*Rippon, T. J., 2000*). To emphasise these difficult circumstances, Darrick Jolliffe and David P. Farrington (*2004*) brought up a systematic review and meta-analysis in which they showed that there is an association between violent behaviours and the absence of empathy (*Rosenberg, 2002*). Moreover, KÖK, in "Nonviolent Communications in Political Conflicts" (*2009*), evaluated the principles of nonviolent communication (NVC) through the perspective of Human Needs Theory. KÖK explained how "Human Needs Theory" examines the root causes of conflicts and cited John Burton, a social theorist, who posited that Human Needs Theory can provide an objective understanding of how cultural and political differences lead to conflicts and how this understanding can facilitate conflict resolution. Although there exists several elements that can contribute to improve inter-process communication (IPC), genuine and empathetic

communication styles, marked by trust and openness, are considered the foundation of collaborative practices (*McCaffrey, R., et al., 2012 & Rodriguez, L. and Baeulieu, M., 2005*).

Thus, over the years, as the efficiency of this communication style became tangible and measurable, various researchers ventured to study and document the implementation of NVC training in different settings. In 2012, a NVC training was carried out among male parolees. The quasi-experimental design, including pre/post testing, revealed a rise in empathy scores among incarcerated men, as measured by the BEES Empathy tool (*Marlow et al., 2012*). Nosek, Gifford & Kober (2014) conducted a mixed methods study aimed to evaluate the impact of NVC intervention on empathy among baccalaureate student nurses at the University of San Francisco. Researchers emphasised that poor communication among healthcare professionals can result in decreased collaboration rates and negative impacts on patient outcomes, and their quantitative analysis showed a rise in empathy by following the NVC training (*Nosek, M., Gifford, E. J., & Kober, B. 2014*). Communication difficulties between professionals can generate conflicts, stress, or exhaustion, and these factors are to be considered the principal cause of the medical error and delays (*Museux et al., 2016*).

Nosek, M., Gifford, E., & Kober, b., (2014), in their study, incorporated the Interpersonal Reactivity Index (IRI) in their experiment design; this index measures empathy and can provide a quantitative measure of an individual's capacity for empathy (*Davis, M. H., 1980*). Findings indicate a positive impact of nonviolent communication on an individual's ability to empathize, with both themselves and others. To continue, after undertaking a NVC training, researchers indicated the enhancements in individual proficiency in client/family-centred collaboration and role definition. Finally, group proficiency also showed improvements, in regards to the teams' ability to formulate a shared action plan. Establishing an effective strategy requires a collaborative culture, which can be challenging to cultivate in organisations where performance and individualism are the dominant values (*Nosek, M., Gifford, E. J., & Kober, B. 2014*).

In October 2021, Epinat-Duclos et al., implemented the NVC method among students, to test whether the effectiveness is extended also to a younger target group. Students, after three-month of practice, developed a greater sensitivity to empathy; this training encouraged stronger and solid relationships, and it contributed to the improvement of inter-professional relations, healthier relationships and environments (*Epinat-Duclos et al., 2021*). Consequently, pursuing a NVC model results in better management of conflicts (*Terepyshchy, & Khomenko, 2019*), it stimulates listening skills, to develop harmless interactions (*Terepyshchy, & Khomenko, 2019*), and it is also extended to school setting, relative to difficult conversations (*Koopman, & Seliga. 2021*).

Based on these findings, we formulate the second hypothesis for this thesis research:

H₂: “higher amount of money ceded from respondents who reported an empathy score above the average of the sample”.

That is, if empathy has a positive effect on the propensity of cooperation, NVC may encourage this domino effects in stimulating higher cooperation among individuals.

1.4 Communication and Cooperation

First, we provide a detailed overview of what cooperation is. The reason is to offer a better understanding of when people are truly cooperative, or if it is just coaction, and the *cooperative action* in game theory language.

Raimo Toumela (1993) in his work “What is Cooperation?” distinguishes several cooperative actions, which in common parlance can be understood as the same. Toumela (1993) mentions the concept of *joint action*, in which an action is carried out, and completed, by several agents who have the same goal or belief. This implies that the following action is brought up by the *joint will* of different agents. Hence, Toumela (1993) emphasises that *joint action* is based on a mutual belief. In contrast, *coaction*, refers to the performance of an action carried out by several agents, who, however, do not have a common intention, e.g. the social norm of standing up at a certain point on certain occasions. The *coaction* lacks the *conditio sine qua non* of the *joint action*, i.e. *joint intention*. Moreover, the author continues the distinction of joint actions in two other nuances. On one hand, we refer to *fully cooperative actions* as the conformity of the agents towards the same belief. Toumela, p.89, (1993) explains: “*In any joint action X, the participants jointly undertake to promote X and make it happen*”. On the other hand, *non-cooperative joint action* differs by the fact that the *joint intention* is missing, since the agents have different preferences.

It is important to highlight the following differences since it marks that, in the case of *joint cooperative action*, it is assumed that the agents are also willing to take further actions, which are not required and may perhaps involve other forms of “costs” (Toumela, 1993). In absence of *joint-intention*, Toumela (1993) clarifies that agents are more tempted to free-ride or minimise their contribution. To better depict what non-cooperative action stands for, we can think of chess or organised fights, or also selling and buying. In these contexts agents aim for different, or opposite, outcomes of the social interaction.

Under favourable conditions, *cooperative joint actions* might lead to better outcomes (e.g. rewards or utility) than by acting independently, i.e. *joint outcome*. The joint outcome is meant to be divided among participants equally, so that no individual is at a disadvantage, compared to acting independently (Toumela, 1993). Lastly, Toumela also refers to another concept that he calls the *motivational output condition*. This concept covers instances where the combined effort yields higher

joint benefit compared to each individual acting alone. This is why in contexts of cooperative action we tend to “stand or fall together”; agents' preferences are highly positively correlated and this explains the possibility of helping each other (*Toumela, 1993*).

It is important to extend these concepts in the context of game theory, as this helps us understand the phenomena observed when decision-makers interact (*Osborne, M. J., & Rubinstein, A., 1994*). We assume decision-makers pursue well-defined external goals (*rational*) and take into account the knowledge and expectations of other decision-makers' behaviour (*strategic reasoning*) (*Osborne, M. J., & Rubinstein, A., 1994*).

In the language of game theory, games with aligned or nearly aligned interests recall the concept of *cooperative action*, given there is a prior agreement to play the game (*Toumela, 1992*). On the other hand, in game theory, zero-sum games and many mixed-motive games are also classified as non-cooperative actions, mainly when there is a sharpen conflict of interest. Cooperation plays a decisive role in the evolution of society, as interactions between individuals can influence their ability to progress and innovate (*Nowak, M.A., 2012*). Nevertheless, there are situations in which cooperation between individuals is not the easiest and most spontaneous choice.

Why would one individual assist another who could potentially affect his/her personal interest? The Prisoner's Dilemma represents the most challenging scenario, as natural selection works against cooperation, unless a mechanism for its evolution is present (*Nowak, M. A., 2006*). This ideal mechanism would, eventually, promote or facilitate the growth of cooperation, but these are related to the physical/visual interactions with the counterpart. To foster cooperation in the Prisoner's Dilemma, we might need a mechanism for the evolution of cooperation (*Nowak, M. A., 2006*). Nowak, M. A., (2006) proposed five possible mechanisms that can stimulate cooperation:

- i. **Kin selection:** it occurs when individuals employ based on kin selection. It is a form of nepotism, resulting in favouritism towards closer relatives over distant ones and non-relatives.
- ii. **Direct reciprocity:** it is related to repeated games and your own personal experience with someone. Concerns about reputation may arise, and playing “defect” is never completely stable.
- iii. **Indirect reciprocity:** the driving factor in indirect reciprocity is reputation. Individuals can adopt strategies that are dependent on the recipient's reputation. Indirect reciprocity is based on others' experiences.

- iv. **Network reciprocity:** the underlying idea is that individuals are more likely to cooperate with those who are connected to them in a social network. People feel more willing to help others if they believe that their actions will benefit themselves and also their friends/acquaintances.
- v. **Group selection:** people are more inclined to cooperate with those who belong to their group. Individuals are more willing to cooperate with their group members even if it means competing with other groups for resources.

Some cooperative dilemmas are called “*relaxed cooperative dilemmas*”, for example the public good games (Nowak, M. A., 2012). In these games, a certain level of cooperation can evolve even if there is no mechanism at work (Nowak, M. A., 2012). As first distinctive feature of our research, we control for these mechanisms (Nowak, M. A., 2006), as we conducted an online experiment and there is no “in presence” interaction with the other party.

Offerman et al., (2016) executed a study about the impact of communication on cooperation in Prisoner’s Dilemma, and they found several factors that can lead to a higher level of cooperation, for instance the reduction of social distance between subjects, the chance to enable “type detection”, and communication allows participants to make promises. Promises make people feel committed to each other and, hence, arise a larger reluctance to break this commitment. Based on the findings of Offerman et al., (2016), the key factor that had the greatest effect on cooperation between subjects was “type detection”. Consistently, the prevailing view is that in-person interactions are preferred for conducting negotiations, finalising agreements and establishing lasting relationships (*Forbes Insight, 2009*). Moreover, it was previously tested that, during face-to-face interactions, the likelihood of people to free-ride is particularly low, compared to no face-to-face interactions (*Bohnet I, Frey BS, 1999*). Agents may look at details, behavioural traits, that could be insights to process thoughts and, perhaps, an idea of others’ people intentions (*Eckel CC, Petrie R., 2011*). Studies proved that communication has a positive impact on the level of cooperation in a Public Good Game dilemma (*Kurzban, R., 2001; Krishnamurthy, S., 2001*). However, the effectiveness of communication can be enhanced when the content of the communication is related to the game itself (*Kurzban, R., 2001*).

Many social interactions, e.g. within and between organisations, have the nature of a social dilemma. If we think about a production team as an example, there may be a tendency for one or more employees to want to work less, knowing that they are not monitored (*Li, N., Liang, J., & Crant, J. M., 2010*). In the same manner, different departments, within a company, may find themselves in a competitive situation, despite it would not be beneficial for the company as a whole. Even though companies may seek collaboration with other firms instead of direct competition (e.g. on pricing), they still possess motives to outdo their competitors. Therefore, it is crucial for managers to learn

methods to foster cooperation in such circumstances, as current research results show that cooperation leads to qualitatively better personal achievements (*Rachilin, 2002*).

In “The Source of Gap Communication” (*2017*), researchers carried out a laboratory experiment, organizing four treatments, in each of which there is a social dilemma game. In the first treatment, called the basic treatment, the subjects play a game without the possibility of meeting. In the second treatment, subjects could meet before drawing the conclusion of the choice, but could not interact. In the third treatment, subjects could communicate but were not allowed to make promises. Finally, the last treatment gave subjects the opportunity to meet and interact freely without restrictions.

Findings suggest that communication acts as a glue for the cooperation of individuals. It emerged from the fourth treatment that subjects spontaneously decide to make a promise to cooperate, resulting in a value of commitment to which subjects were bound. Eventually, it might be due to the presence of emotional or personal traits, such as guilt aversion, lying aversion and shame (*Gneezy, U., 2005; Vanberg, C., 2008*). Indeed, forms of trust norms are triggered during agents’ interactions, which reinforce cooperation among players (*Cohen, Wildschut, & Insko, 2010*). Based on this, it also emerges how promises function as an instrument for type detection (*Ellingsen T., Johannesson M., 2004b, Charness G, Dufwenberg M., 2006, Vanberg C., 2008*). In addition to that, in the study carried out by He, S., Offerman, T., & Van De Ven, J., (*2017*), it has been implemented a social value orientation test. The authors assessed whether individuals are more likely to have a selfish or pro-social personality, concluding that selfish people are less cooperative than pro-social ones (*He, S., Offerman, T., & Van De Ven, J., 2017*). In line with scientific researchers, in social dilemma contexts, individuals are able to identify cooperators during the communication stage (*Dawes RM., McTavish J., Shaklee H., 1977; Frank RH., Gilovich T., Regan DT., 1993b; Brosig J., 2002; Belot M., Bhaskar V., Van de Ven J., 2012*). Brosig et al. (*2003*) conducted a study involving treatments with anonymity and mutual identification in a four-player public good game. They found that levels of cooperation were not significantly influenced by visual identification alone and that the observed effects could be partially influenced by reputation concerns. He, S., Offerman, T., & Van De Ven, J., (*2017*) in their study, aimed to eliminate this potential confounding factor by controlling for it. Also, this is extended to written communication, beside oral communication (*Brosig J., Weimann J., Ockenfels A., 2003; Charness G., Dufwenberg M., 2006; Chen J., Houser D., 2017*).

In addition, Charness and Dufwenberg (*2010*) tested whether self-interested individuals and cooperative individuals have different capacities to assess their partners' cooperativeness in the game, and further pointed out the impact of message content on the level of cooperation. Brosig (*2002*) proposed that those who exhibit conditional cooperation should be better at detecting their opponent's

cooperation propensity, and the study found that cooperative individuals have a slightly better understanding of their partner's cooperation tendencies. Thus, the social value orientation test, as described by Offerman et al., (1996), is administered to gauge the participants' social tendencies. Furthermore, if there is any chance for future interactions, individuals may act more courteously toward their counterparts, in order to safeguard their reputation (*Bolton, G. E., & Ockenfels, A., 2000*).

The influence of communication on behavior in social dilemmas is tangible. It is fair to state that, in social dilemma games, other measures have been implemented to stimulate cooperation.

On one hand, adopting a “rewards and punishment” system in social dilemma games affects the level of cooperation among participants, leading to a higher level of cooperation (*Balliet, Mulder, & Van Lange, 2011, and Stoop, Van Soest, & Vyrastekova, 2018*). On the other hand, Ricciuti, R., (2004) conducted an experiment in which was implemented a mechanism of punishment and counter-punishment in public goods games, discussing that punishment may not directly lead to an increase in cooperation. The effectiveness of punishment in increasing cooperation may, in reality, depend on the relative strength of the punisher and the punished (*Ricciuti, R., 2004*). In this thesis research, there is no concern to fall into such a scenario, as there is no punishment against players. Using punishment, meant as a tool to influence human behavior in an explicit direction, does not always assure benefits (*Myers, 1980*).

Having explored how communication is the central key in stimulating and encouraging cooperation (*Miller, Butts, & Rode, 2002; Balliet et al., 2010*), it is important to focus on the meaning of cooperation we refer too throughout all the thesis. Indeed, we mean by “higher cooperation” the attitude of transferring a higher number of tokens during the game. The missing point in the available literature, so far, is the implementation of nonviolent communication in mixed motives games. In reference to mixed-motivation games, this is meant as: “[...] a situation in which two or more parties face a conflict between the motivations to cooperate and to compete with each other” (*Komorita, & Parks, p.184, 1995*).

Finally, this thesis enriches and supports the current literature review, by implementing the nonviolent communication style, during the pre-game phase, in a Public Goof Game setting. The aim is to test whether nonviolent communication has an even greater impact on cooperation.

2. Methods

This thesis wants to test whether subjective cooperative inclination may be encouraged by implementing a nonviolent communication style in a mixed-motive game setting, following the dynamic of the Public Good Game (Voluntary Contribution Mechanism). We first passed the ethical approval proposed by Erasmus University of Rotterdam, Qualtrics™, and later, brought up an online survey. The survey can be divided into three main parts (see Appendix A). In the first section, the game takes place; subjects, once agreed to be part of the research, were randomly assigned to treated or control group, and then, they had to complete the game to proceed in the survey. In the second part, we asked questions to be able to obtain a benchmark of respondents' level of *empathy* and *altruism*. In the third section, we gathered information about sociodemographic characteristics.

The idea behind this project is to test whether proposing a NVC message to participants, this would have had an effect on their attitude towards cooperation. This online economic experiment involves a treatment and works on a between-subject design; this implies that respondents participated only once, either in the control group or treated group, not in both. We try to minimise the *demand effect* (Mummolo, J., & Peterson, E., 2019). In reference to this phenomenon, we mean that participants may answer according to their understanding, or perception, of the experiment, rather than providing genuine and sincere answers (Mummolo, J., & Peterson, E., 2019). Before getting to the core of the experiment, we asked participants if they agree in taking part in the research. Once voluntarily agreed to proceed, respondents cannot continue in the survey unless they have answered each question.

2.1 Treatment

Firstly, we introduced to the subjects the rules of the game and the hypothetical scenario in which it takes place (see *Text 2.1.1*). As we previously mentioned, face-to-face interactions may trigger factors that can affect the decision-making of individuals (*Roth, 1995*); the following economic experiment, by being virtual and not physical, prevents these factors arising.

As this game resemble the Public Good Game, we provided the description of the setting, inspired by the description provided by *Andreoni (1995)*:

Text 2.1.1, rules of the game.

Imagine the following scenario:

You have been assigned to a group of two people. Both of you will be given 100 tokens, one token values 0.50€, and you can either keep it or invest it into a common fund. If you invest your tokens, there is a chance to earn more euros. What you earn depends on how many tokens you or the other member contribute to the common fund. The total amount collected in the common fund is multi-plied by 1.5, and then divided equally between you and the other member of the group. The more the group member invests in the common fund, the more each member of the group earns.

Please read the examples:

1. Suppose you invest 50 tokens in the common fund, and the other member invests 20 tokens. There will be a total of $70 \cdot 1.5$ tokens, which is equivalent to 52.5€, and each of you receives half, i.e. 26.25€. In the end, you sum the tokens left in your pocket and the common fund, you get 51.5€ in total and 66.25€ the other member.

2. Suppose that you do not want to invest in the common fund, but the other member invests 50 tokens in the common fund. Then, the total amount, in euros, in the common fund is 37.5€. So, you and the other member will each earn 18.75€. In the end, you gain 68.75€ and the other member gains 43.75€.

Participants were randomly assigned to either “treated” or “control” group, without letting them know it, through a simple randomization algorithm on [qualtrics.com](https://www.qualtrics.com).

In this stage of the experiment, we showed the subjects a message from the other imaginary group member, and the structure of the message changes accordingly to the assigned group. The treatment envisages that the subjects receive a message constructed following the structure of nonviolent communication style, thus, mentioning: objective factors (*observation*), sentiment (*feeling*), need (*need*) and the request to collaborate (*request*). The message is clear and based on the pure meaning of the words used. The control group receives a message that lacks the same level of compassion of which the nonviolent communication message is characterized. Clearly, the content message may be perceived differently, depending on the way it is interpreted (*Gudykunst et al., 1996*), for this reason the message's contents are based on the canons proposed by Nurton (1989) and Rosenberg (2002). The content message of control (see *Text 2.1.2*) and treated group (see *Text 2.1.3*) are similar, but expressed with different structure.

Text 2.1.2, message to control group.

Control Group

Imagine the other team member tells you the following word:

Hello! I know we do not know each other. I know we can profit by investing money in the common fund. You're probably just as much hesitant to trust me as I am, right? But whatever, from my side, I'm going to contribute 100 tokens to the common fund. So, are you going to step up and do your part as well?

Text 2.1.3, message to treated group.

Treated Group

Imagine the other team member tells you the following word:

Hello! I see we belong to the same group. We can make some profit by investing the tokens in the common fund. I feel that I would very much like to contribute, but at the same time, I am a little bit afraid that you may not contribute as much as I do. But I know that you may feel the same. We will benefit greatly from investing, but we definitely do not know each other well enough to trust each other. Nevertheless, I will give all my endowments and contribute with the 100 tokens that I have in the common fund. Would you be willing to invest as much as you can as well in the common fund?

Finally, we invited respondents to read the message displayed and to select the amount of tokens they would be willing to transfer, in benefits of the common fund, from 0 to 100. However, the participant is not obliged to align the will of the counterpart. Indeed, we mention respondents are free to choose to contribute, as much as they want, or not. Thus, in this research we interpret the cooperative inclination of respondents by the amount of tokens they freely decide to transfer.

As previously mentioned, the game of the experimental design is based on the Public Good Game setting, i.e. Voluntary Mechanism Contribution; this implies that the possible benefits obtainable have to be non-excludable and non-rival (*Deneulin, S., & Townsend, N., 2007*). The former means that the counterpart cannot deny the respondent to benefit of the disposable common fund, even though the respondent itself decides to not cooperate. Non-rival means that each subject does not affect the other's subject opportunity to consume the common good, which in context is the (virtual) money gained after transferring the tokens. Therefore, we assume, based also on the provided description, subjects are aware that if both decide to cooperate, each of them will profit in return. A general mathematical model of the individual profit would be the following:

$$\pi = y - c + \frac{1}{2}(m \sum N)$$

- π : is the profit the individual may obtain.
- y : the endowment provided, i.e. 100 tokens.
- c : the part of the endowment which the player, arbitrarily, decides to give in favour of the common fund.
- m : the multiplier, 1.5, multiplied by the amount of token given in the common fund, returns the monetary amount.
- N : it is the number of tokens in the common fund.

We decided to proceed with a game reminiscent of the Public Good Game, as this setting does not foresee any “negative consequences” if the subjects do not cooperate. In this way, we can circumvent the assumption that subjects give up tokens because of concerns of punishment (*Ricciuti, R., 2004*). Rather, this scenario allows the subject to gain even more, depending on their behaviour. Therefore, we assume the message may have an impact on the subjects' decision-making process and choice. Moreover, consistent with the explanation in the literature review, it is possible to associate the described game as a *cooperative action* (*Toumela, 1992*). We think the chosen social-motives setting shows respondents that joint cooperation leads to higher benefits, thus, people should be more incentivized in cooperation. Therefore, we interpret a higher level of tokens transferred as a higher propensity in cooperation.

2.2 Empathy and Altruism

In the second section of the survey, we attempted to obtain an estimate of the subjects' level of empathy and altruism. We are interested in measuring the level of empathy of the sample as we found that empathy plays a role in the nonviolent communication context, and in the cooperation among individuals (Rosenberg, 2000); *altruism* is a notorious personality trait whether people are inclined to help each other or not (Lehmann, L., & Keller, L., 2006).

To do so, we asked respondents to evaluate, based on their perceptions and preferences, six sentences. The first three statements are taken from the Interpersonal Reactivity Index (IRI) (Davis, M.H., 1980), and the last three are extrapolated from The Altruistic Personality and Self-Reported Altruism Scale (Rushton, J.P., Chrisjohn, R.D., Fekken, G.C., 1981). We decided to select just three questions from each scale; we are aware that the dropout rate in surveys is high, and we tried to make the survey easy to conclude and to minimise the number of incomplete answers.

Thus, we displayed the respondent the following three sentences, and we asked subjects to answer how well they feel described by the statement (i.e. *Strongly disagree, Disagree, Neither agree nor disagree, Agree, Strongly agree*):

1. *I am the kind of person that tries to look at everybody's side of a disagreement before making a decision.*
2. *I am the kind of person that when is upset at someone, usually tries to "put myself in his shoes" for a while.*
3. *I am the kind of person that, before criticising someone, tries to imagine "how I would feel if I were in their place".*
(Davis, M.H., 1980).

The three questions recall three different moods, such as disagreement, anger and criticism, which are very often accompanied by the unconscious tendency to protect one's own sphere (Cramer, P., 1998). In fact, in contexts of *disagreement*, people tend to try to protect, or possibly, to let their own position prevail (Cramer, P., 1998). The same logical reasoning can be extended in the context of *anger*, which brings out other emotional aspects, such as sadness or anxiety (Spielberger, C. D., & Reheiser, E. C., 2009), and it emerges the tendency to defend your personal sphere (Steigenberger, N., 2015). Lastly, we decided to ask a question that recalls the behavioural

inclination to *criticise* the other. Indeed, it is often the case that people criticise others (Gilbert, P., 2014).

Once collected the data, we proceed by constructing the variables *empathy* and *altruism*. Therefore, we firstly generated a continuous variable, *score_empathy*, that could take values from 3 to 15, as it represents the sum of the values of all the three questions. We did the same procedure for the variable *altruism*.

To enrich the analysis, we computed the Cronbach's alpha scores, which takes values from 0 to 1, to assess the reliability of the scales. In reference to the *empathy* scale, we reported a value of 0.69 (see Table 2.2.1). Other studies, such as Nosek, M., Gifford, E. J., & Kober, B., (2014) computed a Cronbach's alpha score for each domains of the empathy scale: Perspective Taking Scale, Fantasy Scale, Empathic Concern Scale and Personal Distress Scale. On average, results show, for each domains, an alpha score from 0.70 to 0.78 (Nosek, M., Gifford, E. J., & Kober, B., 2014). In our study, we selected only three questions of "Perspective Taking Scale".

Table 2.2.1

Cronbach's Alpha Test Empathy	
Variable	Cronbach's Alpha Coefficient
<i>disagreement</i>	0.6864
<i>upset</i>	0.5295
<i>critics</i>	0.5824
Overall Cronbach's Alpha	0.6964

However, there are factors that must be taken into account. According to Tavakol, M., & Dennick, R. (2011) one always strives for a high alpha score, closer to 1, in order to be able to estimate the valid scale. Nevertheless, it is important to consider that if the text of the question is short, the alpha value is markedly reduced (Nunnally, J. C., & Bernstein, I. H., 1994; Streiner, D. L., 2003). In addition, any reported Cronbach's alpha score is affected by an error variance:

$$0.69 \times 0.69 = 0.47 \text{ thus } 1 - 0.47 = 0.5239 \text{ (Tavakol, M., \& Dennick, R., 2011)}$$

It should be noted that Cronbach's alpha test reveals the effect of measurement error on the observed score of a sample, rather than on an individual observation (Tavakol, M., & Dennick, R., 2011). We believe that the reasons why the score is slightly lower, compared to other studies, may be due to both.

Then, we provided the same qualitative and quantitative analysis for altruism. We are aware that altruism has an effect on cooperation (*Lehmann, L., & Keller, L., 2006*) and thus, we asked participants to express their preferences regarding these three statements, by selecting their occurrence frequency (i.e. *Never, Once, More than Once, Often, Very Often*):

1. *I gave money to a charity.*
2. *I have allowed someone to go ahead of me in a lineup.*
3. *I have offered my seat on a bus or train to a stranger who was standing.*
(*Rushton, J.P., Chrisjohn, R.D., Fekken, G.C., 1981*).

For the altruism variable, we desired to recall common, plausible, dynamics that may lead to the occurrence of altruistic behaviours. In fact, in the case of charity, nowadays, we have various channels to make donations. Possibly, some events trigger forms of altruism to the point of donating to charity (*Khalil, E. L., 2004*). Furthermore, it often happens that we find ourselves in a queue, for example at the supermarket, and give way to the person behind us, or give way our seat in public transport to someone we feel may be in greater need (*Pfattheicher, S., Nielsen, Y. A., & Thielmann, I., 2022*). However, we are also aware that in this section of the survey, some limitations may arise. Indeed, it may happen that people reduce their span attention towards the questions, leading to affected answers. Moreover, it may be the case that reputational concerns may arise and affect the honesty in answering the questions (*Zerbe, W. J., & Paulhus, D. L., 1987*).

Again, we proceed to compute the Cronbach score of the altruism scale. Compared to *empathy*, we got an even lower Cronbach’s alpha score (see *Table 2.2.2*). However, other studies that implemented the same scale in their methodology, reported higher value, e.g. 0.80 (*Head, K. J., Kasting, M. L., Sturm, L. A., Hartsock, J. A., & Zimet, G. D., 2020*). We argue the same limitations and factors above mentioned that may have influenced Cronbach’s alpha score for the variable *altruism*.

Table 2.2.2

Cronbach’s Alpha Test Altruism	
Variable	Cronbach’s Alpha Coefficient
<i>charity</i>	0.5387
<i>seat</i>	0.3625
<i>lineup</i>	0.3348
Overall Cronbach’s Alpha	0.5131

With error variance $0.51 \times 0.51 = 0.26$ thus $1 - 0.26 = 0.7399$. (*Tavakol, M., & Dennick, R., 2011*)

2.3 Sample

To spread the survey, we took advantage of social network channels, such as WhatsApp, Instagram, and /or LinkedIn, and there were no restrictions regarding the eligible subjects. We tried to achieve a wide variety of subjects, older than eighteen years old. We looked for individuals from all parts of the world and, hopefully, with different experience, personal and professional, background. In the end, we were able to reach 370 individuals, who have agreed to proceed in filling the survey. However, a small portion of them have not concluded the survey up to the end, as many missing values were reported, and we decided to not consider their observations. Thus, we obtained a final sample of 327 observations (see *Table 2.3.1*).

Table 2.3.1, descriptive summary of the sample.

Variable	Frequency	Percent	Cum.
Gender			
<i>Male</i>	139	42.51	42.51
<i>Female</i>	180	55.05	97.55
<i>Non-binary/Third</i>	6	1.83	99.39
<i>Gender</i>			
<i>Prefer not to say</i>	2	0.61	100
Nationality			
<i>European</i>	240	73.39	73.39
<i>No European</i>	87	26.61	100
Education			
<i>High School</i>	69	21.10	21.10
<i>Bachelor</i>	120	36.70	57.80
<i>Master</i>	125	38.23	96.02
<i>PhD</i>	13	3.98	100
Field			
<i>Business/Economics</i>	110	33.64	33.64
<i>Education/Teaching</i>	47	14.37	48.01
<i>Healthcare/Medicine</i>	16	4.86	52.91
<i>Engineering/Tech.</i>	31	9.48	62.39
<i>Arts/Humanities</i>	33	10.09	72.48
<i>Social Science</i>	25	7.65	80.12
<i>Communication/Media</i>	36	11.01	91.13
<i>Tourism</i>	21	6.42	97.55
<i>Other</i>	8	2.45	100
Total	327	100	

Based on the data that has been gathered, we can see that the sample as a whole consisted of 55.05% women, 42.51% men, 1.83% non-binary/third gender, and 0.61% who decided not to say. Although we wished to obtain an homogeneous distribution among European and non-European, the majority of the respondents are European, 73.39%, compared to non-European, 26.61%. In particular, we acknowledged that 40.67% were Italians, 6.42% were Dutch and finally 5.20% Greeks (see Appendix C, *Table C.13*). Then, we asked subjects to select their highest level of education completed. The majority of respondents completed a Master degree, 38.23% and 36.70% Bachelor degree, followed by students, 21.20%, with a High School degree, and a few PhD degree, 3.98%. Lastly, we asked to select the field in which the subject either study or work; we can notice that the sample is distributed, mainly, in three fields: 14.37% the Business/Economics sector, followed by Education, 14.37%, and finally Communication and Media, 11.01%. Finally, on average the age of the sample is 29 years old with a minimum 18 years old and maximum of 89 years old (see *Table 2.3.2*).

Table 2.3.2, descriptive summary of the sample's age.

Variable	Obs.	Mean	St. Dev.	Min.	Max.
<i>age</i>	327	29	13.04	18	89

3. Results

As previously noted, we invited participants to complete the survey via social media channels and student group chats. We kindly asked respondents to share it with their closest relatives, friends, classmates, or flatmates. We hoped to reach a wide variety in the sample, in terms of age, cultural and academic background. However, approximately 73% of the sample was European, compared to non-European, and the 33% of the whole sample deals with economics and business field (see Appendix C, *Table C.2* and *Table C.3*). In the next subsections, we go through the statistical analysis of the variables and the different statistics estimations implemented to test the two different hypotheses. We firstly provide descriptive statistics of the variables of the models, and then we ran both a multivariate regression first and a Mann-Whitney U test for robustness check.

3.1 Treated and Control group

In this section, we analyse descriptively the treated and control group (see Appendix B, *Table B.1*). Through the randomisation process, 160 respondents were assigned to the treated group, compared to 167 in the control group (see *Table 3.1.1*). On average, people transferred approximately 71 tokens in *NVC*, compared to 56 tokens in the *Control*, with a minimum of zero and maximum of 100.

Table 3.1.1, descriptive summary of the treated and control group.

Variable	Obs.	Mean	St. Dev.	Min.	Max.
<i>NVC</i>	160	71.68	28.3904	0	100
<i>Control</i>	167	56.90	32.90498	0	100

The histograms (*Figure 3.1.1* and *Figure 3.1.2*) give an idea about the overall trend of tokens transferred by subjects in the control and in the treated group. In the treated group, 40% of the subjects gave the whole endowment received at the beginning of the game, followed by 21.88% who transferred only half of the tokens available. Only a few subjects, 1.88%, gave 0 tokens in the benefit of the common fund, and we can detect that there are higher occurrences for higher amounts of tokens. In the control group subjects behaved differently, 26.35% transferred all the tokens, 17.96% half of them and we can see a higher percentage of subjects who selected either zero or 30 tokens.

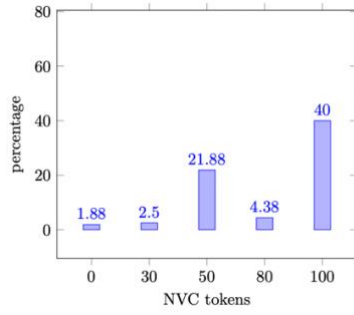


Figure 3.1.1

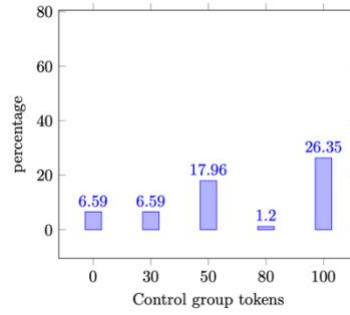


Figure 3.1.2

Finally, we present a box plot (see *Figure 3.1.3*, *Figure 3.1.4* and *Figure 3.1.5*) of the average of the tokens transferred in both groups.

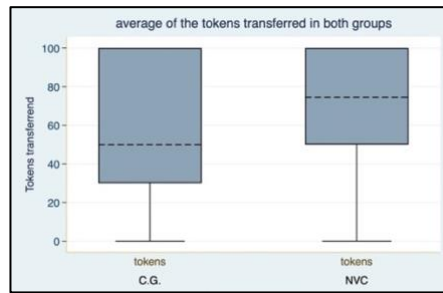


Figure 3.1.3, boxplot of the means of tokens transferred among groups.

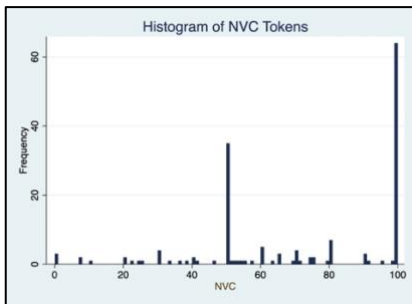


Figure 3.1.4,

histogram of tokens transferred in the treated group.

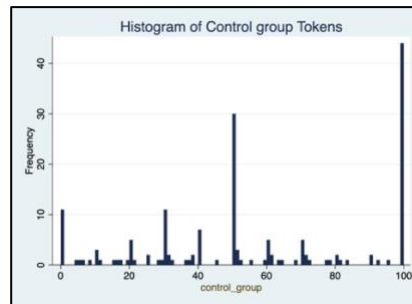


Figure 3.1.5,

histogram of tokens transferred in the control group.

To proceed with statistical analysis, we generated a new variable, *treatment*, which takes value 1 if the respondent was in the treated group and zero otherwise, and then *tokens* which is a continuous variable representing the total sum of tokens transferred in the whole economic experiment. Finally, *Figure 3.1.6* shows the means of tokens and the standard errors among the two groups.

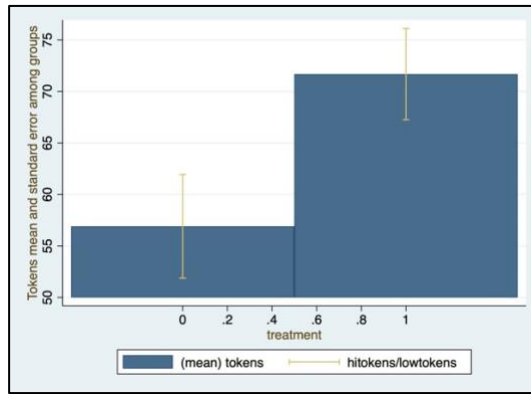


Figure 3.1.5,
barplots of tokens transferred among groups with standard errors.

3.2 Treatment analysis

As the first step of the analysis, we estimated a multivariate simple regression model explaining the amount of *tokens* as a function of treatment, empathy, altruism and controlling for demographic variables, such as age, gender, whether the respondent is European or not, and finally, for the educational background. We ran analysis based on the following Model 1:

$$tokens_i = \beta_0 + \beta_1 treatment_i + \beta_2 empathy_i + \beta_3 altruism_i + \beta_4 age_i + \beta_5 gender_i + \beta_6 european_i + \beta_7 education_i + u_i$$

Based on the results (see *Table 3.2.1*), we can see that, indeed, being in the treatment, compared to not, may lead to a higher propensity of the respondent of giving higher amount of tokens in the game, i.e. the effect is statistically significant at 5%, keeping all the other variables fixed. Moreover, *empathy* has a positive effect on the dependent variable *treatment*, and is significant at 5%, *ceteris paribus*. However, after running the Ramsey RESET test, we obtain a p-value statistically significant at 5%. Therefore, we end up concluding that the above mentioned model may be incorrect.

Table 3.2.1
Linear regression results for the relationships between tokens transferred and being in the treatment.

Variables	(1) Simple Regression Model 1
treatment	0.265*** (0.0665)
empathy	0.244*** (0.0671)
altruism	0.0430 (0.0719)
age	-0.00396 (0.00288)
european	-0.125 (0.0782)
gender	-0.0721 (0.0583)
education	-0.00726 (0.0390)
constant	4.182*** (0.155)
Observations	327
R-squared	0.111

Note: Robust standard errors in parentheses;
*** p<0.01, ** p<0.05, * p<0.1.

To overcome this challenge, we compute the logarithmic transformation to the variable *tokens*, with the aim to get higher interpretability of the Model 1. Thus, we used Model 2:

$$lntokens_i = \beta_{0i} + \beta_1 treatment_i + \beta_2 empathy_i + \beta_3 altruism_i + \beta_4 age_i + \beta_5 gender_i + \beta_6 european_i + \beta_7 education_i + e_i$$

Based on the table below (see *Table 3.2.2*), we can see both *treatment* and *empathy* have a positive effect on the number of tokens transferred, keeping all the other variables fixed, and it is statistically significant at 5%.

Table 3.2.2
Linear regression results for the relationships between lntokens and being in the treatment.

Variables	(2) Simple Regression Model 2
treatment	14.92*** (3.361)
empathy	11.74*** (3.481)
altruism	2.262 (3.600)
age	-0.0996 (0.135)
european	-5.543 (3.789)
gender	-1.060 (3.146)
education	-1.133 (2.172)
constant	63.40*** (9.054)
Observations	327
R-squared	0.104

Note: Robust standard errors in parentheses;
*** p<0.01, ** p<0.05, * p<0.1.

As a robustness check, we also conducted a nonparametric test to compare the amount of tokens in the treatment versus the control group using a Mann-Whitney U test. The result is similar: people contributed more in the treatment group where the message was sent in the NVC style (*p-value* <0.01, two-sided Mann-Whitney U test).

Lastly, the correlation table (Appendix B, *Table B.2*) shows a positive correlation between the treatment dummy variable and the dependent variable the number of tokens, potentially suggesting a positive relationship between these two. Moreover, the correlation between the variable of interest and the other variables is considerably low, indicating that multicollinearity will not be an issue.

3.3 Empathy statistical analysis

The reason why we tried to gather information about the empathy level of people relies on the fact that this personality trait may have an influence on the tendency to cooperate of individuals. To obtain a measure of person's empathy, we asked respondents to give their preferences towards three different statements (see Appendix C, *Table C.6*, *Table C.7* and *Table C.8*).

Figure 3.3.1 represents the statistical summaries of the sentence “*I am the kind of person that tries to look at everybody's side of a disagreement before making a decision*”: 58.1% agree, 21.41% strongly agree, 10.7% neither agree nor disagree, 6.42% disagree, 3.36% strongly disagree.

Figure 3.3.2 represents the statistical summaries of the sentence “*I am the kind of person that when is upset at someone, usually tries to "put myself in his shoes" for a while*”: 50.15% agree, 18.35% neither agree nor disagree, 14.68% strongly agree, 13.46% disagree, 3.36% strongly disagree.

Figure 3.3.3 represents the statistical summaries of the sentence “*I am the kind of person that, before criticising someone, tries to imagine "how I would feel if I were in their place"*”: 48.32% agree, 19.57% neither agree nor disagree, 18.65% strongly agree, 10.7% disagree, 2.75% strongly disagree.

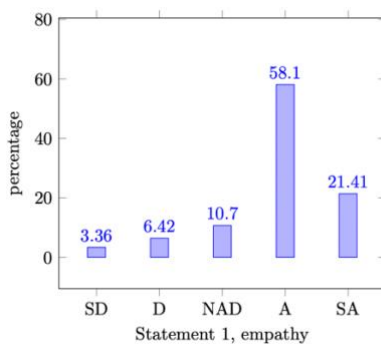


Figure 3.3.1,
disagreement.

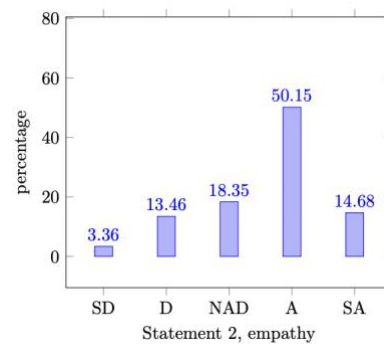


Figure 3.3.2,
upset.

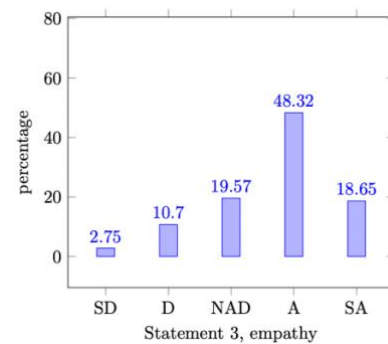


Figure 3.3.3,
critics.

To improve our analysis, we decided to perform a two-sample t-test to examine whether the level of empathy was the same among the treated and control group. Hence, results report for the *control* a *mean* = 0.5629, and *SD* = 0.4975; and the *treated* group a *mean* = 0.5250 and *SD* = 0.5009. The *combined mean* of the two groups was 0.5443 (*SD* = .4988). The difference between the two groups is not statistically significant, $t(325) = 0.6858$, $p = 0.4933$. Therefore, we fail to reject the null hypothesis that the difference in means between the two groups is zero.

As already mentioned, we constructed a variable called *score empathy* that captures the sum of all three statements for each individual. It is a discrete variable which can take a minimum value of 3 and a maximum of 15. On average, people reported an empathy score of approximately 11 points (see *Table 3.3.1*). Then, we created a binary variable, called *empathy* which takes value 1 in case the respondent reported an empathy score above 11, excluded, and 0 otherwise. Summaries show (see *Table 3.3.2*) that 54.43% of the sample reported an empathy score above the average, compared to 45.57% of the sample who did not.

Table 3.3.1, descriptive summary of empathy score.

Variable	Obs.	Mean	St. Dev.	Min.	Max.
<i>score empathy</i>	327	11.16514	2.304359	3	15

Table 3.3.2, empathy score below or above the sample's average.

Variable	Obs.	Percent	Cum.
Empathy			
<i>below average</i>	149	45.57	45.57
<i>above average</i>	178	54.43	100.00
Total	327	100	

In order to test the second hypothesis, i.e. people who reported an *empathy* score above the average of the sample gave a higher number of tokens, we performed a two-sample t-test. The sample consisted of 149 participants in group “*below the average*” and 178 participants in group “*above the average*”. The mean number of tokens transferred by those who reported an empathy score below the average was 57.57 ($SE = 2.61$, $SD = 31.88$, $95\% CI [52.41, 62.73]$), while the mean number of tokens transferred by those who reported an empathy score above the average was 69.63 ($SE = 2.28$, $SD = 30.40$, $95\% CI [65.14, 74.13]$). The null hypothesis that there is no difference in the mean number of tokens transferred by the two groups can be rejected, as the effect is statistically significant at 5%, ($t(325) = -3.50$, $p = 0.0003$, one-tailed).

Therefore, we can conclude that subjects with an empathy score above the average transferred a higher amount of tokens, compared to those who reported an empathy score below the average. This would support our second hypothesis.

In addition to these analysis, we proceeded by running a third model in which we included the interaction term *treatment##empathy* to test whether the treatment, i.e. nonviolent communication, had a stronger effect on people with a high level of empathy. However, we did not find any joint significance, as it was not statistically significant at 10%, and we could not draw any conclusions about the interaction.

3.4 Altruism statistical analysis

As the noun itself stands for, the propensity of people to either look after someone or do something for someone, it was crucial to control for it in our model, otherwise it could result in incorrect conclusions or an overestimation of the effect of other variables on *tokens*, leading to a biased model. Therefore, in order to measure altruism, we asked respondents to give their preferences towards three different statements (see Appendix C, *Table C.10*, *Table C.11* and *Table C.12*).

Data descriptive shows, see *Figure 3.4.1*, that the majority of the respondents gave more than one money to a charity, 49.85%. Only 18.04% of the sample gave money often to a charity, followed by “*once*”, 14.98%, then “*never*”, 10.09%, and finally 7.03% of the sample undertook the action very often.

Figure 3.4.2 represents “*I have allowed someone to go ahead of me in a lineup*”, 55.05% of the subjects chose “*more than once*”, 25.38% “*often*”, followed by “*very often*”, 8.87%, and finally a small portion, 6.12%, stated “*once*”, only 4.59% of the sample selected “*never*”.

Lastly, see *Figure 3.4.3*, the majority of the respondents, 42.2% answered “*more than once*” to the statement “*I have offered my seat on a bus or train to a stranger who was standing*”. Compared to the previous statements, we can see that “*often*” has been chosen by 29.97% of the sample, followed by 19.57% who selected “*very often*”. Finally, only 2.45% have *never* done it and 5.81% of the sample only *once*.

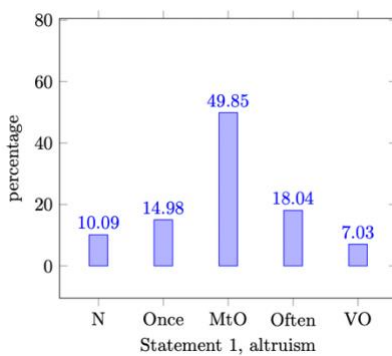


Figure 3.4.1,
charity.

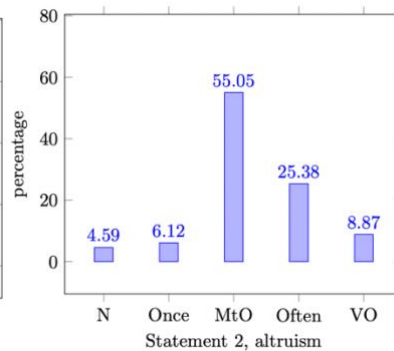


Figure 3.4.2,
seat.

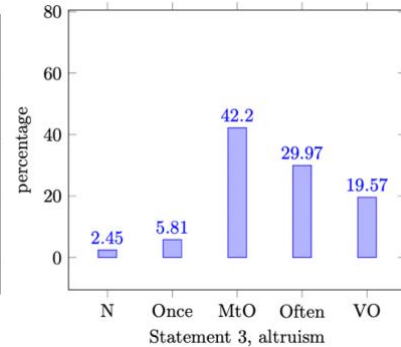


Figure 3.4.3,
lineup.

In the same manner as for *empathy*, we constructed a variable called *score altruism* that captures the sum of all three statements for each individual. It is a discrete variable which can take a minimum value of 3 and a maximum of 15. On average, people reported an altruism score of 9 points (*Table 3.4.1*).

Table 3.4.1, descriptive summary of altruism score.

Variable	Obs.	Mean	St. Dev.	Min.	Max.
<i>score altruism</i>	327	9.831804	2.024201	3	15

Again, we proceeded to create a binary variable, called *altruism*, which takes value 1 in case the respondent reported an altruism score above 9, excluded, and 0 otherwise. Summaries shows that 54.43% of the sample reported an altruism score above the average, compared to 45.57% of the sample who did not (see *Table 3.4.2*).

Table 3.4.2, altruism score above or below the sample's average.

Variable	Obs.	Percent	Cum.
Altruism			
<i>below average</i>	149	45.57	45.57
<i>above average</i>	178	54.43	100.00
Total	327	100	

Lastly, we computed a two-sample t-test to examine whether there was a significant difference in altruism level between two treatment groups. For the *control* group the *mean* is 0.5329 and *SD* = 0.5004; in the *treated* group the *mean* was 0.5563 and *SD* = 0.4984. Similar to previous results, the difference between the two groups was not statistically significant, $t(325) = -0.4220$, $p = 0.3366$. Thus, we fail to reject the null hypothesis that the difference in means between the two groups is zero.

In previous regressions Model 1 and Model 2, *altruism* seemed to not have any effect on the main dependent variable. Therefore, we decided to run a fourth multivariate regression on the following Model 3, by including the *altruism* sub questions as explanatory variables in the models (see *Table 3.4.3*). In this scenario, the behavioural tendency of giving money to charity has a positive effect on the dependent variable, statistically significant at 5%, as well as *lineup* which is statistically significant at 10%, keeping all the other variables fixed. Model 3:

$$Intokens_i = \beta_0_i + \beta_1 treatment_i + \beta_2 empathy_i + \beta_3 seat_i + \beta_4 lineup_i + \beta_5 charity_i + \beta_6 age_i + \beta_7 gender_i + \beta_7 european_i + \beta_7 education_i + \phi_i$$

In addition, we found that being European or not may have an influence on the number of tokens given, as it is significant at 10%. Based on this result, non-European individuals may be more inclined in giving tokens, compared to Europeans. However, this result may be not extremely reliable as in our sample we have a sharp discrepancy between Europeans and not.

Table 3.4.3,
linear regression results for the relationship between Intokens and treatment, including variable seat, lineup and charity.

Variables	(3) Simple Regression Model 3
treatment	0.254*** (0.0659)
empathy	0.222*** (0.0653)
seat	-0.0459 (0.0401)
lineup	0.0785* (0.0430)
charity	0.0738** (0.0353)
age	-0.00470 (0.00307)
european	-0.140* (0.0772)
education	-0.0156 (0.0386)
constant	3.851*** (0.245)
Observations	313
R-squared	0.133

Note: Robust standard errors in parentheses;
*** p<0.01, ** p<0.05, * p<0.1.

4. Discussion and Limitations

The aim of this thesis is to support and enrich the current bibliography on the efficiency and potentiality of the Nonviolent Communication style, in every nature and shape of social interactions. We carried out an economic online experiment in which subjects were randomly divided into treated and control group, and in relation to the assigned group, they received a message of same content but structured differently, i.e. NVC style for the treated (*Rosenberg, 2002*) and friendly style for the control (*Norton, 1989*). We were interested to test whether the message constructed by the model proposed by Rosenberg could have an effect on the decision-making process of participants, hence, in our context, whether the NVC style, compared to a friendly style, could encourage higher cooperation in a social dilemma setting. Furthermore, nonviolent communication has been shown to stimulate and consolidate the level of empathy in individuals, and so, we tested whether subjects with a high level of empathy, with respect to the sample average, were also those who showed a higher level of cooperation towards their counterparts. The relevance of this hypothesis is fueled by the assumption that if more empathic people are more cooperative, perhaps, by using NVC style as a channel to stimulate people's level of empathy, we can encourage higher empathy and cooperation between individuals.

Regarding the first assumption, we performed a multivariate simple regression, Model 1, testing whether the number of tokens transferred by the subjects throughout the game was influenced by being in the treated group, compared to the control, and by the level of empathy and altruism of the people, controlling for demographic aspects. In addition, we computed Model 2 with the dependent variable as a logarithmic function, in order to get higher interpretability of the model and to, eventually, obviate problems relating to the incorrect functional form of the statistical model. In conclusion of this first analysis, results supports that both being in the treated group and the level of empathy have a positive association on the transferred tokens, statistically significant at 5%. Subsequently, we also performed a nonparametric test, Mann Whitney U test, for robustness check: the results support our hypothesis that there is a systematic difference between the two groups, resulting in a statistically significant p-value at 5%. In the end, overall, people who were in the treated group, NVC message, transferred on average a higher amount of tokens, compared to the control group.

Nevertheless, based on the results, it appears that *altruism* does not have an effect on the amount of tokens transferred, thus, we ran a third multivariate regression, Model 3, by including the three questions used to construct the dummy variable *altruism*. In this scenario, only “*I gave money to charity*” has a positive effect on the dependent variable, and statistically significant at 5%. This

result is consistent with our analysis, as giving money to charity resemble the behavior relying the proposed game in the experiment.

However, we hypothesise that altruistic attitudes, in contexts of social and economic affairs (Simon, H. A., 1993), might be correlated with social desirability (Johnson, R. C., et al., 1989), and therefore, lacking of the genuine pro-social inner motivation. Thus, we can speculate that *altruistic attitude* may be the external symptom of *self-interest*, hence, “self-interested centred people” might be comparable with altruistic individuals. Consistently with this assumption, there is evidence that supports the correlation between social support and personal health, extended also in terms of brain function and healthy conditions (Yeh T.L., Lee I.H., Chen K.C., et al., 2009). Therefore, sometimes it may be that internal factors triggering altruistic behaviors may not be led by the genuine will to actually being pro-social, but, perhaps, the altruistic action itself has beneficial effects on the health of the actor of the action (Schwartzetal., 2003). Thus, altruistic behaviours may be higher correlated with subjective aspects and consequences than, broadly, to pro-social behaviors. Finally, in 2005, Ferrari, J. R., Bristow, M., & Cowman, S. E. (2005) found evidence that most students may be altruistic, pro-social, in order to address the desire to be well considered from the environment around them.

In regards to the second hypothesis, we performed a two-sample t-test to test whether those who reported an above-average empathy score transferred a higher amount of tokens, compared to those with a below-average score. Firstly, we checked, and confirmed $p\text{-value} > 0.1$ significance level, that the level of empathy was, on average, the same among treated and control groups, as robustness check. Then, we found support to our second hypothesis: there is a systematic statistical difference between the two groups, i.e. above-average empathy and below-average empathy, at 1% significance level. We were able to conclude that empathy does indeed play a role in cooperation. We hope this may lead to an increase of awareness related to the importance of being empathic, as it may be beneficial for current and future generations (Humphrey, R. H., 2013). In fact, literature shows that a high level of emotional intelligence and empathy may have positive consequences in people's personal sphere and relationships (Humphrey, R. H., 2013).

The aim of this thesis is to promote NVC style, such as in academic and working environments, as training, as skills, and as a tool, that can foster qualitatively better social relationships and interactions. As already extensively explained in the literature review, communication is a crucial in conflict resolution, agreement conclusion, scientific research, and in general, in human progress (Katz, N. H., Lawyer, J. W., Sosa, K. J., Sweedler, M., & Tokar, P., 2020; De Nooy, W., 2013; Ebadi, Y. M., & Utterback, J. M., 1984; Cherry, C., 1966). Our results are consistent with other researches, implementing the Public Good Game setting in economic

experiment, in which communication among participants played a role in the cooperation rate (Kurzban, R., 2001; Krishnamurthy, S., 2001). However, in these games was not implemented the nonviolent communication style, and here this thesis enrich the literature. We are fortunate nowadays to have proofs on the value of nonviolent communication style, that enhances, recalling all the benefits aforementioned, the exchange of thoughts between individuals (Rosenberg, 2002).

Limitations and future research

We believe that the online survey may also influenced the truthfulness of the answers reported (Duffy, B., Smith, K., Terhanian, G., & Bremer, J., 2005). We hope this may be an incentive for future research to replicate the same experiment in a laboratory, and test whether the results are consistent with those proposed in this thesis.

Furthermore, we encounter limitations in terms of generalizability as our sample primarily consists of individuals from the European union, of which mainly Italians, and we have way less individuals with a different cultural background. Thus, the study may not represent the diversity of perspectives and experiences that exist among people, and this is certainly a factor future research shall address. We also keep in mind possible self-selection bias. Eventually, participants have different motivations to participate in the survey, and motivations for not proceeding to fill out the survey. This may have affected the internal validity of the study. For example, an effective strategy to avoid selection bias could be recruiting people based on the database of holland residents, and invite x individuals per decade, e.g. invite ten people, of each decade, born from 1925 to 2023. In fact, it is not necessary to have Dutch citizenship to be resident in the Netherlands, and around 15% of the residents are from foreign countries (CBS, “Statistics Netherlands”, 2023).

In addition, as already mentioned in the literature, we reiterate the fact that, given the nature of the economic experiment, intersubjective factors may have arisen throughout the survey, that have consequences in the social desirability bias (Grimm, P., 2010), and thus reputational concerns. We may think that there might have been an overestimation of the results, and that there may be other factors influencing behaviour. It is true, however, that the randomisation process controls a great deal for the occurrence of these factors. We are aware that there may also be measurement problems, e.g. self-report measures may be subject to response bias and observer ratings may be influenced by observer bias or expectations.

This study provides useful insights relatively to the relationship between NVC and cooperative behaviours. For future research, it can be interesting to test whether people who are more team-work centered may present a different cooperative behaviour, when proposing NVC style on cooperation rate. Finally, this study relied primarily on self-report data, and future analysis could

enrich the research by adopting other methods for behavioural or physiological measures, to provide a more comprehensive understanding.

5. Conclusion

Finally, through this online economic experiment, we can say nonviolent communication and empathy have an effect on the cooperative behaviours of people. In conclusion, we found that there is a significant relationship between NVC, empathy and the tokens transferred from the sample. Specifically, our results indicate that nonviolent communication and empathy play a role in social-motive games, and this can be extended in social life scenarios. These findings have important implications for social interactions, collaborations and human progress, in all shades.

It is important to note, however, that there are still many questions that remain unanswered. Future research could explore its implementation in real Public Good Game settings and contribute to a deeper understanding. The wish is to develop more effective interventions, for examples training, programs among academic and work environments', to address social issues related to miscommunication, and associated consequences, among individuals. Overall, this study represents an important contribution to the current scientific literature, and it has provided valuable information that can be used to support future research.

References

- Askari, M., Noah, S. B. M., Hassan, S. A. B., & Baba, M. B. (2012). *Comparison the effects of communication and conflict resolution skills training on marital satisfaction. International Journal of Psychological Studies, 4(1)*,
- Balliet, D. (2010). *Communication and cooperation in social dilemmas: A meta-analytic review. Journal of Conflict Resolution, 54(1)*, 39-57.
- Balliet, D., Mulder, L. B., & Van Lange, P. A. (2011). *Reward, punishment, and cooperation: a meta-analysis. Psychological bulletin, 137(4)*, 594.
- Belot M, Bhaskar V, Van de Ven J (2012) *Can observers predict trust- worthiness? Rev. Econom. Statist. 94(1):246–259.*
- Bohnet I, Frey BS (1999) *The sound of silence in prisoner’s dilemma and dictator games. J. Econom. Behav. Organ. 38(1):43–57.*
- Bolton, G. E., & Ockenfels, A. (2000). *ERC: A theory of equity, reciprocity, and competition. American economic review, 91(1)*, 166-193.
- Bowles, S., & Gintis, H. (2005). *Can self-interest explain cooperation?. Evolutionary and Institutional Economics Review, 2(1)*, 21-41.
- Brosig J (2002) *Identifying cooperative behavior: Some experimental results in a prisoner’s dilemma game. J. Econom. Behav. Organ. 47(3):275–290.*
- Brosig J, Weimann J, Ockenfels A (2003) *The effect of communication media on cooperation. German Econom. Rev. 4(2):217–241.*
- Cabrera, E. F., & Cabrera, A. (2005). *Fostering knowledge sharing through people management practices. The international journal of human resource management, 16(5)*, 720-735.
- Caporael, L. R., Dawes, R. M., Orbell, J. M., & Van de Kragt, A. J. (1989). *Selfishness examined: Cooperation in the absence of egoistic incentives. Behavioral and Brain Sciences, 12(4)*, 683-699.

CBS, “Statistics Netherlands”, 2023.

Charness G, Dufwenberg M (2006) Promises and partnership. *Econometrica* 74(6):1579–1601.

Charness G, Dufwenberg M (2010) Bare promises: An experiment. *Econom. Lett.* 107(2):281–283.

Chen J, Houser D (2017) Promises and lies: Can observers detect deception in written messages. *Experiment. Econom.* 20(2): 396–419.

Cheng, S. H., Lee, C. T., Lee, I. H., Sun, Z. J., Lin, S. H., Chen, K. C., ... & Yang, Y. C. (2014). Social relationship and health among students with low social desirability. *Asia-Pacific Psychiatry*, 6(2), 145-151.

Cherry, C. (1966). *On human communication*. ISO 690.

Cohen, T. R., Wildschut, T., & Insko, C. A. (2010). How communication increases interpersonal cooperation in mixed-motive situations. *Journal of Experimental Social Psychology*, 46(1), 39-50.

Clarke, K. A. (2005). The phantom menace: Omitted variable bias in econometric research. *Conflict management and peace science*, 22(4), 341-352.

Cramer, P. (1998). Defensiveness and defence mechanisms. *Journal of Personality*, 66(6), 879-894.

Davis, M. H. (1980). A multidimensional approach to individual differences in empathy. *JSAS Catalog of Selected Documents in Psychology*, 10, 85.

Dawes RM, McTavish J, Shaklee H (1977) Behavior, communication, and assumptions about other people's behavior in a commons dilemma situation. *J. Personality Soc. Psych.* 35(1):1–11.

Darrick Jolliffe, David P. Farrington, *Empathy and offending: A systematic review and meta-analysis*, *Aggression and Violent Behavior*, Volume 9, Issue 5, 2004, Pages 441-476, ISSN 1359-1789.

De Nooy, W. (2013). *Communication in natural resource management: agreement between and disagreement within stakeholder groups*. *Ecology and Society*, 18(2).

De Vries, R.E., Bakker-Pieper, A., Alting Siberg, R., Van Gameren, K. & Vlug, M. (2009). *The content and dimensionality of communication styles*. *Communication Research*, 36, 178- 206.

De Vries, R. E., Bakker-Pieper, A., Konings, F. E., & Schouten, B. (2013). *The communication styles inventory (CSI) a six-dimensional behavioral model of communication styles and its relation with personality*. *Communication Research*, 40(4), 506-532. ISO 690.

Deneulin, S., & Townsend, N. (2007). *Public goods, global public goods and the common good*. *International journal of social economics*, 34(1/2), 19-36. ISO 690.

Doyal, L., & Gough, I. (1984). *A theory of human needs*. *Critical Social Policy*, 4(10), 6-38.

Duffy, B., Smith, K., Terhanian, G., & Bremer, J. (2005). *Comparing data from online and face-to-face surveys*. *International journal of market research*, 47(6), 615-639.

Ebadi, Y. M., & Utterback, J. M. (1984). *The effects of communication on technological innovation*. *Management science*, 30(5), 572-585.

Eckstein, D., & La Grassa, L. (2005). *The non-violent relationship questionnaire (NVRQ)*. *The Family Journal*, 13(2), 205-211.

Ellingsen T, Johannesson M (2004b) *Promises, threats and fairness*. *Econom. J.* 114(495):397–420.

Epinat-Duclos, J., Foncelle, A., Quesque, F., Chabanat, E., Duguet, A., Van der Henst, J. B., & Rossetti, Y. (2021). *Does nonviolent communication education improve empathy in French medical students?*. *International Journal of Medical Education*, 12, 205-218.

Forbes Insight (2009) Business meetings: The case for face-to-face. Report, Forbes Insights, New York, http://www.forbes.com/forbesinsights/Business_Meetings_FaceToFace/.

Frank RH, Gilovich T, Regan DT (1993b) *The evolution of one- shot cooperation: An experiment. Ethology and Sociobiology* 14(4): 247–256.

Gächter, S., Herrmann, B., & Thöni, C. (2010). *Culture and cooperation. Philosophical Transactions of the Royal Society B: Biological Sciences*, 365(1553), 2651-2661.

Gilbert, P. (2014). *The origins and nature of compassion focused therapy. British Journal of Clinical Psychology*, 53(1), 6-41.

Gneezy U (2005) *Deception: The role of consequences. Amer. Econom. Rev.* 95(1):384–394.

Greenberg AE, Smeets P, Zhurakhovska L (2014) *Promoting truth- ful communication through ex- post disclosure. Working paper, University of California, Los Angeles, Los Angeles.*

Grimm, P. (2010). *Social desirability bias. Wiley international encyclopedia of marketing.*

Head, K. J., Kasting, M. L., Sturm, L. A., Hartsock, J. A., & Zimet, G. D. (2020). *A national survey assessing SARS-CoV-2 vaccination intentions: implications for future public health communication efforts. Science Communication*, 42(5), 698-723.

He, S., Offerman, T., & Van De Ven, J. (2017). *The sources of the communication gap. Management Science*, 63(9), 2832-2846.

Heylighen, F. (1992). *Evolution, selfishness and cooperation. Journal of Ideas*, 2(4), 70-76.

Hoffmann, J. (2014). *Conceptualising ‘communication for peace’. Peacebuilding*, 2(1), 100-117.

Honeycutt, J. M. (1993). *Components and functions of communication during initial interaction, with extrapolations to beyond. Annals of the International Communication Association*, 16(1), 461-490.

House J.S., Landis K.R., Umberson D. (1988) *Socialrelationships and health. Science.* 241, 540–545.

Humphrey, R. H. (2013). *The benefits of emotional intelligence and empathy to entrepreneurship. Entrepreneurship Research Journal, 3*(3), 287-294

Lehmann, L., & Keller, L. (2006). *The evolution of cooperation and altruism—a general framework and a classification of models. Journal of evolutionary biology, 19*(5), 1365-1376.

Li, N., Liang, J., & Crant, J. M. (2010). *The role of proactive personality in job satisfaction and organizational citizenship behavior: a relational perspective. Journal of applied psychology, 95*(2), 395.

James Andreoni. (1995). *Cooperation in Public-Goods Experiments: Kindness or Confusion? The American Economic Review, 85*(4), 891–904.

Jensen, C., Farnham, S. D., Drucker, S. M., & Kollock, P. (2000, April). *The effect of communication modality on cooperation in online environments. In Proceedings of the SIGCHI conference on Human Factors in Computing Systems (pp. 470-477).*

Jolliffe, D., & Farrington, D. P. (2004). *Empathy and offending: A systematic review and meta-analysis. Aggression and violent behavior, 9*(5), 441-476.

Johnson, R. C., Danko, G. P., Darvill, T. J., Bochner, S., Bowers, J. K., Huang, Y. H., ... & Pennington, D. (1989). *Cross-cultural assessment of altruism and its correlates. Personality and individual differences, 10*(8), 855-868.

Kansky, R., & Maassarani, T. (2022). *Teaching nonviolent communication to increase empathy between people and toward wildlife to promote human–wildlife coexistence. Conservation Letters, e12862.*

Katz, N. H., Lawyer, J. W., Sosa, K. J., Sweedler, M., & Tokar, P. (2020). *Communication and conflict resolution skills. Kendall Hunt Publishing.*

Khalil, E. L. (2004). *What is altruism?. Journal of economic psychology, 25*(1), 97-123.

Koopman, S., & Seliga, L. (2021). *Teaching peace by using nonviolent communication for difficult conversations in the college classroom. Peace and Conflict Studies, 27(3), 2.*

Komorita, S. S., & Parks, C. D. (1995). *Interpersonal relations: Mixed-motive interaction. Annual review of psychology, 46(1), 183-207.*

Krishnamurthy, S. (2001). *Communication effects in public good games with and without provision points. In Research in Experimental Economics (Vol. 8, pp. 25-46). Emerald Group Publishing Limited.*

Kurzban, R. (2001). *The social psychophysics of cooperation: Nonverbal communication in a public goods game. Journal of Nonverbal Behavior, 25, 241-259.*

McCaffrey, R., Hayes, R. M., Cassel, A., Miller-Reyes, S., Donaldson, A., & Ferrell, C. (2012). *The effect of an educational program on attitudes of nurses and medical residents towards the benefits of positive communication and collaboration. Journal of Advanced Nursing, 68 (2), 293–301.*

McCloskey, D. (1994). *The Neglected. Planning for Higher Education, 22, 1-1.*

McKnight, P. E., & Najab, J. (2010). *Mann-Whitney U Test. The Corsini encyclopedia of psychology, 1-1.*

Mehta, D., Bediako, Y., De Winde, C. M., Ebrahimi, H., Fernández-Chiappe, F., Ilangovan, V., ... & Weissgerber, T. (2020). *Research Communication: Ways to increase equity, diversity and inclusion. Elife, 9, e60438.*

Miettinen T, Suetens S (2008) *Communication and guilt in a prisoner's dilemma. J. Conflict Resolution 52(6):945–960.*

Miller, J. H., Butts, C. T., & Rode, D. (2002). *Communication and cooperation. Journal of Economic Behavior & Organization, 47(2), 179-195.*

Myers, S. L. (1980). *The rehabilitation effect of punishment. Economic Inquiry, 18(3), 353-366.*

Morreale, S. P., Osborn, M. M., & Pearson, J. C. (2000). *Why communication is important: A rationale for the centrality of the study of communication*. *Journal of the association for communication administration*, 29(1), 1.

Morreale, S. P., & Pearson, J. C. (2008). *Why communication education is important: The centrality of the discipline in the 21st century*. *Communication Education*, 57(2), 224-240.

Mummolo, J., & Peterson, E. (2019). *Demand effects in survey experiments: An empirical assessment*. *American Political Science Review*, 113(2), 517-529.

Museux, A. C., Dumont, S., Careau, E., & Milot, É. (2016). *Improving interprofessional collaboration: The effect of training in nonviolent communication*. *Social work in health care*, 55(6), 427-439.

Nosek, M., GiCord, E., & Kober, B. (2014). *Nonviolent Communication training increases empathy in baccalaureate nursing students: A mixed method study*. *Journal of Nursing Education & Practice*, 4(10), 1-15.

Nowak, M. A. (2006). *Five rules for the evolution of cooperation*. *science*, 314(5805), 1560-1563.

Nowak, M. A. (2012). *Evolving cooperation*. *Journal of theoretical biology*, 299(0), 1-8.

Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory*. New York: McGraw.

Osborne, M. J., & Rubinstein, A. (1994). *A course in game theory*. MIT press.

Paulo, S. (2014). *International cooperation and development: A conceptual overview*. German Development Institute/Deutsches Institut für Entwicklungspolitik Discussion Paper, 13.

Pekerti, A. A., & Thomas, D. C. (2003). *Communication in intercultural interaction: An empirical investigation of idiocentric and sociocentric communication styles*. *Journal of cross-cultural psychology*, 34(2), 139-154.

- Pfattheicher, S., Nielsen, Y. A., & Thielmann, I. (2022). *Prosocial behavior and altruism: A review of concepts and definitions. Current opinion in psychology, 44, 124-129.*
- Rachlin, H. (2002). *Altruism and selfishness. Behavioral and brain sciences, 25(2), 239-250.*
- Reed, V. A., & Spicer, L. (2003). *The Relative Importance of Selected Communication Skills for Adolescents' Interactions With Their Teachers: High School Teachers' Opinions. Language, Speech & Hearing Services in Schools, 34(4).*
- Reed, V. A., McLeod, K., & McAllister, L. (1999). *Importance of selected communication skills for talking with peers and teachers: Adolescents' opinions. Language, Speech, and Hearing Services in Schools, 30(1), 32-49.*
- Ricciuti, R. (2004). *Punishment and Counter-punishment in Public Goods Games: Can we still govern ourselves? (No. 04/06). Department of Economics, Royal Holloway University of London.*
- Rippon, T. J. (2000). *Aggression and violence in health care professions. Journal of advanced nursing, 31(2), 452-460.*
- Rosenberg, M. B. (2002). *Nonviolent communication: A language of compassion. Encinitas, CA: Puddledancer press.*
- Rushton, J. P., Chrisjohn, R. D., & Fekken, G. C. (1981). *The altruistic personality and the self-report altruism scale. Personality and individual differences, 2(4), 293-302.*
- San Martin Rodriguez, L., Beaulieu, M.-D., D'Amour, D., & Ferrada-Videla, M. (2005). *The determinants of successful collaboration: A review of theoretical and empirical studies. Journal of Interprofessional Care, 19(2), 132–147.*
- Schwartz C., Meisenhelder J.B., Ma Y., Reed G. (2003) *Altruistic social interest behaviors are associated with better mental health. Psychosom Med. 65, 778–785*
- Sigmund, K. (2010). *The calculus of selfishness. Princeton University Press.*

Simon, H. A. (1993). Altruism and economics. *The American Economic Review*, 83(2), 156-161.

Smither, R. D., & Houston, J. M. (1992). The nature of competitiveness: The development and validation of the competitiveness index. *Educational and Psychological Measurement*, 52(2), 407-418.

Spielberger, C. D., & Reheiser, E. C. (2009). Assessment of emotions: Anxiety, anger, depression, and curiosity. *Applied Psychology: Health and Well-Being*, 1(3), 271-302.

Steigenberger, N. (2015). Emotions in sensemaking: A change management perspective. *Journal of Organizational Change Management*.

Stoop, J., Van Soest, D., & Vyrastekova, J. (2018). Rewards and cooperation in social dilemma games. *Journal of Environmental Economics and Management*, 88, 300-310.

Streiner, D. L. (2003). Starting at the beginning: an introduction to coefficient alpha and internal consistency. *Journal of personality assessment*, 80(1), 99-103.

Suárez-Orozco, M. M., & Qin-Hilliard, D. B. (2004). Culture and education in the new millennium. *Globalization: Culture and education in the new millennium*, 1-37.

Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International journal of medical education*, 2, 53.

Terepyshchyi, S., & Khomenko, H. (2019). Development of Methodology for Applying Non-Violent Conflict Resolution in Academic Environment. *Future Human Image*, 12(94), 103.

Vanberg C (2008) Why do people keep their promises? An experimental test of two explanations. *Econometrica* 76(6):1467–1480.

Warneken, F., & Tomasello, M. (2009). The roots of human altruism. *British Journal of Psychology*, 100(3), 455-471.

Whitton, S. W., Waldinger, R. J., Schulz, M. S., Allen, J. P., Crowell, J. A., & Hauser, S. T. (2008). *Prospective associations from family-of-origin interactions to adult marital interactions and relationship adjustment. Journal of family Psychology, 22(2), 274.*

Whitton, S. W., & Whisman, M. A. (2010). *Relationship satisfaction instability and depression. Journal of Family Psychology, 24(6), 791.*

Whitton, S. W., & Kuryluk, A. D. (2012). *Relationship satisfaction and depressive symptoms in emerging adults: cross-sectional associations and moderating effects of relationship characteristics. Journal of Family Psychology, 26(2), 226.*

Wildschut, T., & Insko, C. A. (2006). *A paradox of individual and group morality: Social psychology as empirical philosophy. Bridging social psychology: Benefits of transdisciplinary approaches, 377-384.*

Yeh T.L., Lee I.H., Chen K.C., et al. (2009) *The relationships between daily life events and the availabilities of serotonin transporters and dopamine transporters in healthy volunteers—a dual-isotope SPECT study. Neuroimage. 45, 275–279.*

Yu, X. (2011). *Theory of humans: Selfishness. Available at SSRN 1974395.*

Zerbe, W. J., & Paulhus, D. L. (1987). *Socially desirable responding in organizational behavior: A reconception. Academy of management review, 12(2), 250-264.*

Appendix A. Survey

Introduction.

Dear Participant,

your participation is completely voluntary and anonymous, and the answers will be used for scientific purposes only. This survey takes about 5 minutes to complete, and participants must be over 18 years old.

In case you would like to proceed, thank you in advance for your help.

For any other questions please contact: 604963cl@eur.nl

I agree to fill the survey

I do not wish to fill the survey

Survey Structure

1. I will introduce you a scenario and you'll be asked to answer one question.
2. I'll ask your opinion regarding six short sentences.
3. Six general demographic questions.

Experiment Description



Imagine the following scenario:

You have been assigned to a group of two people. Both of you will be given 100 tokens, one token values 0.50€, and you can either keep it or invest it into a common fund. If you invest your tokens, there is a chance to earn more euros. What you earn depends on how many tokens you or the other member contribute to the common fund. The total amount collected in the common fund is multiplied by 1.5, and then divided equally between you and the other member of the group. The more the group member invests in the common fund, the more each member of the group earns.

Please read the examples:

1. Suppose you invest 50 tokens in the common fund, and the other member invests 20 tokens. There will be a total of 70×1.5 tokens, which is equivalent to 52.5€, and each of you receives half, i.e. 26.25€. In the end, you sum the tokens in your pocket and the common fund, you get 51.5€ in total and 66.25€ the other member.

2. Suppose that you do not want to invest in the common fund, but the other member invests 50 tokens in the common fund. Then, the total amount, in euros, in the common fund is 37.5€. So, you and the other member will each earn 18.75€. In the end, you gain 68.75€ and the other member gains 43.75€.

NVC

Scenario:

Before starting, imagine the other group member telling you the following words.



Hello!

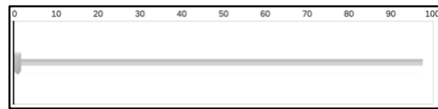
I see we belong to the same group. We can make some profit by investing tokens in the common fund.

I feel that I would very much like to contribute, but at the same time, I am a little bit afraid that you may not contribute as much as I do. But I know that you may feel the same.

We will benefit greatly from investing, but we definitely do not know each other well enough to trust each

other. Nevertheless, I will give all my endowments and contribute with the 100 tokens that I have in the common fund. Would you be willing to invest as much as you can as well in the common fund?

How many tokens would you like to put in the common fund? (you are free to choose).



Control Group

Scenario:

Before starting, imagine the other group member telling you the following words.



"Hello! I know we do not know each other. I know we can profit by investing money in the common fund.

You're probably just as much hesitant to trust me as I am, right? But whatever, from my side, I'm going to contribute 100 tokens to the common fund. So, are you going to step up and do your part as well?"

How many tokens would you like to put in the common fund? (you are free to choose).



Altruism and Empathy Scale

You are invited to answer *honestly* to these questions, remember that *answers are anonymous* and *your privacy is respected*.

I am the kind of person that tries to look at everybody's side of a disagreement before making a decision.

Strongly Disagree Disagree Neither agree nor disagree Agree Strongly agree

I am the kind of person that when is upset at someone, usually tries to "put myself in his shoes" for a while.

Strongly Disagree Disagree Neither agree nor disagree Agree Strongly agree

I am the kind of person that, before criticising someone, tries to imagine "how I would feel if I were in their place".

Strongly Disagree Disagree Neither agree nor disagree Agree Strongly agree

"I have given money to a charity".

Never Once More than once Often Very Often

"I have allowed someone to go ahead of me in a lineup".

Never Once More than once Often Very Often

"I have offered my seat on a bus or train to a stranger who was standing".

Never Once More than once Often Very Often

General Questions

What is your age?

What is your gender?

Male Female Non-binary/Third gender Prefer not to say

Are you..?

European

Not-European

Where do you identify yourself?

What is your highest level of education?

High school diploma or equivalent

Bachelor's degree

Master's degree

Doctoral degree (PhD)

Which is the field of your current study/work?

Business/Management/Economics

Education/Teaching

Healthcare/Medicine

Engineering/Technology

Arts/Humanities

Social Sciences

Communications/Media

Tourism

Other

Appendix B. Summary Statistics

Table B.1: Descriptive Statistics continuous variable

Variable	Obs	Mean	Std. Dev.	Min	Max
Tokens	327	64.138	31.611	0	100
Treated Group	160	71.688	28.39	0	100
Control Group	167	56.904	32.905	0	100
Score altruism	327	9.832	2.024	3	15
Score empathy	327	11.165	2.304	3	15
Age	327	29.284	13.042	18	89

Table B.2: Matrix of correlations variables of the model

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) tokens	1.000						
(2) treatment	0.234	1.000					
(3) empathy	0.190	-0.038	1.000				
(4) altruism	0.040	0.023	0.075	1.000			
(5) age	-0.079	-0.028	-0.153	0.105	1.000		
(6) european	-0.094	-0.036	-0.061	0.037	-0.053	1.000	
(7) education	-0.051	0.006	-0.086	0.247	0.362	-0.007	1.000

Mann-Whitney U test:

$$H_0 : \text{tokens}(\text{treatm} \sim t = 0) = \text{tokens}(\text{treatm} \sim t = 1) \quad z = -4.123 \quad \text{Prob} > |z| = 0.0000$$

Appendix C. Tabulation of variables

Table C.1: Tabulation of Gender

Gender, male=1	Freq.	Percent	Cum.
Male	139	42.51	42.51
Female	180	55.05	97.55
Non-binary /Third gender	6	1.83	99.39
Prefer not to say	2	0.61	100.00
Total	327	100.00	

Table C.2: Tabulation of European

European, non-european=0	Freq.	Percent	Cum.
European	240	73.39	73.39
Non european	87	26.61	100.00
Total	327	100.00	

Table C.3: Tabulation of Education

Degree level completed	Freq.	Percent	Cum.
High School	69	21.10	21.10
Bachelor	120	36.70	57.80
Master	125	38.23	96.02
PhD	13	3.98	100.00
Total	327	100.00	

Table C.4: Tabulation of Field

Educational field	Freq.	Percent	Cum.
Business/Management/Economics	110	33.64	33.64
Education/Teaching	47	14.37	48.01
Healthcare/Medicine	16	4.89	52.91
Engineering/Technology	31	9.48	62.39
Arts/Humanities	33	10.09	72.48
Social Science	25	7.65	80.12
Communication/Media	36	11.01	91.13
Tourism	21	6.42	97.55
Other	8	2.45	100.00
Total	327	100.00	

Table C.5: Tabulation of Empathy

	Freq.	Percent	Cum.
below average	149	45.57	45.57
above average	178	54.43	100.00
Total	327	100.00	

Table C.6: Tabulation of disagreement, empathy

Disagreement, empathy	Freq.	Percent	Cum.
Strongly Disagree	11	3.36	3.36
Disagree	21	6.42	9.79
Neither Agree nor Disagree	35	10.70	20.49
Agree	190	58.10	78.59
Strongly Agree	70	21.41	100.00
Total	327	100.00	

Table C.7: Tabulation of upset, empathy

Upset, empathy	Freq.	Percent	Cum.
Strongly Disagree	11	3.36	3.36
Disagree	44	13.46	16.82
Neither Agree nor Disagree	60	18.35	35.17
Agree	164	50.15	85.32
Strongly Agree	48	14.68	100.00
Total	327	100.00	

Table C.8: Tabulation of critics, empathy

Criticism, empathy	Freq.	Percent	Cum.
Strongly Disagree	9	2.75	2.75
Disagree	35	10.70	13.46
Neither Agree nor Disagree	64	19.57	33.03
Agree	158	48.32	81.35
Strongly Agree	61	18.65	100.00
Total	327	100.00	

Table C.9: Tabulation of Altruism

	Freq.	Percent	Cum.
below average	149	45.57	45.57
above average	178	54.43	100.00
Total	327	100.00	

Table C.10: Tabulation of charity, altruism

Charity, altruism	Freq.	Percent	Cum.
Never	33	10.09	10.09
Once	49	14.98	25.08
More than once	163	49.85	74.92
Often	59	18.04	92.97
Very often	23	7.03	100.00
Total	327	100.00	

Table C.11: Tabulation of lineup, altruism

Lineup, altruism	Freq.	Percent	Cum.
Never	15	4.59	4.59
Once	20	6.12	10.70
More than once	180	55.05	65.75
Often	83	25.38	91.13
Very often	29	8.87	100.00
Total	327	100.00	

Table C.12: Tabulation of seat, altruism

Seat, altruism	Freq.	Percent	Cum.
Never	8	2.45	2.45
Once	19	5.81	8.26
More than once	138	42.20	50.46
Often	98	29.97	80.43
Very often	64	19.57	100.00
Total	327	100.00	

Table C.13: Tabulation of Countries	Freq.	Percent	Cum.
Afghanistan	1	0.31	0.31
Albania	1	0.31	0.61
Algeria	1	0.31	0.92
Antigua and Barbuda	1	0.31	1.22
Argentina	6	1.83	3.06
Armenia	1	0.31	3.36
Australia	3	0.92	4.28
Austria	1	0.31	4.59
Bangladesh	1	0.31	4.89
Belgium	2	0.61	5.50
Brazil	1	0.31	5.81
Bulgaria	3	0.92	6.73
Canada	2	0.61	7.34
China	2	0.61	7.95
Colombia	6	1.83	9.79
Croatia	3	0.92	10.70
Cyprus	3	0.92	11.62
Czech Republic	2	0.61	12.23
Denmark	2	0.61	12.84
Ecuador	1	0.31	13.15
Egypt	4	1.22	14.37
Estonia	1	0.31	14.68
France	8	2.45	17.13
Georgia	1	0.31	17.43
Germany	12	3.67	21.10
Greece	17	5.20	26.30
Hungary	3	0.92	27.22
India	7	2.14	29.36
Iran	1	0.31	29.66
Ireland	2	0.61	30.28
Italy	133	40.67	70.95
Japan	4	1.22	72.17
Kenya	1	0.31	72.48
Kuwait	2	0.61	73.09
Latvia	2	0.61	73.70
Mexico	1	0.31	74.01
Morocco	7	2.14	76.15
Netherlands	21	6.42	82.57
North Korea	1	0.31	82.87
Norway	1	0.31	83.18
Oman	1	0.31	83.49
Paraguay	1	0.31	83.79
Peru	1	0.31	84.10
Philippines	1	0.31	84.40
Poland	4	1.22	85.63
Portugal	3	0.92	86.54
Qatar	1	0.31	86.85
Romania	2	0.61	87.46
Russian Federation	3	0.92	88.38
Saudi Arabia	1	0.31	88.69
Serbia	3	0.92	89.60
South Africa	2	0.61	90.21
Spain	1	0.31	90.52
Suriname	11	3.36	93.88
Turkey	4	1.22	95.11
Ukraine	3	0.92	96.02
United Arab Emirates	1	0.31	96.33
United Kingdom of Great Britain and Northern Ireland	1	0.31	96.64
United States of America	6	1.83	98.47
Venezuela	1	0.31	98.78
Vietnam	4	1.22	100.00
Total	327	100.00	