



**UNICA**

UNIVERSITÀ  
DEGLI STUDI  
DI CAGLIARI

**Ph.D. DEGREE IN  
Economics and Business**

Cycle XXXVII

**TITLE OF THE Ph.D. THESIS**

Four essays on risk, altruism, and social norms

---

---

Scientific Disciplinary Sector(s)

ECON-01/A

Ph.D. Student:

Gabriele Ballicu

Supervisor

Prof. Vittorio Pelligra

Final exam. Academic Year 2023/2024

Thesis defence: January 2025 Session



## Abstract

Altruism and cooperation phenomena have been extensively studied by psychology and the social sciences. Recently, these concepts have become increasingly important in economics as well. The field of game theory has formalized strategic behavior, and theoretical models of social preferences have been developed (Cooper & Kagel, 2017; Drouvelis, 2021). Furthermore, prosocial behaviors are complex and can be influenced by personal characteristics, particular situations (such as risky choices), and social norms. This dissertation aims to investigate these phenomena in depth, using experimental methods to explore different scenarios. The first study examines the various classifications of nudges in the literature by creating a unified framework that takes into account different dimensions of nudges. The second study is a field experiment on blood donations that implements a nudge policy using framing messages based on different types of altruism to increase donations. The results demonstrate the effectiveness of different messages on different types of subjects. The third study is a survey experiment examining the impact of cultural and social norms on the level of cooperation between individuals in southern and northern Italy. The findings suggest that individuals in the southern region exhibit a lower degree of trust in their fellow region residents, in contrast to those in the northern region. This may provide an explanation for the observed differences in levels of trust and citizenship, as reported in other studies. The fourth study is a laboratory experiment that aims to analyze the effect of altruism on risk through lottery tasks. The results indicate that men are more likely than women to make a risky choice that benefits a charity, exceeding the behavior estimated based on their baseline levels of altruism and risk.



# Contents

<b>Introduction</b> .....	<b>13</b>
<b>Chapter 1: Which nudge is better to use? BOTTOM, a review of nudging frameworks</b> .....	<b>16</b>
1.1. Introduction .....	17
1.2. Nudge subjects and outcomes .....	18
1.3. Nudge frameworks .....	20
1.3.1. MINDSPACE framework .....	22
1.3.2. Brain System framework (Behavioral control systems): Habit vs. Impulsive-Innate .....	25
1.3.3. The types of mental activity orientation of the intervention .....	26
1.3.4. A dual framework for transparency and the process of mind .....	27
1.3.5. The 23 ways framework and the types of triggers .....	29
1.3.6. The categories and objectives of decision technique .....	31
1.4. The BOTTOM framework: How can it be applied? .....	32
1.5. Discussion and concluding remarks.....	36
<b>Chapter 2: What motives increase blood donation? A field experiment with framing messages.</b>	<b>39</b>
2.1. Introduction.....	40
2.2. Relevant literature .....	41
2.2.1. Blood Donation Motives.....	41
2.2.2. Strategies and policy interventions used in other studies .....	44
2.3. The experiment: design, procedures, and hypotheses .....	46
2.4. Results.....	50
2.4.1. Intention to donate .....	53
2.4.2. Donation.....	57
2.4.3. Incentives belief.....	62
2.5. Discussion, policy implications, and concluding remarks .....	64

<b>Chapter 3: The Italian North-South divide. Cultural and contextual determinants of cooperation and trust.....</b>	<b>69</b>
3.1. Introduction.....	70
3.2. The North-South divide in Italy .....	71
3.2.1. Historical background and data.....	71
3.2.2. Theories on the causes of the gap .....	73
3.3. The experimental approach to the North-South divide.....	76
3.4. Experimental design and assumptions .....	79
3.5. Results.....	85
3.5.1. Data and Descriptive Analysis .....	85
3.5.2. Econometric analysis .....	87
3.5.2.1. Psychological preferences and characteristics .....	88
3.5.2.2. Behavior in games and scenarios .....	90
3.6. Discussion and Conclusions.....	100
 <b>Chapter 4: Altruistic excuse to risk: An experiment on prosocial risk-taking.....</b>	 <b>103</b>
4.1. Introduction.....	104
4.2. Relevant literature .....	106
4.2.1. The deep link between prosocial behavior and risk-taking.....	106
4.2.2. Optimism and karma belief: a link between altruism and risk-taking? .....	107
4.2.3. Experiments on the interaction between altruism and risk .....	108
4.3. A theoretical model for altruism effect on risk.....	109
4.4. The experiment: design, procedures and behavioral hypotheses .....	112
4.5. Results.....	116
4.5.1. Data and Descriptive Analysis .....	116
4.5.2. Econometric analysis .....	120
4.6. Concluding remarks .....	129

<b>Appendix Chapter 2</b> .....	<b>132</b>
Appendix 2.A. Additional data information and results .....	133
Appendix 2.B. Supplementary information and analysis .....	152
2.B.1. The italian case .....	152
2.B.2. Donor Status .....	153
2.B.3. Robustness checks.....	158
Appendix 2.C. Online survey and emails .....	172
<b>Appendix Chapter 3</b> .....	<b>186</b>
Appendix 3.A. Additional data information and results .....	187
Appendix 3.B. Online survey.....	200
<b>Appendix Chapter 4</b> .....	<b>248</b>
Appendix 4.A. Additional data information and results .....	249
Appendix 4.B. Supplementary information and analysis .....	253
4.B.1. Risk attitudes and prosocial behavior.....	253
Appendix 4.C. Mathematical Appendix of Section 4.3 .....	255
4.C.1. Properties of the Utility Functions .....	255
4.C.2. Properties of the Weighted functions .....	257
Appendix 4.D. Questions and tasks .....	259
<b>References</b> .....	<b>274</b>

## List of Figures

FIGURE 2.1. INCENTIVES BELIEFS ABOUT SELF AND OTHERS .....	64
FIGURE 3.1. MAPS OF ITALIAN REGIONS .....	86
FIGURE 3.2. MAPS OF MAIN CULTURAL VARIABLES ACROSS REGIONS .....	93
FIGURE 3.3. MAPS OF MAIN GAME DIFFERENCE ACROSS REGIONS .....	94
FIGURE 4.1. DICTATOR GAME DONATIONS BY GENDER.....	119
FIGURE 4.2. CARD GAME OPTIMISM BY GENDER .....	119
FIGURE 4.3. HOLT & LAURY SWITCHING POINTS DISTRIBUTIONS OVER GROUPS BY GENDER.....	121
FIGURE 4.4. AVERAGE SWITCH IN HOLT & LAURY LOTTERIES OVER GROUPS BY GENDER.....	122
FIGURE 2.A.1. PERCENTAGE OF STUDENT’S AGE ACROSS THE POPULATION .....	148
FIGURE 2.A.2. PERCENTAGE OF STUDENT POPULATION ACROSS SCHOOLS .....	148
FIGURE 2.A.3. BOX PLOT OF GENERAL PREFERENCES SURVEYS BY GENDER .....	149
FIGURE 2.A.4. BOX PLOT OF GENERAL PREFERENCES SURVEYS BY DONOR STATUS .....	149
FIGURE 2.A.5. PERCENTAGE OF DONATION OVER SCHOOLS .....	150
FIGURE 2.A.6. BOX PLOT FOR SURVEY ON ATTITUDE AND MOTIVES ON BLOOD DONATION .....	150
FIGURE 2.A.7. INCENTIVES BELIEFS ON SELF AND OTHER BY GENDER.....	151
FIGURE 3.A.1. GRAPHS OF EXPECTED CONTRIBUTION OVER REGIONS .....	199
FIGURE 4.B.1. MODEL OF POSSIBLE INTERSECTIONS BETWEEN RISK-TAKING AND PROSOCIALITY .....	253
FIGURE 4.B.2. PROSOCIAL-RISK TAKERS TYPES IN THE SAMPLE .....	254

## List of Tables

TABLE 1.1 NUDGE AND SLUDGE COMPARISONS FRAMEWORK.....	19
TABLE 1.2. BRAIN SYSTEM FRAMEWORK AND MINDSPACE FRAMEWORK.....	25
TABLE 1.3. RESPONSIBLE USE OF THE NUDGE APPROACH TO BEHAVIOR CHANGE IN PUBLIC POLICY (HANSEN & JESPERSEN, 2013) .....	29
TABLE 1.4. THE 23 NUDGING MECHANISMS (CARABAN ET AL., 2019) AND THE THREE TYPES OF TRIGGERS SUGGESTED BY FOGG’S BEHAVIOUR MODEL .....	30
TABLE 1.5. CHOICE ARCHITECTURE TAXONOMY (MÜNSCHER ET AL., 2016).....	31
TABLE 1.6. THE BOTTOM FRAMEWORK.....	33
TABLE 1.7. EXAMPLES (INCREASE THE EATING OF VEGETABLES AND VACCINE ADHERENCE) OF APPLICATION OF THE BOTTOM FRAMEWORK .....	34
TABLE 2.1 – REASONS FOR DONATING BLOOD REPORTED IN PREVIOUS STUDIES.....	43
TABLE 2.2 – DIFFERENT FRAMING MESSAGES FOR GROUPS.....	49
TABLE 2.3 – DESCRIPTIVE STATISTICS OF GROUPS AND POPULATION.....	52
TABLE 2.4 – TEST FOR GENDER, DONOR STATUS AND TREATMENTS ON INTENTION TO DONATE .....	53
TABLE 2.5 – AVERAGE MARGINAL EFFECTS FOR PROBABILITY OF STATED A POSITIVE INTENTION .....	54
TABLE 2.6 – TEST FOR GENDER, DONOR STATUS AND TREATMENTS ON DONATION .....	58
TABLE 2.7 – AVERAGE MARGINAL EFFECTS FOR PROBABILITY OF DONATION DURING BLOOD DRIVE .....	59
TABLE 2.8 – MULTIPLE HYPOTHESIS TESTING CORRECTION FOR MAIN HYPOTHESIS.....	66
TABLE 3.1 – REGRESSION MODELS FOR GAMES AND SCENARIOS .....	96
TABLE 3.2 – REGRESSION MODELS FOR THE INVESTMENT GAME (DIFFERENT ROLES) .....	97

TABLE 4.1 – GROUPS AND TASKS ORDER.....	114
TABLE 4.2 – MAIN DESCRIPTIVE STATISTICS OF GROUPS AND POPULATION .....	118
TABLE 4.3 – TEST COMPARING HOLT & LAURY SWITCH AND RISK PARAMETER IN CONTROL AND PROSOCIAL GROUPS (T2) BY GENDER.....	124
TABLE 4.4 – ORDERED LOGIT FOR HOLT & LAURY SWITCHING POINTS (RISK AVERSION) FOR FEMALES .....	125
TABLE 4.5 – INTERVAL REGRESSION MODELS FOR RISK PARAMETERS FOR FEMALES .....	126
TABLE 4.6 – ORDERED LOGIT FOR HOLT & LAURY SWITCHING POINTS (RISK AVERSION) FOR MALES.....	127
TABLE 4.7 – INTERVAL REGRESSION MODELS FOR RISK PARAMETERS FOR MALES .....	128
TABLE 2.A.1 – DIFFERENT MESSAGES (ITALIAN .....	133
TABLE 2.A.2 – MODELS FOR POSITIVE INTENTION TO DONATE (PROBIT WITH ROBUST SE) .....	134
TABLE 2.A.3 – MODELS FOR DONATION DURING BLOOD DRIVE (PROBIT WITH ROBUST SE).....	137
TABLE 2.A.4 – MODELS ON GAP IN DAYS BETWEEN INTENTION AND DONATION .....	140
TABLE 2.A.5 – MODELS ON PROPENSITY TO DONATE IF HE/SHE WOULD GET PAID .....	142
TABLE 2.A.6 – MODELS ON BELIEVED PROPENSITY TO DONATE OF OTHER IF THEY WOULD GET PAID .....	145
TABLE 2.B.1 – AVERAGE MARGINAL EFFECTS FOR PROBABILITY OF BEING A DONOR .....	154
TABLE 2.B.2 – MODELS FOR DONOR STATUS (NON-DONOR, OCCASIONAL AND HABITUAL DONOR) .....	156
TABLE 2.B.3 – ROBUSTNESS CHECK FOR MODELS .....	160
TABLE 2.B.4 – MODELS FOR INTENTION TO DONATE AND DONATION DURING BLOOD DRIVE (OLS).....	163
TABLE 2.B.5 – MULTIVARIATE PROBIT WITH THREE EQUATIONS: BLOOD DONATION, POSITIVE INTENTION AND DONOR STATUS.....	166
TABLE 3.A.1 – DESCRIPTIVE STATISTICS AND TEST COMPARING NORTHERN AND SOUTHERN .....	187
TABLE 3.A.2 – AVERAGE MARGINAL EFFECTS FOR SOCIAL CAPITAL VARIABLES.....	191
TABLE 3.A.3 – ROBUSTNESS CHECKS FOR GAMES AND SCENARIOS.....	193
TABLE 3.A.4 – ROBUSTNESS CHECKS FOR THE INVESTMENT GAME (DIFFERENT ROLES).....	195
TABLE 3.A.5 – TESTS FOR COOPERATION SCENARIO.....	197
TABLE 3.A.6 – TESTS FOR WALLET SCENARIO .....	197
TABLE 3.A.7 – TESTS FOR INVESTMENT GAME (SUBJECT AS THE TRUSTEE) .....	198
TABLE 3.A.8 – TESTS FOR INVESTMENT GAME (BELIEF IN THE OTHER AS THE TRUSTOR) .....	198
TABLE 3.A.9 – TESTS FOR INVESTMENT GAME (BELIEF IN THE OTHER AS THE TRUSTEE).....	199
TABLE 4.A.1 ROBUSTNESS CHECK FOR RISK AVERSION MODELS FOR FEMALES.....	249
TABLE 4.A.2 ROBUSTNESS CHECK FOR RISK AVERSION MODELS FOR MALES.....	251
TABLE 4.A.3 REGRESSION COMPARING CONTROL AND T2 (PROSOCIAL RISK GROUP), USING AN INTERACTION BETWEEN T2 AND MALE.....	252



## Acknowledgments

I would like to personally thank all the people who have supported me and contributed to the realization of this thesis. First of all, I thank my supervisor Vittorio Pelligra, who has always believed in me and in my projects, leaving me the freedom to decide what to research and supporting the projects in every way, even when they seemed complicated and risky, as well as encouraging me to have so many training experiences.

I thank Prof. Emanuela Marrocu for all her advice and for her willingness to answer all my econometric doubts. I thank Cristian Usala for introducing me to the use of Stata and for his insights on coding. I thank Maurizio Romano for his advice on statistical methods, data collection, and questionnaire design. I thank the University of Cologne, especially my foreign supervisor Prof. Daniel Wiesen, for the warm welcome during my visiting period, where I found a great working environment and made connections with many colleagues and professors. I thank all the professors and researchers who gave me valuable feedback at all the conferences and workshops, especially Prof. Nicolas Jacquemet and Prof. Lubomir Cingl for their review of the first draft of the thesis. I thank Prof. Mario Macis for all his advice on the blood donation study. I also thank the provincial AVIS of Cagliari, with its president and all its members, for making this study possible. I thank Valeria Concas for her great contribution to the study on North-South differences. I thank Tilburg University for providing its experimental economics laboratory and its pool of subjects for the study on prosocial risk-taking, and in particular Prof. Jan Potters for his advice and practical support in carrying out this experiment.

I thank my colleague Federico Atzori for all the mutual help during these years of Ph.D. studies, for his great contribution to the study on prosocial risk-taking, for the wonderful experiences we had together, for all his important comments, and for the friendship that was created between us.

I thank my girlfriend, Serena, for always believing in me and, even before I started on this path, for pushing me to do it, for supporting me both emotionally and intellectually, for her closeness and love that gave me the strength to face all the challenges, even the most difficult ones, along this path.

Finally, I thank my mother and father for always giving me the freedom to choose what I wanted to be, even when my college choices seemed strange and against the grain, for all the love and help they have given me over the years, for the education they have given me that has helped make me who I am, and for the high regard they have for me.



## Introduction

*“How selfish soever man may be supposed, there are evidently some principles in his nature, which interest him in the fortune of others, and render their happiness necessary to him, though he derives nothing from it except the pleasure of seeing it.”*

(Adam Smith, *The Theory of Moral Sentiments*, 1759)

*“The purely economic man is indeed close to being a social moron. Economic theory has been much preoccupied with this rational fool.”*

(Richard H. Thaler, *Misbehaving: The Making of Behavioural Economics*, 2015)

Neoclassical economics often assumes that individuals are rational, self-interested agents who aim to maximize their personal utility, regardless of moral considerations. The model building based on the figure of “homo oeconomicus” has often been criticized for being unrepresentative of actual decision-making processes. This is due to the limited rationality of individuals and their lack of interest in others. Behavioral economics, which integrates findings from psychology and social sciences, has developed models that consider these factors. In particular, prosocial behaviors have become a significant topic in experimental and behavioral economics. Prosocial behaviors are voluntary actions taken by individuals that benefit others, even if it means sacrificing their own interests. These behaviors focus on cooperative and altruistic interactions among individuals. Game theory has developed several scenarios to study these behaviors, such as the Dictator Game, the Ultimatum Game, the Trust Game, and the Public Good Game. Moreover, numerous experiments have shown that people have social preferences, including those related to inequality aversion. However, further studies are needed on this topic since there are various types of altruism, and prosocial behaviors themselves may be influenced by external factors such as risk situations, prevailing social norms, and individual characteristics. The aim of this thesis is to address several gaps in the literature on prosocial behaviors.

The first chapter is a theoretical study that analyzes the main frameworks of nudge theory in order to create a comprehensive one (BOTTOM) that connects them all. This new framework incorporates the widely-used MINDSPACE and takes into account the insights of six previously developed frameworks. It also enables us to explain the different dimensions of each nudge to make comparisons between them in laboratory experiments with several nudge policies or in meta-analyses.

The second chapter presents a large-scale field experiment on blood donation and altruism that applies a nudge policy. The study used different framed messages to determine the most effective motivations and for whom they are most efficient. The results showed heterogeneity in the message effects on donations: self-benefit motives increase donation for males, norms effects increase donation especially for donors, and empathy frames are effective for everyone.

The third chapter presents a survey experiment that analyzes whether individuals from the northern and southern regions of Italy differ in their levels of cooperation and trust in three different treatments: interacting with unknown subjects, interacting with subjects from their own region, and interacting with subjects from the opposite macro area. The results showed no significant differences between North and South when subjects did not have information about whom they were interacting with. However, these attitudes emerged only when Southerners interacted with people from their own region, resulting in a decrease in cooperation and trust. This suggests that Southerners may have internalized negative stereotypes about themselves.

The final chapter presents a laboratory experiment that utilizes lottery tasks to investigate the influence of altruism on risk-taking. The study employs a between-subjects design with three groups. The control group completed the standard lottery of Holt and Laury, while the second group (karma belief) had the opportunity to engage in 'good behavior' before completing the same task. In the third group, prosocial risk participants played a modified version of the Holt and Laury lotteries. They could choose between a safe outcome or a risky payoff for themselves, with a certain amount going to a chosen charity organization. Only among men in the prosocial risk-taking group was an altruistic excuse found for taking risks. These subjects exhibited risk-seeking behavior beyond what was estimated based on their level of risk and altruism. This finding is consistent with psychological and sociological literature.



# Chapter 1

## Which nudge is better to use?

### BOTTOM, a review of nudging frameworks

Gabriele Ballicu<sup>a</sup>

University of Cagliari

#### Abstract\*

The literature on nudges has proposed many different frameworks to classify them; however, no study has tried to analyze these frameworks together and find the links between them. In addition, an arbitrary choice of a nudge classification could lead to inaccurate conclusions from a theoretical and a practical point of view. We have analyzed the major frameworks regarding the nudge theory to develop a guide and a holistic framework, the BOTTOM (Brain, Orientation, Transparency, Triggers, Objective, Mind), that can fill this methodological gap. This framework draws upon the insights of six existing frameworks, integrating the MINDSPACE (the most well-known and widely utilized one) to facilitate the explanation of the diverse dimensions of each nudge. Finally, we explained how it can be applied (with several examples) to better understand which factors explain the effectiveness of nudges in experiments and meta-analysis.

**Keywords:** nudge framework; MINDSPACE; libertarian paternalism; choice architecture; decision making; behavioral economics

**JEL Codes:** D11, D91

---

<sup>a</sup> Department of Economics and Business, University of Cagliari, V.le S. Ignazio 17, 09129, Cagliari, Italy. E-mail: [gabriele.ballicu@unica.it](mailto:gabriele.ballicu@unica.it) (Corresponding author)

\* *Acknowledgments:* I would like to thank Vittorio Pelligra (University of Cagliari) for his assistance and comments that significantly improved the manuscript. I would also like to thank Federico Atzori (University of Cagliari) for providing helpful references and Serena Racis (University of Cagliari) for her comments on the manuscript and for providing language help.

## 1.1. Introduction

A nudge is defined by Thaler and Sunstein (Sunstein, 2018; Thaler & Sunstein, 2008) as any aspect of choice architecture that alters people's behavior predictably without eliminating or prohibiting any of the available options or changing their economic consequences. Where possible, according to the two researchers, public decision-makers should structure framing in the best possible way for the welfare of everyone, always leaving space for the freedom (so avoiding manipulation and not significantly constraining decision-making) of the subjects. Through a thoughtful architecture of choices, cognitive boundaries and biases could be prevented or used to direct choices toward the best social outcomes, together with routines and habits (Hansen, 2016). A key feature of nudging is that the change made to the architecture of the choices does not have to be expensive for the nudger and must be easy to avoid for subjects who get nudged. This means we cannot classify huge financial incentives (or tax) and bans on doing something as nudging policies, even if they change the individual's behavior. Classifying an intervention as a nudge may be difficult because its definition has some shortcomings (Congiu & Moscati, 2022), like issues related to the “mental costs” that are not easy to avoid or too vague to be calculated accurately, or also the risk that the freedom of subjects might be only in theory for “manipulative” nudges that bypass the intentional choice of subjects. The debate over the exact definition of nudge is beyond the scope of this study, and we will use the definitions given above. However, we will deepen some of these topics in Section 1.3.4.

The literature on nudges has proposed many different frameworks to classify them. However, there is no guide to choosing the proper framework depending on the study to be conducted. Each of these classifications focuses only on certain aspects (such as the transparency of the nudge, the type of intervention, or the type of mental process), and taken individually, they may not allow us to explain why some nudges are effective in a specific case, and others are not. So, choosing arbitrarily a classification in a study on nudges can mislead the results, attributing the effectiveness of one feature to another. This methodological gap in the literature leads to a fragmentation of frameworks and an absence of a comprehensive overview, with a chaotic, partial, and incomplete picture of nudges. This can lead to improper conclusions from theoretical (attributions of the effectiveness of a nudge to a feature) and practical (choosing a nudge for a policy after being tested) points of view. We will see some real examples of correct and misleading classifications in sections 1.4 and 1.5. However, before giving examples, it is better to define the existing frameworks in detail in the following sections to understand the consequences and the differences.

This study aims to fill this gap. We develop a novel, extensive, and comprehensive framework called "BOTTOM" (Brain, Orientation, Transparency, Triggers, Objective, Mind), which takes into account six previously published and validated frameworks, and it enables us to describe the various elements of each of the nine distinct types of MINDSPACE nudges (Dolan et al., 2010; Dolan et al., 2012). So, the BOTTOM is an extension of the widely used MINDSPACE framework, which we will discuss and justify the choice as the primary reference framework in Section 1.3. Thanks to this integrated framework, which is compatible with existing frameworks in the literature, the effectiveness of nudges can be better understood using it in both experiments and meta-analyses and so in every case where we can compare different nudge policies.

The rest of this paper is organized as follows: Section 1.2 provides important general and preliminary concepts regarding nudge classifications. Section 1.3 introduces and analyses the essential frameworks on nudges. Section 1.4 presents the new holistic framework, the "BOTTOM," and all its advantages. Section 1.5 concludes.

## **1.2. Nudge subjects and outcomes**

Before analyzing the different ways we can classify nudges, it is helpful to briefly consider who could benefit from nudges and the possible outcomes (even negatives) related to them. These clarifications are relevant for two reasons: regarding the subjects of the nudges, they allow us to outline the technical language we will use in the following sections. Regarding outcomes, the frameworks we will consider are valid not only for nudges with positive outcomes but also for harmful ones (such as sludges). Nudge can help different subjects, and we can classify them into different types that are not mutually exclusive (Congiu & Moscati, 2022):

- Pro-self nudges are directed to the nudged people (those who experience the nudge), helping the individual to improve their well-being (like saving retirement or stopping smoking). There is a debate about what are the actual preferences of a subject (Infante et al., 2016; Sugden, 2018) and whether the nudgers know and can choose what is better for the nudged (Hands, 2021; Rizzo & Whitman, 2019); we will not focus on this topic because it is outside the aim of this paper.
- Pro-social nudges are those that increase the welfare of society, for example, protecting common goods (like increasing tax compliance and reducing pollution).

- Pro-nudger’s nudges are the ones that increase the utility of the architect of choice; so, if they are the only subjects who benefit from this type of intervention, it is more correct to consider it as a marketing technique.

Another aspect is related to the efficiency and outcomes obtained through nudges. Instead of simplifying decision-making processes, a wrongful architecture of choice can make them more complex or even hinder them (Thaler, 2018). Some of them are classified as “dark nudges” (or “dark patterns”), which use cognitive processes to make the decision maker choose an option that harms her and, possibly, benefits the nudger; these are very widespread, for example, in the case of the alcohol industry (Petticrew et al., 2020). An example of a dark nudge is making cigarette packs highly visible and accessible to grab to stimulate their purchase. Instead, “sludges” can be considered the opposite of a nudge (Mills S., 2020) because they are a modification in the choice architecture that makes the decision-making more complicated to discourage a particular choice. An example of sludge is occurring on all those websites that make it complicated and time-consuming to deselect non-mandatory cookies. However, when sludges are implemented for positive purposes – for example, forcing individuals to reason in order to avoid falling into bias – we can classify these interventions as "decision points" (Soman, D. et al., 2010) or "cooling-off period" (Thaler & Sunstein. 2008). This latter can take the form of questions of confirmation of choice. Examples are “are-you-sure checks” that appear before taking an action where it is difficult to go back, such as deleting a document or publicizing information. All these typologies exploit biases and heuristics such as nudges. In Table 1.1, we report a useful diagram summarizing the nudge framework related to nudge and sludge comparison (Soman D. et al., 2019; Sunstein, 2020).

TABLE 1.1 NUDGE AND SLUDGE COMPARISONS FRAMEWORK  
(SOMAN D. ET AL., 2019; SUNSTEIN, 2020)

	<b>Facilitate Decision Making (Low friction)</b>	<b>Impede Decision Making (High friction)</b>
<b>Helps the subject/society</b>	<i>Nudge</i> : making it easier to choose the option that increases welfare	<i>Decision Points</i> or <i>Cooling off Periods</i> : prompt vigilance and thoughtfulness on complex choice
<b>Harms the subject/society</b>	<i>Dark Nudge</i> or <i>Dark Patterns</i> : making it easier to choose the option that reduces welfare	<i>Sludge</i> : making it difficult to change options or make a choice without any benefit on welfare

### 1.3. Nudge frameworks

Different frameworks of nudging theory try to classify the different types of nudge policies. The most famous and widely used, both by researchers, practitioners, and policymakers, is the MINDSPACE. It was used by the “Behavioural Insight Team” established by the UK government in 2010, but also in Australia and the USA (Behavioural Insight Team, 2011; 2015). There are several studies applying MINDSPACE to different fields, such as studies of nudges to improve physicians' decisions (Kostick, 2020), prevention strategies during the pandemic of COVID-2019 (Smith et al., 2022), cybersecurity (Coventry et al., 2014), for agri-environmental programs (Palm-Foster et al., 2019), to promote physical activity (Forberger et al., 2022) and vaccination (Reñosa et al., 2021), and several others. The advantage of this classification is to consider the diversity of nudges without being overly dispersive. For these reasons, MINDSPACE is the framework on which the BOTTOM is developed. This new, complete, holistic framework considers six already developed frameworks (Brain, Orientation, Transparency, Triggers, Objective, Mind). It allows us to explain the different aspects of every nine types of nudges of MINDSPACE. The BOTTOM allows us to understand what characteristics of a nudge are effective in experiments (when we compare different groups with different nudge policies) and meta-analysis (when we classify various interventions made for a specific topic).

In fact, the shortcoming of the MINDSPACE framework is that it only gives us a classification of different nudges without identifying common elements among them and thus does not allow us to understand whether there are specific factors that might explain why particular nudges work in a specific field, and others do not. So, other frameworks, often based on the classification of MINDSPACE, have tried to aggregate in macro-categories the nudges. Before analyzing the different frameworks, we must clarify why we exclude some from this approach. Some, such as TTIPPME and ANGELO, are developed for specific topics, such as consumption of products like food and alcohol, and so are not suitable to be generalized (Hollands et al., 2013; Hollands et al., 2017). Other, like Sunstein's list of ten nudges, overlap considerably with MINDSPACE, but it requires more categories and is less used (Sunstein, 2019). We recall that we are talking about the framework on types of nudges: there are also some valuable and orthogonal frameworks regarding the strategy to develop an intervention using nudges, like the EAST framework (Behavioural Insight Team, 2014), CAN (Wansink, 2015), BASIC (Hansen et al., 2019), Message-Environment (Congiu & Moscati, 2020) and FORGOOD (Lades & Delaney, 2022), the latter applied for ethics implications. All these frameworks help structure a policy intervention with nudges but do not help classify them. Finally, other frameworks focus on marginal aspects that add little about the

type of nudges, such as Importance-Confidence (Löfgren & Nordblom, 2020) and Nudge3 (Mongin & Cozic, 2018), which focus more on the underlying mechanisms that drive individual decision-making (like attention and rationality failures). We also excluded the Dark Patterns Auditing Framework (Mills et al., 2023) because it is specific to detecting dark patterns and sludge. All these classifications are outside the aim of this study.

In this section, the MINDSPACE will be reviewed along with the six supporting nudge frameworks, highlighting their contributions to clarify how the BOTTOM framework integrates them. The frameworks considered are:

- The brain System framework (Vlaev & Dolan, 2015; Vlaev et al., 2016), developed by the same authors as MINDSPACE, on which it is based and which classifies nudges to be directed toward innate and habitual actions.
- Cadario and Chandon's framework (2020), related to intervention orientation (cognitive, affective, or behavioral), which is also based on MINDSPACE and uses insights from other frameworks mentioned earlier (such as the EAST, CAN, and TIPPME).
- Hansen and Jespersen's frameworks (2013), also based on MINDSPACE and used by various authors of other frameworks, classify nudges by their transparency and type of mental process (automatic or reflective).
- Triggers from the 23 ways framework (Caraban & Karapanos, 2020; Caraban et al., 2019; Caraban et al., 2020), developed to be compatible with Hansen and Jespersen's frameworks, classify nudges by type of "triggers" that support a behavior (facilitator, sparks, and signal).
- The taxonomy of Münscher and colleagues (2016), used in several meta-analyses and containing within it the nudges of the MINDSPACE, focuses on choice design change (information, assistance, and support).

As can be seen, one of the strengths of BOTTOM is that it is composed of frameworks that create a compatible network among themselves, particularly with MINDSPACE, which is, therefore, already validated and used. In this way, BOTTOM does not need to justify the choice of a particular feature assignment to a nudge, as the extensive previous literature already validates it. Moreover, studies that have used one or more of the frameworks included in BOTTOM, whether experiments or meta-analyses, can be reused to go deeper into the analysis by simply supplementing the missing frameworks.

### 1.3.1. MINDSPACE framework

As we have already said, the framework of MINDSPACE (Dolan et al., 2010; Dolan et al., 2012) is developed as a guide for policymakers to use nudges and is one of the first to be applied. The framework aims to solve a problem related to some of the most important political issues, like reducing crime and anti-social behavior or incentivizing prosocial and healthy behavior. In describing the different types of nudges, we will also consider the potential ethical issues associated with each of them. (Blumenthal-Barby & Burroughs, 2012; Lin et al., 2017). The framework consists of nine types of nudges:

1. **Message:** This can be a reminder that notifies us to adopt a behavior, or it can be a specific way to frame information; in particular, we are heavily influenced by who communicates the information. The strength of information depends on perceived authority, characteristics similar to ours (demographical or “peer effect”), whether they are experts in the field, and on the emotions that we feel for them (if we like and trust them). One example of nudging with messages is to receive motivational messages on a training app with phrases from sports champions reminding us that we need to train to achieve our goals.
2. **Incentives:** Our responses to incentives are shaped by a predictable mental shortcut that depends on the reference point and could lead to bias. For example, we have a greater aversion to loss, reason with separate mental budgets, and have inconsistent time preferences (hyperbolic discount rate, preferring smaller immediate payoffs to larger distant ones). Incentive nudges can be easily combined with other nudges, like salience (for example, considering that low probabilities are overestimated, we can use a lottery incentive) or commitment (using a conditional incentive for subscription repayment). Of course, the impact of an incentive depends on its type, magnitude, and timing. The exact relationship between nudges and incentives is frequently unclear. (Hansen, 2016): a too-high incentive is perceived as coercive by those being nudged and does not qualify as a nudging policy because it is no longer a cost-effective approach. A high incentive can be useless or even harmful, decreasing the internal motivation related to behavior (the so-called “crowding out effect”). Moreover, they can be considered unfair if a category cannot meet the criteria to receive it: we should remember that people have different abilities, so they also have different standards for results. An example of an incentive is to be paid back a small amount of money for recycling plastic bottles.
3. **Norm:** We are strongly influenced by what others do, such as social rules (explicit or implicit) and expected behaviors. As social animals, we naturally need to conform and follow the cues of others. An application of this nudge can be to make it visible how many people (if they are the majority)

behave in a certain way if the related norm is desirable, tying it to social comparison with similar people. Of course, it is crucial to avoid a backfire situation with a “boomerang effect” that spreads undesirable norms (for example, when subjects behave worse, be it polluting or wasting, feeling justified by the behavior of others). Moreover, the representatives must be honest because “propaganda” with lies and misrepresentation is not ethically permitted. It can work in a combination of messengers to reinforce a behavior, and the effect can spread quickly in social networks. An example of a nudge with a social norm is to communicate in your bill what the average power consumption in your neighborhood is and alert you if you are over that threshold.

4. Defaults: A default is a pre-selected option if an individual does not make an active choice. In particular, we follow the flow of basic options because we think it is a suggested option for alternatives that we do not consider important or do not understand or know the topic. We have the inertia to act differently from the default setting (which leads to a “status quo bias). A famous example is the different effect of an opt-in versus an opt-out default, as in the case of organ donation, where the donation rate in Austria (with an opt-out default) is higher compared to Germany (with an opt-in setting).
5. Saliency: We have limited cognitive resources, and the stimuli to which we are subjected are numerous so that our attention is drawn to what seems relevant to us, especially if the stimulus is new, accessible, and straightforward. In addition, we use "anchor" or reference points (even if they are arbitrary, like a random number, like the last two digits of a telephone number and the price of a different object) to evaluate other elements if we do not know the topic. Even after conditions change, the effect of anchors endures over time because we have a “confirmation bias” that makes us evaluate less that information against our initial hypothesis and focus only on supportive information. Anchors also work for the memory of experiences: we remember and assess an event of the past based mainly on the most intense “peak” moments, as well as the final impressions in a chain of events. An example of saliency might be to highlight the tax on a harmful good instead of including it in the final price to discourage sales without changing the price.
6. Priming: Our acts are often influenced by sub-conscious cues that make some concepts more accessible in the processing of new stimuli, such as words, sight (faces, dimensions, situational cues), and smells. This effect is controversial because, for some critics, it interferes with freedom and the possibility of choosing otherwise. Still, it depends on the strength and transparency of the intervention. An example of priming is relaxing music in a waiting room.

7. **Affect:** Our emotional associations can affect our decision-making and shape our actions (like an emotional response to images, stories, and videos). This response is not deliberative and is rapid and automatic, so individuals can experience a behavioral reaction before realizing what they are reacting to. Of course, people are more motivated about things they care about (e.g., money, health, losses). For some critics, this is manipulation because it bypasses our reasoning abilities using psychological strategies based on nonrational elements. An example of this intervention might be to use emotional videos for advertisements related to avoiding drunk driving.
8. **Commitment:** We seek to be consistent with our promises and reciprocate acts, and we can use a pre-commitment self-imposed strategy to avoid weak will and procrastination. This works better with public promises and penalties on themselves for failing to act according to long-term goals (a sort of “Ulysses Contract”). However, just writing down intentions could work. Even in this case, there are ethical and philosophical issues: one might ask why specific requests or desires have more normative weight and deserve more respect than others, mainly if the future is worth more than the present. We should also be aware of dangerous self-destructive commitments, like eating disorders. An example of a smoking cessation commitment is donating money to a despised entity (like a company or a political party) in case you fail a nicotine test after six months.
9. **Ego:** We behave in a way that supports positive and consistent impressions of ourselves; we consider ourselves above the average and want to please others. So, if there is a conflict between beliefs and behaviors, and a self-serving bias (where we attribute to ourselves the merits and the faults of others) is not enough to overcome this cognitive dissonance, the behaviors might win. Based on that, for example, the foot-in-the-door technique, often used by marketing, has been developed that makes performs first a tiny action and then a bigger one coherent to the image of ourselves. The higher the expectation, the greater the effect: this phenomenon is called the “Pygmalion effect,” it could have positive or negative effects on altering our behaviors. An example of an ego-based nudge is to represent an unfavorable social image of people who perform risky behaviors, such as smokers or alcoholics, in order to make people change their behaviors to support their positive image of self.

### 1.3.2. Brain System framework (Behavioral control systems): Habit vs. Impulsive-Innate

The brain system framework is an extension of MINDSPACE (developed by the same authors) considering the different behavioral control systems (Vlaev & Dolan, 2015; Vlaev et al., 2016) (see Table 1.2). This framework is based on developments in behavioral economics and cognitive neuroscience (Glimcher et al., 2009), particularly according to the view that there are different decision-making systems in the brain with related actions resulting from them (Rangel et al., 2008).

TABLE 1.2. BRAIN SYSTEM FRAMEWORK AND MINDSPACE FRAMEWORK  
(DOLAN ET AL., 2012; VLAEV & DOLAN, 2015; VLAEV ET AL., 2016)

<b>MINDSPACE techniques</b>	<b>Behavior</b>	<b>Brain system</b>
Messenger	We are heavily influenced by who communicates information to us	Habit
Incentives	Our responses to incentives are shaped by predictable mental shortcuts, such as strongly avoiding losses.	Impulsive-Innate
Norms	We are strongly influenced by what others do	Habit
Defaults	We “go with the flow” of pre-set options	Impulsive-Innate
Saliency	Our attention is drawn to what is novel and seems relevant to us	Habit
Priming	Our acts are often influenced by sub-conscious cues	Habit
Affect	Our emotional associations can powerfully shape our actions	Impulsive-Innate
Commitments	We seek to be consistent with our public promises and reciprocate acts	Habit
Ego	We act in ways that make us feel better about ourselves	Impulsive-Innate

The idea that different areas of the brain control different behaviors is based on the model of the Action Change Theory (ACT) (Vlaev & Dolan, 2015), which, in addition to considering the reward system and goal-directed actions, allows the various types of areas to be classified into two categories

- Habit system (habitual actions): It is responsible for the adaptive response with the stimulus-action association. It learns by repetition of the behavior in a stable or similar environment (the environment itself could be a cue to activate the behavior) and based on the results obtained. It concerns mental and motor habits (the former are the heuristics). The nudges they attribute to this category are messenger, norms, salience, priming, and commitments.
- Impulsive system (innate actions): It associates affective evolutionary states (emotions such as anger, comfort, disgust, fear, trust, etc.) with specific stimuli (such as food, money, etc.). It is related to innate behavior and stereotyped responses expressed as evolutionarily pre-programmed acts. The types of nudges that are in this category are incentives, defaults, affect, and ego.

### **1.3.3. The types of mental activity orientation of the intervention**

This approach was developed by two researchers in the nudge intervention for healthy eating, but their insight could be extended to another topic of intervention (Cadario & Chandon, 2020). After considering several nudge frameworks (including MINDSPACE, EAST, CAN, TIPPME, and so on), the authors developed a framework that considers the advantages of the previous ones and is compatible with MINDSPACE. They proposed three macro-categories inspired by the German philosophy tradition (Hilgard, 1980) and psychology studies on marketing (Breckler, 1984). The authors distinguish nudge interventions according to the different mental activities toward which they are primarily directed and which they direct:

- Cognitively oriented: These nudges influence what the individual knows about something. They make an example of visibility enhancements and descriptive and evaluative labeling. Following the model created by authors and the reasoning behind each nudge, we attribute to this first category norms and messengers.
- Affectively oriented: These interventions influence what the individual feels and perceives. In this case, they consider hedonic enhancements and written and oral injunctions to choose an option. Affect, salience, priming, and ego can be classified into this group.

- Behaviourally oriented: These nudges influence what the individual concretely does. They make examples of convenience enhancements (making it easier to choose something) and changes in framing (like the size or the order). In this last category, we classify incentives, defaults, and commitments.

#### **1.3.4. A dual framework for transparency and the process of mind**

The two frameworks we will analyze are usually considered together from previous studies. Developing the idea of the Dual-System Theory (Evans & Stanovich, 2013; Kahneman, 2011; Vlaev & Dolan, 2009), Hansen and Jespersen (2013) developed a framework that distinguishes the types of nudge according to the mental process of dual theory activated and transparency of intervention. This framework is also validated and incorporated by the authors of MINDSPACE and by Caraban and colleagues (Caraban & Karapanos, 2020; Caraban et al., 2019), the authors of another framework that we will analyze later, using it in combination with their frameworks.

For the type of process of mind, we have:

- Nudge type 1 (non-reflective): They influence automatic mental processes without judgment or conscious choice. The author of the MINDSPACE framework (Dolan et al., 2010) considers the MICE part (messenger, incentives, commitments, and ego) in this category.
- Nudge type 2 (reflective): tries to attract the attention of automatic processes to use the deliberative system. In this case, we have the NDSPA type of nudge (norms, defaults, salience, priming, and affect). As expected, people prefer this type of nudge to the automatic one (Jung & Mellers, 2016; Lin et al., 2017; Sunstein, 2016).

We should note that previously, we talked about the predominant brain system related to automatic behavior control (habit against impulsiveness), while in this case, we are considering the cognitive process, so the goal-directed system and the automatic associative activation system (composed of the two categories of the previous framework). A particular case is the “nudge plus” (Banerjee, 2021; Banerjee & John, 2021; John & Stoker, 2019), which is an evolution of the nudge that combines the two systems: it embeds an active trigger of reflection with an unconscious nudge (for example, a commitment device that also gives feedback and information about the underlying aims of the process), to increase the autonomy of choice.

Regarding transparency, we have the following:

- Transparent nudges: The individual could easily reconstruct the intention behind and how behavior change is pursued. We consider transparent nudges as incentives, defaults, norms, messengers, commitments, and ego. Various surveys proved that people prefer this type of nudge to the non-transparent (Felsen et al., 2013; Gold et al., 2020; Jung & Mellers, 2016).
- Non-transparent nudges: In the opposite case, people cannot reconstruct either the intervention's intentions or aim, leading to risk manipulation. We classify it as non-transparent: affect, salience, and priming.

Making a non-transparent nudge transparent seems not to reduce its effectiveness (Bruns et al., 2018; Loewenstein et al., 2015; Marchiori et al., 2017; Paunov et al., 2019).

The combination of these two classifications gives us a matrix with four categories:

1. Transparent type 2 (reflective) (e.g., a urinal with fly and “Save More Tomorrow” pension plan): prompting or reflected choice and protecting freedom even in practice. They are the least controversial of all. This type of nudge is similar to the concept of “boost,” whose goal is to help people to overcome bias, expanding their competence to reach their aim (Grüne-Yanoff, 2018; Grüne-Yanoff & Hertwig, 2016; Grüne-Yanoff et al., 2018; Hertwig & Grüne-Yanoff, 2017).
2. Transparent type 1 (non-reflective) (e.g., relaxing music in the waiting area or red signals to pay attention): Influences behavior, not psychologically, but in a technical sense. They ensure freedom only in theory.
3. Non-transparent type 2 (reflective) (e.g., framing for risky choices, such as medical treatments): In this case, we have manipulation of choices, and only very cautious individuals will notice. They can be considered very invasive because they might discharge responsibility for the nudged. Not to be used except to prevent severe damage that can harm others (e.g., important laws resulting from democratic public decision-making).
4. Non-transparent type 1 (non-reflective) (e.g., plate sizes, context arrangements): Even if pointed out, it is challenging to understand effects because they bypass the decision maker’s cognitive deliberation. They can be considered as psychological and technical manipulation, albeit not of choice but of a behavior (so a paternalistic nudge with a policy-maker responsibility).

We can observe in Table 1.3 that we do not have a non-transparent type 2 nudge in the MINDSPACE framework because the nudges in this category are a combination of two nudges of different types. This may explain why there are divergent views on the invasiveness of nudges: the simple categories of MINDSPACE nudges are not manipulative on choices, but this type is produced by combining two or more nudges, where system 2 is present in one and non-transparent in the other, for example with lottery incentive (that combines incentive and salience).

TABLE 1.3. RESPONSIBLE USE OF THE NUDGE APPROACH TO BEHAVIOR CHANGE IN PUBLIC POLICY  
(HANSEN & JESPERSEN, 2013)

	<b>Transparent</b>	<b>Non-Transparent</b>
<b>System 2 thinking (reflective mind)</b>	Facilitation and prompt consistent reflective choice (Incentives, Messenger, Commitments, Ego)	Manipulation of choice
<b>System 1 thinking (automatic mind)</b>	Influence behavior (Defaults, Norms)	Manipulation of behavior (Affect, Salience, Priming)

### 1.3.5. The 23 ways framework and the types of triggers

A recent framework proposed by Caraban and colleagues (Caraban et al., 2019; Caraban & Karapanos, 2020; Caraban et al., 2020) has been developed to classify nudge applied in HCI (Human-computer interaction). Their framework aims to understand "why" a particular nudge may work based on "how" it works. The authors, after conducting a meta-analysis in the literature on nudges in the HCI, classify nudges into 23 different mechanisms – from which the framework is named "23 ways" – grouped into six different categories (facilitate, reinforce, confront, social influence, fear, and deceive) and identify 15 cognitive biases on which these are based. However, the most interesting and original classification is the one that divides nudges by 3 clusters of triggers. This classification is inspired by Fogg’s Behavior

Model, which explains behavior as a product of motivation, ability, and triggers (Fogg, 2009). So, we have three types of factors based on what they trigger to make a behavior happen (see Table 1.4):

TABLE 1.4. THE 23 NUDGING MECHANISMS (CARABAN ET AL., 2019) AND THE THREE TYPES OF TRIGGERS SUGGESTED BY FOGG'S BEHAVIOUR MODEL

Triggers	Mechanisms
Facilitator	Facilitate (Defaults) <i>Includes: default options, opt-out policies, positioning, hiding, suggesting alternatives</i>
Sparks	Confront (Incentives) <i>Includes: throttling mindless activity, reminding of the consequences creating friction, providing multiple viewpoints</i>
	Deceive (Saliency) <i>Includes: adding inferior alternatives, biasing the memory of past experiences, placebos, deceptive visualizations</i>
	Social influence (Norms, Ego) <i>Includes: invoking feelings of reciprocity, leveraging public commitment, raising the visibility of users' actions, enabling social comparisons</i>
	Fear (Commitment) <i>Includes: make resources scarce, reducing the distance</i>
Signal	Reinforce (Messenger, Affect, Priming) <i>Includes: just-in-time prompts, ambient feedback, instigating empathy, subliminal priming</i>

- Facilitator: They simplify the task, which is suitable when the user is motivated to perform a behavior but lacks the ability to do it. They can reduce the physical or cognitive effort required for an action. Only the various changes of default can be classified in this group.
- Sparks: They increase motivation when the individual is not motivated enough but has the ability to do the task. They can increase self-efficacy or support planning and use social and affect aspects to make an alternative more attractive. This group has incentives, saliency, norms, commitments, and ego.

- Signal: They remind us to perform a behavior when there is both the motivation and the ability to do it, but there is a discrepancy between intention and action. They can increase the preference for certain stimuli or trigger discomfort for current behavior. Priming, affect, and messenger are the types of nudges in this cluster.

### 1.3.6. The categories and objectives of decision technique

The taxonomy proposed by Münscher and colleagues (Münscher et al., 2016) focuses on the typology of technique utilized by the architecture of choice, specifically what part of the design of the choice architecture should be changed. So, this framework is directed to the “objective” of the intervention design, both in the sense of the target and the aim. It has three macro-categories (see Table 1.5):

TABLE 1.5. CHOICE ARCHITECTURE TAXONOMY (MÜNSCHER ET AL., 2016)

Category	Technique
A. Decision Information	A 1 Translate information (Priming) <i>Includes: reframe, simplify</i>
	A 2 Make information visible (Salience) <i>Includes: make own behavior visible (feedback), make external information visible</i>
	A 3 Provide a social reference point (Norms) <i>Includes: refer to descriptive norm, refer to opinion leader</i>
B. Decision structure	B 1 Change choice defaults (Defaults) <i>Includes: set no-action default, use prompted choice</i>
	B 2 Change option-related effort (Incentives) <i>Includes: increase/decrease physical/ financial effort</i>
	B 3 Change range or composition of options (Defaults) <i>Includes: change categories, change grouping of options</i>
	B 4 Change option consequences (Incentives) <i>Includes: connect decision to benefit/cost, change social consequences of the decision</i>
C. Decision assistance	C 1 Provide reminders (Messenger)
	C 2 Facilitate commitment (Commitment, Ego) <i>Includes: support self-commitment/public commitment</i>

#### **1.4. The BOTTOM framework: How can it be applied?**

The BOTTOMS is an integrated and holistic framework that explains the different aspects of each of the nine types of nudges of MINDSPACE, thereby becoming an extension of it (see Table 1.6). We have six characteristics with six questions:

1. Brain: Is the nudge changing an action based on habit or an impulsive-innate brain system?
2. Orientation: Is the nudge behaviourally, affectively, or cognitively oriented?
3. Transparency: Is the nudge intervention transparent or not?
4. Triggers: Does the nudge increase the ability or motivation, or is it just a reminder?
5. Objective: Is the nudge improving decision information, structure, or assistance?
6. Mind: Does the nudge activate the reflective or automatic mind process?

This framework has many advantages: each nudge has elements in common with some of the others, allowing the identification of patterns of similarity that can explain why some work and others do not. However, each nudge has at least one feature that differentiates it from the others, thus allowing it to be uniquely identified and not overlap with the others (otherwise, it would not be useful to have that category). We also remind you that these classifications are not arbitrary and created ad hoc but established by existing, validated frameworks, allowing comparison with existing scientific literature. The originality and innovativeness of BOTTOM are based on connecting a previously fragmented literature. The main advantage of this extension can be seen when we compare the effect of different nudges applied to the same issue. A way to do that is with experiments. Suppose we have more treatment with different nudging policies. In that case, we can compare not only the different typologies but also understand which characteristic has made the difference in the policy's success (or failure).

We can give some examples based on scientific studies in the healthcare field (see Table 1.7). Suppose we run an experiment with one control group and three treatments with a nudging policy based on affect, salience, and priming, respectively. We consider our aim to increase the eating of vegetables by students at college, using an example similar to a current study (Friis et al., 2017). The affect policy will be an image of a smiling face around the vegetable area, the salience policy will be to collocate the vegetables in the most accessible and visible place, and the priming policy will be to paint light green on the walls and put some plants in the room. All these nudges improve the decision information, are affectively oriented, and are directed to the automatic mind process with a non-transparent intervention.

TABLE 1.6. THE BOTTOM FRAMEWORK

<b>MINDSPACE framework</b>	<b>Brain system</b>	<b>Orientation of intervention</b>	<b>Transparency</b>	<b>Triggers (23 ways)</b>	<b>Objective (Category of technique)</b>	<b>Mind process</b>
<i>Incentives</i>	Impulsive-Innate	Behaviorally oriented	Transparent	Spark	B (Decision structure)	Reflective
<i>Defaults</i>	Impulsive-Innate	Behaviorally oriented	Transparent	Facilitator	B (Decision structure)	Automatic
<i>Affect</i>	Impulsive-Innate	Affectively oriented	Non-Transparent	Signal	A (Decision information)	Automatic
<i>Saliency</i>	Habit	Affectively oriented	Non-Transparent	Spark	A (Decision information)	Automatic
<i>Priming</i>	Habit	Affectively oriented	Non-Transparent	Signal	A (Decision information)	Automatic
<i>Norms</i>	Habit	Cognitively oriented	Transparent	Spark	A (Decision information)	Automatic
<i>Messenger</i>	Habit	Cognitively oriented	Transparent	Signal	C (Decision assistance)	Reflective
<i>Commitments</i>	Habit	Behaviorally oriented	Transparent	Spark	C (Decision assistance)	Reflective
<i>Ego</i>	Impulsive-Innate	Affectively oriented	Transparent	Spark	C (Decision assistance)	Reflective

TABLE 1.7. EXAMPLES (INCREASE THE EATING OF VEGETABLES AND VACCINE ADHERENCE) OF APPLICATION OF THE BOTTOM FRAMEWORK

<b>MINDSPACE framework</b>	<b>Brain system</b>	<b>Orientation of intervention</b>	<b>Transparency</b>	<b>Triggers (23 ways)</b>	<b>Objective (Category of technique)</b>	<b>Mind process</b>
<i>Affect</i> (Smiling face)	Impulsive-Innate	Affectively oriented	Non-Transparent	Signal	A (Decision information)	Automatic
<i>Salience</i> (Accessible area)	Habit	Affectively oriented	Non-Transparent	Spark	A (Decision information)	Automatic
<i>Priming</i> (Green walls and plants)	Habit	Affectively oriented	Non-Transparent	Signal	A (Decision information)	Automatic
<b>MINDSPACE framework</b>	<b>Brain system</b>	<b>Orientation of intervention</b>	<b>Transparency</b>	<b>Triggers (23 ways)</b>	<b>Objective (Category of technique)</b>	<b>Mind process</b>
<i>Incentives</i> (Gadgets)	Impulsive-Innate	Behaviorally oriented	Transparent	Spark	B (Decision structure)	Reflective
<i>Norms</i> (Number of vaccinated)	Habit	Cognitively oriented	Transparent	Spark	A (Decision information)	Automatic
<i>Messenger</i> (Reminder)	Habit	Cognitively oriented	Transparent	Signal	C (Decision assistance)	Reflective

However, if we compare the affect's nudge with the priming one, even if both are signals, the first is directed to the impulsive system while the latter is to habit. So, if one is effective and the others are not, we can isolate which factor can play a role in determining the difference in effectiveness. The same thing happens if we compare salience and priming: in this case, they are both directed to the habit system, but the first increases the motivation, while the second just reminds us of a task. These factors are not accounted by MINSPLACE or the frameworks where these nudges fall into the same category: only by considering the different BOTTOM factors we can understand which of these can account for the difference in nudge effectiveness.

We can do another example, considering vaccine adherence (Reñosa et al., 2021); even here, we consider an experiment with a control group and three treatments: we can use norm, messenger, and incentive. The norm nudge can be information about how many people have already done the vaccine, the messenger nudge can be a reminder of the date, and the incentive can be the vaccine promotion with gadgets like a bag or pens. We can see that all of these are transparent. Suppose two of those work and one does not. In that case, it might be due to the operativity (incentives and norms increase the motivation, while the messenger only reminds a task), the mind process (incentives and messenger are reflective while norms are automatic), or the orientation of the intervention and the brain system (norms and messenger are cognitively oriented and based on habit system, while incentives are behaviourally oriented and based on impulsive system). Suppose only one of these increases adherence. In that case, we can attribute the difference to the technique category: norms, incentive, and messenger affects, respectively, the decision information, the decision structure, and the decision assistance. These comparisons can be extended considering a meta-analysis. Also, in this case, we can classify the different interventions made for a specific topic in various categories, each for every framework of the BOTTOM. So, we can have a clear representation of the number of studies for each characteristic and the relative efficacy of each of them. An example can be a systematic literature review with a meta-analysis regarding the interventions for smoking cessation (Sunstein, 2015), with nudging policies like:

- Affect: images with “black” lungs of smokers on the pack of cigarettes
- Default: packet with fewer cigarettes
- Ego: using a diary where the person can count the day as a non-smoker
- Incentive: giving a small financial incentive for every week without smoking
- Reminder: message to not smoke during the routine of smoking
- Commitment: using commitment devices like commitment contract

For this specific topic, the different orientations of intervention, even if different across nudges, might be irrelevant, while the mind system might be the most critical aspect to understand why an intervention works (for example, only the automatic one) and vice versa. In addition, if all the treatments are successful but with different effect sizes, by constructing econometric models having as dependent variable the output of interest, we can control for different characteristics of the nudge intervention and estimate the impact of each.

## **1.5. Discussion and concluding remarks**

The BOTTOM framework allows us to consider the insight of six already developed and validated frameworks, unifying a fragmented literature. Combined with MINDSPACE, it can help explain what kind of nudging policies work better for a specific issue and why. In fact, thanks to the different frameworks that constitute the BOTTOM, we can more accurately understand what factors explain why some interventions work and others do not, thus allowing us to go deeper into nudge studies and better plan future policies based on those interventions. As we showed in the previous section, such frameworks can be used both to compare different nudge policies in experiments and meta-analyses, classifying nudges by several factors (Brain, Orientation, Transparency, Triggers, Objective, Mind) and allowing to study them in their completeness of features.

We cited a good meta-analysis made by Mertens and colleagues. (2022), where they try to classify the nudge interventions using the Choice Architecture Technique Taxonomy from Münscher. After discovering that decision structure intervention is more effective in different fields, they speculate that it might depend on the different mind processes (automatic). However, by doing so, they mixed two frameworks (category of technique and mind process) and they do not consider that incentives are decision structure types but reflective. Then, they also speculate that interventions in the food domain are more effective because they are related to behavior often driven by habits. Interestingly, checking their data, the decision information interventions in the food field are the ones with bigger standard deviations regarding their effect. This might be because two of the four decision information nudges are based on the habit brain system (another framework), so some could be highly effective while others are not. Even in this case, another framework is required to understand what factors explain the success of the nudge intervention. This case thus shows that considering only a few frameworks does not correctly identify the factors that explain the effectiveness of a nudge.

The unique limitation of the BOTTOM framework is that it considers only the simple typology of nudge of MINDSPACE without considering the combination of two or more, as we have seen in the Hansen and Jespersen frameworks (where we do not have any non-transparent type 2 nudge). So, an additional taxonomy can be developed to improve the analysis of aggregate typologies. In the case of the combination of a transparent and non-transparent nudge, we advise that, different from other frameworks where we obtain a mix of two categories, the latter's characteristic prevails (and this also explains the criticism related to the risk of manipulation). We hope that using this framework in planning experiments and for systematic literature review with meta-analysis for a different topic will give a more comprehensive and clear view of nudging and the specific aspects that affect people's behavior.



## Chapter 2

### What motives increase blood donation?

#### A field experiment with framing messages

Gabriele Ballicu<sup>a</sup>

Vittorio Pelligra<sup>b</sup>

University of Cagliari

University of Cagliari

#### Abstract\*

Numerous surveys have identified various reasons why individuals voluntarily donate blood. So far, no one has compared the strength of these reasons and their impact on the intention to donate to actual blood donation. We conducted a field experiment to address this gap using different messages eliciting different potential motivations. We randomly sent these messages to 24,839 college students and tracked anonymously both their willingness to donate and their actual donations. In this way, we can compare the efficacy of the different messages. Firstly, we found a systematic gap between intention and actual donation. Secondly, as expected, we observed heterogeneity in the responses to the various messages. The most effective was those appealing to self-benefit motives, social norms, and empathy reasons. The message appealing to guilt/regret was never significant. The policy implications of these results are important as they can be useful in guiding the design of targeted promotional campaigns, in identifying the proper recipients, in filling the intention-donation gap, and more in general, in devising efficient strategies to attract new donors and to retain the old ones.

**Keywords:** field experiment, blood donation, frame, nudge, altruism, survey

**JEL Codes:** C93, D64, H41, I18

---

<sup>a</sup> Department of Economics and Business, University of Cagliari, V.le S. Ignazio 17, 09129, Cagliari, Italy. E-mail: [gabriele.ballicu@unica.it](mailto:gabriele.ballicu@unica.it) (Corresponding author)

<sup>b</sup> Department of Economics and Business, University of Cagliari, V.le S. Ignazio 17, 09129, Cagliari, Italy. E-mail: [pelligra@unica.it](mailto:pelligra@unica.it).

\* *Acknowledgments:* We thank Mario Macis and Daniel Wiesen for their valuable advice and comments. We are also grateful for the feedback and comments received during seminar presentations at the University of Cologne, the Paris School of Economics, the 11<sup>th</sup> SEET Workshop in Málaga, and the AFE 2024 Conference at the LSE. We thank Emanuela Marrocu and Sarah Zaccagni for their advice on the econometric analysis, Federico Atzori for providing helpful references and suggesting “UnicaDona” as the name of the University blood project, and Serena Racis for her comments. Finally, we thank to Antioco Dessì, the provincial AVIS president of Cagliari, and all staff members for their active participation and contribution to the project.

Protocol was approved after review by ethics committee of the University of Cagliari (UniCa - Prot. n. 0112536 of 01/06/2023 - [Classif. II/9]). The study was pre-registered on OSF: <https://osf.io/jsweq>

## 2.1. Introduction

Giving blood means to contribute to a vital public good. Blood donation is crucial for various potentially life-saving medical treatments, including surgery and transfusions for blood loss due to trauma, as well as in cancer, leukemia, and anemia therapies. In these cases, a single blood donation can save up to three lives. It is essential to have diverse blood types due to the presence of antigens that can trigger an immune response if they are foreign to the body. Unfortunately, many forecasts indicate that a decrease in blood supplies is expected due to increased life expectancy and a reduction in the number of first-time donors (Carter et al., 2011; Greinacher et al., 2010). To better understand and improve the recruitment process, it is crucial to analyze the motivations behind the choice of donating (Huis in 't Veld et al., 2019; Lownik et al., 2012) and why some donors stop contributing (Germain et al., 2007).

Many studies on what motivates blood donation only focus on the intention to donate and do not explore the relationship between intentions and actual donations. Additionally, there is a lack of literature comparing different treatment motives in the same experiment. This study aims to fill these gaps. A field experiment was conducted to test the effectiveness of messages appealing to different reasons (social norms, guilt/regret from not donating, empathy, and self-benefits) not only in increasing the intention to donate but also on the actual donation. The study found that different messages are effective for different categories, such as donors or non-donors and males or females.

We invited the entire student population of the University of Cagliari, in Sardinia (Italy), to participate in an online incentivized questionnaire on attitudes and beliefs about blood donations. At the end of the questionnaire, participants were asked if they would like to donate blood at a blood drive, which we considered a proxy for their intention to donate. Those willing to donate received a code and detailed instructions to set an appointment to donate at either a blood donation center or one of the seven bloodmobiles that we made available close to the University buildings for two weeks. Using the anonymous code, the subjects had to provide to the medical staff before donating, we monitored them to see if they donated in the following weeks. We also collected data about participants' willingness to donate blood more frequently if they were paid and their beliefs about other people's attitudes about being paid. We found that some messages can effectively increase the intention to donate and the actual donation, with different levels of efficacy for different categories of subjects. The message with a self-benefit motive increases positive intention, especially for women, and the donation itself, although only for men and with mild statistical significance. On the other hand, the message with an empathy frame does not increase intentions but does increase donations. The message framed with norms has a mild but

significant effect, increasing both intentions and donations, especially for those who are already donors. In contrast, messages based on regret, guilt, and reluctant altruism are never significant. Interestingly, most subjects report that they would donate equally if they were paid, but they believe that others would donate more if they were paid. This bias is even more pronounced in female subjects. Overall, these results support our hypotheses and are consistent with previous literature shading lights on the actual donation behavior. The policy implications may be important and useful, for example, providing guidance for the design of promotional campaigns, identifying the “right” message for the “right” recipients (Bove et al., 2021; Romero-Domínguez et al., 2019), filling the intention-donation gap, and, more generally, devising efficient strategies to attract new donors and retain the old ones.

The rest of the paper is organized as follows: Section 2.2 provides theoretical background on blood donation motives and strategies used in other studies to increase blood donation. Section 2.3 describes the experimental design. Section 2.4 presents and discusses the results of the study. Section 2.5 concludes.

## **2.2. Relevant literature**

### **2.2.1. Blood Donation Motives**

Several motives have been considered as explanations for the choice to donate blood (see Table 2.1 for a summary), starting with simple self-interest, which, however, appears not to be significant (Ferguson et al., 2007) to different variants of altruism. Pure altruism, for example, only partially explains the likelihood of being a donor (Ferguson et al., 2012; Steele et al., 2008), whereas impure and reluctant altruism appear to explain more donors’ behavior (Evans & Ferguson, 2014; Ferguson, 2015) especially as new donors are considered (Ferguson et al., 2012). According to other studies (Ferguson et al., 2012; Ferguson & Lawrence, 2016; Ferguson & Lawrence, 2019), habitual donors are more influenced by impure altruism, including the resulting warm-glow effect. The warm-glow effect may contribute to the development of an “affective addiction” to donate before a sense of personal obligation to give arises. Many blood donors report experiencing this feeling after donating, which may be a reaction to uncomfortable feelings reported before and during initial donations (Piliavin et al., 1982). Therefore, donors may be considered “benevolent” rather than “purely altruistic” (Ferguson et al., 2008). We should note that familiar (or genetic) altruism might be in contrast with other types of altruism: a study with Italian data shows that blood donations are inversely correlated with marriages between cousins, pointing out the nature of “gift to a stranger” of blood donation (Schulz et al., 2019).

Other research point to the importance of norms, showing that subjective and moral norms have a greater impact than social norms on blood donation behavior (Armitage & Conner, 2001; Godin et al., 2005; Masser et al., 2009). However, social norms may indirectly influence the decision to donate by favoring the internalization of related personal norms (Piliavin & Libby, 1986) and increasing blood donation more effectively than simple informational messages (Sarason et al., 1991). Other studies have shown that blood donations are primarily motivated by norm-based factors, including moral, descriptive, and social norms, with altruism playing only an indirect role (Lemmens et al., 2009; Otto & Bolle, 2011). Both active and lapsed donors are more likely to endorse beliefs related to reciprocal fairness than non-donors, and active donors are more likely to support positive and negative reciprocity norms (Ferguson & Lawrence, 2018; Ferguson, 2021). The probability of an individual becoming a blood donor is greater when they have a personal connection to a blood donor, such as a friend or family member (Goerleer et al., 2020, 2023; Misje et al., 2017; Piersma & Klinkenberg, 2018). The fact that the choice to donate is a social phenomenon can be seen by observing that immigrants donate less blood when they move to a new community (Wildman & Hollingsworth, 2009). Donor identity and the degree of internalization of the role are crucial predictors of donation behavior (Ajzen, 1985, 1991; Callero & Piliavin, 1983; 1991; France et al., 2014; Gilles et al., 2004; Lemmens et al., 2005; Wevers et al., 2014). First-time donors, who have not yet internalized their role as blood donors, are less likely to donate blood again compared to habitual donors (Masser et al., 2008). The decision to donate blood can also be influenced by the individual's perception of control (and potential barriers, such as fear of needles or transfusion side effects (Armitage & Conner, 2001; Farrell et al., 2001; Ferguson et al., 2007; Godin et al., 2005; Mohanty et al., 2021).

Gender differences have been observed for the reasons underlying the decision to donate: men tend to focus more on self-regarding motives, while women prioritize collective and altruistic aspects (Carver et al., 2008; Hupfer, 2006). Additionally, women tend to be more interested in information regarding the donation process, while men's donations are stimulated more by the possibility of health checks and other forms of incentive (Bani & Giussani, 2010; Glynn et al., 2003; Glynn et al., 2006; Sanchez et al., 2001). On the contrary, financial incentives for blood donation could be counterproductive for women, generating a motivational crowding-out effect (Mellström & Johannesson, 2008). This is because a positive self-image as a donor influences the decision to donate. (Martín-Santana et al., 2018; Sénémeaud et al., 2017). Finally, religious belief does not appear to impact the intention to donate blood (Ferguson & Lawrence, 2016; Gillum & Masters, 2010).

TABLE 2.1 – REASONS FOR DONATING BLOOD REPORTED IN PREVIOUS STUDIES

Motives	Description	References
Pure altruism (also called moral altruism)	The desire to help others without getting any reward, concerning only their happiness and welfare.	Bednall & Bove, 2011; Ferguson et al., 2012; Steele et al., 2008; Wildman & Hollingsworth, 2009.
Impure altruism	The desire to help others for the positive sensation of doing a positive thing, the so-called “warm-glow effect.”	Andreoni, 1990; Evans & Ferguson, 2014; Ferguson, 2015; Ferguson & Lawrence, 2016; Ferguson & Lawrence, 2019; France et al., 2020; Godin et al., 2014.
Reluctant altruism (linked with guilt and regret)	Helping others because someone thinks no one else will do it, particularly if they feel guilt or regret not doing so. We should note that there are two opposite concepts of reluctant altruism (Ferguson, 2022); in this case, we consider reluctant altruism as “reactive” to help others when there are high levels of free riding. On the other hand, “coerced” reluctant altruism is helping others when they feel social pressure (Cain et al., 2014).	Bednall et al., 2013; Evans & Ferguson, 2014; Ferguson, 2015; Ferguson et al., 2012; France et al., 2020; Godin et al., 2014.
Reciprocal Altruism	Helping others to establish a mutual relationship based on conditional cooperation. It is strictly related to the concept of norms.	Bednall & Bove, 2011; Ferguson et al., 2022; Landry, 2006.
Familiar altruism (also called genetic altruism or nepotistic altruism)	Helping only close relatives, such as parents, partners, or friends. When the help is directed to a specific group affiliation, it can also be called group-selected altruism.	Bani & Strepparava, 2011; Bednall & Bove, 2011; Schulz et al., 2019.
Identifiable victim effect	Individuals' propensity to provide more assistance when a particular, identified person ("victim") is witnessed in distress, as opposed to a broad, vague group with the same need.	Jenni & Loewenstein, 1997; Lee & Feeley, 2016; Moussaoui et al., 2016; Vuletić Čugalj, 2015.

Self-benefits motives	In the case of blood donation, it can be related to a free day from work, free health check, social reputation, or other benefits.	Bani & Giussani, 2010; Bednall & Bove, 2011; Ferguson et al., 2007; Glynn et al., 2003; Glynn et al., 2006; Lacetera & Macis, 2013; Mellström & Johannesson, 2008; Sanchez et al., 2001.
Descriptive norms	Reflect perceptions of behaviors typically performed by others (usually based on observations).	Bednall & Bove, 2011; Bicchieri, 2005; Godin et al., 2005; Lemmens et al., 2009; Otto & Bolle, 2011; Xie et al., 2019.
Social norms	Reflect people's perceptions and opinions of which behaviors are approved (or disapproved) by others.	Bednall & Bove, 2011; Bicchieri, 2005; Godin et al., 2005; Lemmens et al., 2009; Otto & Bolle, 2011; Piliavin & Libby, 1986.
Moral and subjective norms	Individual's perception of the moral correctness or incorrectness of performing a specific behavior.	Armitage & Conner, 2001; Bednall & Bove, 2011; Lemmens et al., 2009; Masser et al., 2009; Otto & Bolle, 2011.

---

### 2.2.2. Strategies and policy interventions used in other studies

The policies regularly used to stimulate donations may help understand the underlying motives. While the use of financial incentives may seem intuitive, they are not always efficient and come with economic costs and feasibility concerns. The quality of blood donations may be compromised in countries without social welfare programs, as the poorest individuals may have poorer health and still donate for payment, even if their blood is unusable due to disease (Abolghasemi et al., 2010). Additionally, extrinsic motivations, particularly for women, may decrease internal motivation to donate, a phenomenon known as the “motivational crowding-out effect” (Titmuss, 1970; Niza et al., 2013). This drawback may be caused by “image motivation”, where people seek social approval and signal that they are performing a good and prosocial act, rather than being motivated purely by greed. Therefore, if blood donations are public, financial incentives may exert a negative impact (Goette & Tripodi, 2022) while being more effective in settings where donors are relatively anonymous (Ariely et al., 2009; Goette et al., 2010).

Other material incentives such as free cholesterol tests (Goette et al., 2009), T-shirts (Reich et al., 2006), or movie tickets (Royse, 1999) appear ineffective in increasing donations. In contrast, donating to a

charity per blood donation works for women (Mellström & Johannesson, 2008), and receiving a lottery ticket works for less motivated donors, also promoting habit formation without crowding out (Goette & Stutzer, 2019). Overall, up to a certain threshold, financial incentives appear to be effective in increasing blood donation rates without compromising the quality of donated blood (Bruer, 2021; Iajya et al., 2013; Lacetera et al., 2012; Lacetera et al., 2013). Their effectiveness also depends on the context and prevailing social norms (Chell et al., 2018; Graf et al., 2023): for example, vouchers boosted donor recruitment in the US (Ferrari et al., 1985), but no such effect was found when offered to Argentinians (Iajya et al. 2013).

A second approach to the promotion of donations is based on nudges. A nudge is an inexpensive and easy-to-avoid policy that modifies the “choice architecture” and alters people’s behavior in a predictable way without limiting their options or altering the economic incentives (Thaler & Sunstein, 2008). Stutzer and colleagues (2011) document an increase in the probability of donating by 8% when an “active decision” is implemented, that is when individuals are asked to indicate a date and place to donate. Similarly, binding communication based on commitment strategy is more effective than persuasion (Fonte et al., 2017).

Another effective nudge policy involves reminders and messages with a framing. For example, interventions based on VRA (voluntary reciprocal altruism) are highly effective because they encourage beliefs about reciprocal fairness (Landry, 2006). Asking non-donors if they would accept a transfusion if necessary can be an effective strategy to increase the number of new donors (Ferguson et al., 2022). Boosting predicted positive and negative emotional reactions to giving or not giving, such as eliciting an anticipated warm glow and regret, may also positively impact donation intention (France et al., 2020; Godin et al., 2014). Several studies have demonstrated that information about blood type shortages (Sun et al., 2016; Heger et al., 2020) or expressions of gratitude (Gemelli et al., 2018; Moussaoui et al., 2019) can increase the intention to donate, with the former type more effective than the latter (Wang et al., 2021). However, in some cases, the same strategies have proven to be ineffective (Sun et al., 2019) or even harmful due to negative self-image (Goette & Tripodi, 2020). Finally, field experiments have found that information about how many people donate (descriptive norms) and observing positive role models can increase willingness to donate (Bruhin et al., 2020; Rushton & Campbell, 1977; Xie et al., 2019).

When comparing different types of interventions, it appears that those that appeal to altruistic motives and utilize reminders are the most effective (Godin et al., 2012; Reich et al., 2006), particularly for habitual donors (Fosgaard et al., 2020). Conversely, messages focusing on self-benefit seem not to work

(Pauhlus et al., 1976). One advantage of these nudge policies is that they do not diminish prosocial behavior or the warm glow effect, even if individuals are aware that these interventions have been implemented (Gråd et al., 2021). However, a reminder message that abstractly refers to “saving lives” (gain-framed messages) does not appear to increase donations (Moussaoui et al., 2016; Vuletić Čugalj, 2015) and the same applies when referring to the possibility of people dying (loss-framed messages) (Chou & Murnighan, 2013; Ou-Yang et al., 2021; Szaszi et al., 2018; Vuletić Čugalj, 2015) As with the message content, the source of information must be official and credible (Martín-Santana et al., 2018; Wang et al., 2021). As the discussion has shown, the phenomenon of blood donation is complex, and the reasons that can induce donors are multiple, as are the tools that can be used to activate or reinforce these reasons. A gap in the research up to this point concerns that no one has comparatively assessed the strength of the different possible motives to donate and, therefore, the effectiveness of the different policy instruments. In our study, we consider the role of messages and focus, particularly on the relative effectiveness of stimulating donations of messages that appeal to different motivations.

### **2.3. The experiment: design, procedures, and hypotheses**

We used the Cagliari University student’s emails database (24,839 enrolled students in 2022). On May 24th, 2023, we sent an email to all the 24,839 students of the University of Cagliari (Sardinia, Italy) explaining the significance of studying beliefs about blood donation and asking them to respond to a brief anonymous set of questions to express their opinions on blood donation. We informed them that the survey was carried out in collaboration with AVIS (the major blood donation association in Italy, see Appendix 2.B.1 for more details on blood donation in Italy) and those who completed it would participate in a lottery offering 20 prizes of 100 euros each. We also mentioned that anyone who wanted to do so would have the opportunity to make an appointment to donate blood using a unique numerical code generated at the end of the survey. This code made it possible to skip the queue and had to be reported to the staff in order to donate blood. We clarified that the chance of winning the prize was unrelated to the decision to set the appointment, as winners would have been chosen randomly. It is crucial to note that completing the questionnaire was the only requirement to participate in the lottery and win the prize. To prevent individuals from completing the questionnaire multiple times to increase their chances of winning, participants must login with their university details to enter the survey (but the personal and questionnaire data were compiled on two distinct sites and stored in two separate datasets, in order to safeguard the privacy and anonymity of the participants, as well as to avoid any potential experimental

demand effects). The blood drive took place from May 29th to June 13th, 2023. Donations were accepted daily at various locations, not only in Cagliari but also in nearby cities and different departments of the university. This approach guarantees accessibility for individuals irrespective of their geographical location, which is a crucial factor to consider (Merz et al., 2018; Piersma et al., 2021). The unique codes generated at the end of the survey were collected by AVIS medical staff when students showed up to donate. In the survey, we included four sets of questions: personal questions (demographic information of age, gender, and field of study), social preferences (altruism, trust, time and risk preferences, etc.), health and blood information questions (self-reported health, donor status, knowledge of donors and receiver, etc.), and finally, questions about attitudes and beliefs on blood donations (related to the preferences and the motives to donate blood). Participants were given the option to indicate their gender identity or choose not to answer, in accordance with ethical committee approval. General questions were asked regarding risk and time preference, altruism, reciprocity, and trust, as these have been shown to be good predictors of attitude and are commonly used for comparing different populations (Dohmen et al., 2011; Falk et al., 2018, 2023). We also considered ambiguity preference (in terms of vagueness about outcome probabilities and the aversion to novelty and complexity), using only one attitudinal question for time reasons (Cavatorta & Schröder, 2019). We used a 10-point Likert scale (ranging from “strongly disagree” to “strongly agree”) to assess the various intensities of motives to donate blood, as other studies have done (Evans & Ferguson, 2014; Ferguson et al., 2012). An even value was chosen to avoid neutral bias. To reduce the risk of bias caused by differences in cognitive and affective orientation, we refrain from using subjective language such as “think” and “feel” (Mayer & Tormala, 2010). Furthermore, we ask about the effect of financial incentives on one’s own willingness to donate and the belief about the effect on the willingness of others to donate. A last question was introduced as a test to measure the subjects’ attention and to validate their responses (see Appendix 2.C for the complete questionnaire and the text of the emails; the original Italian version and the English translation).

The survey respondents are randomly assigned to one of five groups. In the control group, subjects were asked if they wanted to donate blood and if they would book an appointment for the upcoming “blood donation days” (active choice nudge). In this way, we collected both the intention to donate and the actual blood donation. The other treatments have the same structure as the control group. However, subjects also received messages with different framings. In Table 2.2, we report the messages we sent to the different groups to elicit the potential motives for donating (see Table 2.A.1 in Appendix 2.A for the original Italian version):

- 1) T1 – Norms: social, descriptive, and moral norms that are closely linked to the concept of duty, cooperation, and reciprocity, as well as the donor’s identity;
- 2) T2 – Empathy: the feeling of empathy with a particular subject (the identifiable victim effect). Two real stories of people with specific names (Samuele and Sara) were chosen as they are representative of people from different regions, religions and genders.
- 3) T3 – Guilt/regret: it concerns all the anticipated negative emotions of not donating blood and the concept of reluctant altruism;
- 4) T4 – Self-benefits: it includes personal benefits like a free day from work, scholarships for blood donors, and a free health check.

We do not consider pure altruism and impure altruism specifically because they are problematic to disentangle from the other motives. Instead, we merge similar and concurrent motives in blocks. This is for two reasons: first, we need extensive samples for each group to get reliable estimates; second, many of these motives rely on similar mechanisms, as we have already explained. These four groups have some common characteristics in pairs: “self-benefit” and “empathy” focus at the individual level (myself or, on the opposite, specific persons), while “norms effects” and “guilt/regret” at the collective level (the society, regarding a bad or, on the opposite, a good behavior). “Self-benefit” and “norms” evoke positive feelings (benefits or positive images of self), while “empathy” and “guilt/regret” evoke negative feelings (concern for others or negative images of self). Finally, “self-benefit” and “guilt/regret” are more related to the effect of my choices on me, while “empathy” and “norm effects” focus on others’ status and behavior.

The message was intentionally placed at the end of the questionnaire to prevent any influence on the questions about attitudes and to avoid weakening the comparison to the different groups. Additionally, the messages were framed to prevent the subjects from feeling manipulated (Fehr et al., 1999; Renner et al., 2013). In the following section, we will examine which frames are more suitable for different scenarios and whether there is a correlation between specific characteristics and message types. Our study was preregistered on OSF<sup>1</sup> and received approval from the ethics committee at the University of Cagliari. The general hypothesis we want to test is whether and which messages are more effective in increasing the intention to donate and the donation itself, depending on the subjects' characteristics

---

<sup>1</sup> <https://osf.io/jsweq>

TABLE 2.2 – DIFFERENT FRAMING MESSAGES FOR GROUPS

Group	Message
<i>Control group</i> (T0)	[No message, only active choice]
<i>Norms</i> (T1)	<p>For about 90% of Italians, blood donation is considered a moral responsibility and civic duty. In fact, it is an act of reciprocity and social involvement. In Sardinia, in 2021, we reached 40.000 blood donors, that have ensured 55.000 blood transfusions. More and more Sardinians have become donors: give your blood too and help a growing community in Sardinia. Your contribution helps to provide a public good. How would you feel if you needed a blood donation in the future, but there wouldn't be enough blood for everyone?</p>
<i>Empathy</i> (T2)	<p>Donating your blood can help someone suffering from a severe disease or accident. Behind every donation, there is a person in danger. They are not responsible for their health status but must receive a donation quickly. Like Samuele, a six-year child suffering from thalassemia, his family could not afford other cures. Or Sara, although she has always kept fit, she had to get a liver transplant. We are searching for a donor that matches their blood types: you can be their donor!</p>
<i>Guilt/regret</i> (T3)	<p>In the last few years, there has been a drastic decrease in the blood donation rate, with a negative balance of 25.000 blood bags in Sardinia. Even if the region spends 5 million euros on importing the bags required, many people who need blood might not receive it. It is widespread to have a shortage of the blood type required, and waiting for other donors can be fatal: their lives also depend on your choice. You can give your blood and help those less healthy and lucky than you.</p>
<i>Self-benefits</i> (T4)	<p>Donating blood has many benefits, not only for those who need blood but also for you. If you work, you will have a free day when you choose to donate. If you study, you can get specific scholarships and awards for blood donors. You will have the possibility to check your health thanks to free medical check-ups before every donation. Data shows that habitual blood donors have 33% fewer risks of cardiopathy and 88% fewer risks of heart attacks. Finally, blood donation improves glycemic control and cardiovascular functionality, reduces oxidative stress, and increases the flux of arterial blood: all these things preserve the health of the heart and liver and reduce the risk of developing diabetes of type II. Make the best choice for you and all: donate your blood!</p>

We denote with  $PI_T$  and  $PD_T$  with  $T \in \{T0, T1, T2, T3, T4\}$  the probability of expressing a positive intention to donate and the probability of an actual donation respectively, for the participants of each group  $T$ . Specifically, the following hypotheses were tested:

- $H_1$ :  $PI_{T1} > PI_{T0}$  and  $PD_{T1} > PD_{T0}$ . The intention to donate and the actual blood donation will be higher in T1 (norms) than in the control group T0, in particular for habitual blood donors that have internalized the norm of donation (Armitage & Conner, 2001; Godin et al., 2005; Masser et al., 2009);
- $H_2$ :  $PI_{T2} > PI_{T0}$  and  $PD_{T2} > PD_{T0}$ . We hypothesize a gender effect, with treatment T2 (identify victim effect and empathetic frame) increasing the intention to donate and the blood donation itself more than the control group, especially for women in the samples;
- $H_3$ :  $PI_{T3} > PI_{T0}$  and  $PD_{T3} > PD_{T0}$ . The intention to donate and the blood donation itself will be higher in T3 (guilt/regret) than in the control group T0, in particular for non-donors and new donors (Ferguson et al., 2012);
- $H_4$ :  $PI_{T4} > PI_{T0}$  and  $PD_{T4} > PD_{T0}$ . Also in this case, we hypothesize a gender effect, with treatment T4 (self-regarding frame) will increase the intention to donate and the number of donations with respect to the control group only for men (Carver et al., 2008; Hupfer, 2006; Mellström & Johannesson, 2008);
- $H_5$ : We hypothesize there is consistency between the motivations for donating blood reported by individuals in the questionnaire and the effectiveness of messages based on the same or similar motivations on PI and PD;
- $H_6$ : We expect that the majority of the subjects will report that they will donate less or the same if they receive a financial incentive but believe there would be an increase in the donation for others. This bias might be due to a social approbation effect (Lacetera & Macis, 2010) and a moral superiority bias (Tappin & McKay, 2017).

## 2.4. Results

We collected a total of 6,762 answers. Some of them were removed for different reasons.<sup>2</sup> After the data cleaning, we remain with a sample of 3,872 complete questionnaires (twice the minimum sample size

---

<sup>2</sup> The first questionnaire as it was a test (1), subjects who did not complete the entire questionnaire (1201 observations), subjects who failed the attention test in the last question (11 observations), those who stated that they could not donate blood (1133 observations) because we could not measure the effect of the treatments; this also considers female subjects who

required for other studies). Among the respondents, 2,989 subjects reported a positive intention to donate blood, and 148 actually donated. Table 2.3 reports the data for each treatment group. The sample can be considered representative of the target student population (see later), thereby excluding the possibility of self-selection. Correct randomization was verified using various tests. A multinomial logit was used with the different treatments as dependent variables and the subjects' characteristics as independent variables; most coefficients were not significant. These results were further confirmed by the Hotelling test, Pearson Chi-Square test, and Spearman test, which compared each group with the control group, particularly regarding gender, donors, and studies. The control and treatment groups differ only in their response time to the last question, as the treatment groups had to read a longer text. A shorter response time could indicate that the message elicited emotions that preceded the decision more quickly by increasing the positive intention to donate (Rand et al., 2012); however, a long response time could indicate a personal conflict in the decision that could turn positive from negative. In this case, the time variable was not relevant in any model. We will use only the frequency of donations in the models, as it is more informative about the subjects' behavior and strongly correlates with the last donation.

Table 3 shows that 33.5 percent of the subjects are men (40 percent in the whole population), and 42 percent were already blood donors. Since the number of donors exceeded our expectations, collecting donor-specific data to compare with the collected sample was unnecessary. This allows us to conduct more precise analyses within this category (see Appendix 2.B.2 for the analysis of characteristics related to being a donor). The average age is approximately 25 (with a median of 21), ranging from 18 to 61 (see Figure 2.A.1 in Appendix 2.A). Subjects are from all University schools, with a minimum of 6.7 percent from the School of Science and a maximum of 28.7 percent from the Humanities (see Figure 2.A.2 in Appendix 2.A for also a comparison with the whole population). Based on the data, men seem less risk-averse, less altruistic (see Figure 2.A.3 in Appendix 2.A), and less informed about their donor status than women, as in the literature (Byrnes et al., 1999; Charness & Gneezy, 2012; Croson & Gneezy, 2009).

---

donated three months ago (287 observations), subjects older than 65 years (1 observation), or older than 60 who is not a habitual donor (2 observations); those who replied inconsistently, in particular, those who said they had never donated (were donors) but also indicated (did not indicate) the last time or the frequency of donation (218 observations). This inconsistency can happen to subjects who mis-clicked the frequency or the last time or clicked the wrong classification of donor types. However, since we cannot assign them to one of the categories, we dropped them out. Non-binary subjects because they are too few to do reliable estimations (28 observations). Subjects who take more than 8 minutes to answer the last question (8 observations).

However, more than half of men have donated at least once, compared to one-third of women. No significant differences regarding individual preferences were found between donors and non-donors in the raw data (see Figure 2.A.4 in Appendix 2.A). However, there appears to be heterogeneity among students from different schools, in terms of prosocial behavior between medical-biological schools and others (see Figure 2.A.5 in Appendix 2.A) (Godager & Wiesen, 2013; Li, 2018). This difference (and the fact that there could be spillover due to word of mouth among students of the same school) is taken into account using cluster standard errors. Of the 148 donors considered, 80 (54 percent) chose to donate near their school<sup>3</sup>. When examining data on motivation to donate blood at an aggregate level, it appears that the highest reported factors are altruistic motivation (on a scale of 1 to 10, the average for pure and impure altruism is 9.68 and 9.08 respectively), information about blood donation (8.98), and norms (8.84 social and 8.2 moral). Conversely, the lowest reported factors are reluctant altruism (6.9) and guilt (5.97) (see Figure 2.A.6 in Appendix 2.A). As we will see, these results are consistent with the message effectiveness results, confirming the H<sub>5</sub> hypothesis of consistency between reported motivation and the stimulus effect.

TABLE 2.3 – DESCRIPTIVE STATISTICS OF GROUPS AND POPULATION

	<b>Control</b>	<b>T1</b>	<b>T2</b>	<b>T3</b>	<b>T4</b>	<b>Total</b>
Positive intention	75.13%	78.64%	75.52%	76.76%	80%	77.2%
Donation	2.76%	3.87%	5.07%	3.47%	3.61%	3.82%
Male	32.76%	33.24%	34.49%	32.1%	34.84%	33.5%
Donor	43.81%	40.85%	40.54%	42.23%	42.32%	42%
Age	24.5 years 5 months	24 years 9 months	24 years 5 months	25 years	24 years 10 months	24 years 8 months
N	760	749	809	779	775	3872

<sup>3</sup> One individual with the code “72K51100” appeared twice in the codes collected by AVIS. According to AVIS workers, this student could not donate the first time due to high blood pressure levels and decided to book and donate on another day. Only 12 subjects donated without providing a code.

### 2.4.1. Intention to donate

The following section presents the results related to the effect of the various framing messages on donation intentions. Table 2.4 reports the results of several tests. We observe a positive and significant effect of gender, donor status, and “self-interest” messages on the intention to donate. Furthermore, the effect of the norm-based message is only mildly significant (with Fisher’s exact one-sided test). We use probit and logit models (see Table 2.A.2 in Appendix 2.A) with robust SEs clustered by schools.

TABLE 2.4 – TEST FOR GENDER, DONOR STATUS AND TREATMENTS ON INTENTION TO DONATE

Test \ p-value	Male	Donor	T0 vs T1	T0 vs T2	T0 vs T3	T0 vs T4
Pearson Chi-Squared test	0	0	0.106	0.857	0.453	0.022
Fisher’s exact test (1-sided)	0	0	0.060	0.451	0.245	0.013
Spearman test	0.0001	0	0.1064	0.8567	0.4537	0.0222
Wilcoxon rank-sum test	0.0001	0	0.1064	0.8565	0.4536	0.0222
Kruskal Wallis	0.0001	0.0001	0.1064	0.8571	0.4535	0.0222

The model on which we analyze the average marginal effects is the logit with SEs by cluster, but the results are similar using probit or robust SEs (see Table 2.5). Our dependent variable is the binary variable of positive intention to donate. Four binary variables are used for each treatment group, along with four interactions (treatment T1 and T3 with donor status and treatment T2 and T4 with gender) as independent variables, consistent with our hypotheses. In addition, we also use individual characteristics, such as gender, age, health status, and study background, as independent variables. We also consider individual preferences such as altruism, positive and negative reciprocity, trust, time, and risk preferences. Since we are using nonlinear models, it is important to note that the average marginal effects of the interactions should be interpreted carefully because they cannot be evaluated just by considering the sign and the statistical significance of the coefficient of the interaction term. Unlike a linear model, the interaction effect is conditional on the independent variables; therefore, it is necessary to calculate the statistical significance of the entire cross derivative (in this case, because we have two dummies, the cross

difference) of the expected value of the dependent variable (Ai & Norton, 2003; Karaca-Mandic et al., 2012)<sup>4</sup>.

TABLE 2.5 – AVERAGE MARGINAL EFFECTS FOR PROBABILITY OF STATED A POSITIVE INTENTION

	(1) Probit Robust SE	(2) Probit Cluster SE for schools	(3) Logit Robust SE	(4) Logit Cluster SE for schools
T1: Norms	0.016 (0.023)	0.016 (0.03)	0.0157 (0.0224)	0.0157 (0.0288)
T2: Empathy	0.0055 (0.023)	0.0055 (0.0217)	0.00525 (0.023)	0.00525 (0.027)
T3: Guilt/regret	-0.000134 (0.0236)	-0.000134 (0.0217)	0.000577 (0.023)	0.000577 (0.0202)
T4: Self-benefits	0.0664*** (0.022)	0.0663*** (0.0248)	0.0675*** (0.022)	0.0675*** (0.0231)
Interaction T1 and donor	0.0593* (0.0318)	0.0593* (0.0307)	0.0607* (0.032)	0.0607** (0.0297)
Interaction T2 and male	0.0155 (0.0346)	0.0155 (0.0208)	0.01326 (0.0346)	0.0133 (0.021)
Interaction T3 and donor	0.0309 (0.0323)	0.0308 (0.03425)	0.03005 (0.0324)	0.03 (0.0337)
Interaction T4 and male	-0.0411 (0.0348)	-0.0411* (0.02125)	-0.0418 (0.0348)	-0.0418** (0.0213)
Time to respond to the last question (seconds)	-0.000387** (0.000197)	-0.000387 (0.000289)	-0.000359* (0.000189)	-0.000359 (0.000273)
Donor	0.0748*** (0.0275)	0.0748*** (0.0206)	0.0745*** (0.0281)	0.0745*** (0.0209)
Male	-0.0532*** (0.02)	-0.0532** (0.0225)	-0.053*** (0.02)	-0.0531** (0.0205)

<sup>4</sup> In STATA, instead of using the “margins” command, we use the “ginteff” user-written command, which is suitable for nonlinear models when there are two or more interacting variables (Radean, 2023).

Age	-0.000997 (0.00105)	-0.000997 (0.000643)	-0.00117 (0.00105)	-0.00117* (0.000669)
Health status	0.00959** (0.00488)	0.00959** (0.00394)	0.00919* (0.00489)	0.0092** (0.00363)
Physical activity	0.000994 (0.0137)	0.000994 (0.00791)	0.00116 (0.0137)	0.00116 (0.00772)
Medicine and Surgery School	0.0346 (0.0276)	0.0346*** (0.0093)	0.0405 (0.027)	0.0405*** (0.00755)
Engineering and Architecture School	-0.0134 (0.0291)	-0.0134*** (0.00388)	-0.0114 (0.0286)	-0.0112*** (0.00285)
Biology and Pharmacology School	0.0763*** (0.0267)	0.0763*** (0.0093)	0.075*** (0.0263)	0.0746*** (0.0088)
Human Sciences School	-0.00423 (0.0272)	-0.00423 (0.0108)	-0.0029 (0.0267)	-0.0029 (0.00977)
Economics, Law and Political Sciences School	-0.0116 (0.0278)	-0.0115 (0.00777)	-0.012 (0.0275)	-0.012 (0.0079)
Risk propensity	0.0117*** (0.00311)	0.0117*** (0.00293)	0.0120*** (0.00316)	0.0120*** (0.00278)
Time preference	0.0000868 (0.00411)	0.0000868 (0.00311)	-0.000424 (0.00415)	-0.000424 (0.00305)
Ambiguity propensity	0.00611** (0.00251)	0.00611** (0.00251)	0.00650** (0.00253)	0.00650*** (0.00245)
Altruism	0.0272*** (0.00438)	0.0272*** (0.00365)	0.0267*** (0.00432)	0.0267*** (0.00320)
Positive Reciprocity	-0.000888 (0.00386)	-0.000888 (0.00389)	-0.000297 (0.00385)	-0.000297 (0.00393)
Negative Reciprocity	-0.00365 (0.00308)	-0.00365* (0.00210)	-0.00384 (0.00308)	-0.00384* (0.00213)
Trust	0.00947*** (0.00345)	0.00947*** (0.00304)	0.00941*** (0.00347)	0.00941*** (0.00299)

Frequency of blood donation	0.00188 (0.00758)	0.00188 (0.00967)	0.003 (0.008)	0.003 (0.0101)
He/she has received a blood donation	-0.0041 (0.0435)	-0.0041 (0.018)	-0.00287 (0.044)	-0.00287 (0.019)
Knowledge of Donors	0.0455* (0.0243)	0.0455 (0.0285)	0.0426* (0.024)	0.0426 (0.0284)
Knowledge of people who received a blood donation	0.033** (0.0134)	0.033*** (0.00655)	0.034** (0.0135)	0.034*** (0.00674)
Not knowing if he/she can donate	-0.075*** (0.0168)	-0.075*** (0.0145)	-0.0734*** (0.017)	-0.0734*** (0.014)
Observations	3872	3872	3872	3872
<i>AIC (models)</i>	3865.23	3811.23	3862.54	3808.54
<i>BIC (models)</i>	4065.60	3842.53	4062.91	3839.85

Standard errors in parentheses.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

*Notes:* The correct interaction marginal effects are calculated with the STATA “ginteff” command. When all schools’ dummies are equal to zero, we consider students from the School of Sciences.

Only two treatments appear to be statistically significant. Treatment T4 (self-benefits) increased, on average, the probability of women's positive intention by 6.75 percentage points (p-value of 0.003), while only 2.57 for men (with the coefficient of the interaction equal to – 0.418 and a p-value of 0.041). This result appears to contradict our initial hypotheses; however, it is possible that female students did not consider the “selfish” aspects of donating blood. The other significant treatment is treatment T1 (norms), which, consistent with our hypotheses, increases, on average, the probability of who is already a donor to express the intention to donate by 6.07 percentage points (p-value of 0.041). Compared to the control group, the probability of having declared a positive intention in treatment T4 (self-benefits) – considering males and females together – is about 39% higher; in contrast, in treatment T1 (norms) is about 30% higher than the control group (but is weaker statistically significant).

On average, donors were 7.45 percentage points more likely to have a positive intention (p-value close to 0) than non-donors, while men were 5.3 percentage points less likely than women (p-value of 0.01). Knowing people who have received a donation also increases the likelihood by 3.4 percentage points, while not knowing whether you can donate decreases it by 7.34 (both with p-values close to 0). Positive

intention is also higher among medical, biological, and pharmacological school students. Health status (+0.9 percentage points, p-value of 0.011), risk propensity (+1.2 percentage points, p-value close to 0), ambiguity propensity (+0.6 percentage points, p-value of 0.008), altruism (+2.7 percentage points, p-value close to 0), and trust (+0.9 percentage points, p-value close to 0.002) increase on average the probability of having a positive intention, as their level increases by one point. On the other hand, each year of age and each level of negative reciprocity decrease this probability on average by 0.1 (p-value of 0.081) and 0.4 (p-value of 0.071) percentage points, respectively.

### **2.4.2. Donation**

The following section analyzes the actual donations. As previously noted, there is a significant difference between intentions and actual donations, with an average positive intention of 77.2% dropping to only 3.82% of actual donations. This percentage is slightly higher than the donation rate among donors in the Italian population (2.8%). However, if we include those who cannot donate in the population of potential donors, the value converges to the national average. The discrepancy between intention to and actual donation may be due to multiple factors: self-image concerns, where individuals declare positive intentions even if they do not intend to follow through; high access costs in case where donation points (hospitals or bloodmobiles) are not close enough; a systematic time-inconsistency observed in several psychological studies (Sheeran & Webb, 2016). However, it is worth noting that all participants who donated had previously expressed positive intentions, indicating that intention is a good predictor of behavior (Ferguson et al., 1996)<sup>5</sup>. Another important aspect to consider is the health status of the donors. Among those who donated we find only individuals who reported health levels above the mean value, those who had never received a transfusion, and all are younger than 35. This finding highlights the importance of good health in motivating individuals to donate (note that the data used in this study only includes potential donors, as we excluded those who were unable to donate at this blood drive). All statistical tests used for intention are summarized in Table 2.6. Our findings suggest that gender may mildly impact donation, while donor status has a strong effect. These results differ from those obtained from the models, possibly due to heterogeneity. Only Treatment T2 was found to be statistically significant.

---

<sup>5</sup> The only exception was one female student in treatment T2 who did not follow her initial negative intention

TABLE 2.6 – TEST FOR GENDER, DONOR STATUS AND TREATMENTS ON DONATION

Test \ p-value	Male	Donor	T0 vs T1	T0 vs T2	T0 vs T3	T0 vs T4
Pearson Chi-Squared test	0.094	0.007	0.229	0.019	0.428	0.226
Fisher's exact test (1-sided)	0.058	0.005	0.145	0.013	0.259	0.143
Spearman test	0.0974	0.0073	0.2303	0.0185	0.4299	0.2272
Wilcoxon rank-sum test	0.0942	0.0068	0.2291	0.0192	0.4279	0.2261
Kruskal Wallis	0.0944	0.0068	0.2292	0.0192	0.4279	0.2263

Again, we use probit and logit models (see Table 2.A.3 in Appendix 2.A) with robust SEs and clusters by university schools: we report the estimated marginal effects of the probit with clustered standard errors by school, as this minimizes information criteria (see Table 2.7). From the regressions, we see that positive intention, on average, is associated with an increase in the probability of donating of almost 4.77 percentage points (p-value close to 0). We see also that treatment T1 (norms), on average, increases the probability of donating by 1.28 percentage points (p-value of 0.009) and treatment T2 (empathy) – which was not significant for intention – positively affects donations by as much as 2.58% (p-value of 0.022), considering a value for the odd-ratio in this treatment (including males and females) is equal to .89. Treatment T4 (self-interest) increases donation by 3.33 percentage points on average for men, although the coefficient is mildly significant (p-value of 0.065)<sup>6</sup>.

As highlighted earlier, young age, health, and playing sports positively affect the probability of donating, with each year of age decreasing the probability of donating by 0.5 percentage points (p-value close to 0) on average, each level of health increasing it by 0.5 percentage points (p-value close to 0) on average, and athletes are 0.927 percentage points (p-value of 0.032) more likely to have donated blood on average than sedentary people. Donor status and gender, on the other hand, do not appear to be relevant, as does knowledge of donors and blood recipients. The same is valid for individual preferences, with the exclusion of time preferences for the future, although the increase in each level increases, on average,

<sup>6</sup> Considering the raw data, it would seem that these results apply to all the different schools, with the exclusion of Economics, Law and Political Science, where the most effective treatment would seem to be T4 (self-interests).

the likelihood of donating by only 0.289 percentage points (p-value of 0.016). This slight effect could be due to subjects thinking about the possibility they might need blood in the future. Finally, students in medical, biological, and pharmacological schools donate more on average than others. All these results are confirmed using different robustness checks, such as increasing the sample and changing the functional form of the models (see Appendix 2.B.3)

TABLE 2.7 – AVERAGE MARGINAL EFFECTS FOR PROBABILITY OF DONATION DURING BLOOD DRIVE

	(1) Probit Robust SE	(2) Probit Cluster SE for schools	(3) Logit Robust SE	(4) Logit Cluster SE for schools
Intention to donate	0.0477*** (0.00416)	0.0477*** (0.00208)	0.0477*** (0.00417)	0.0477*** (0.00208)
T1: Norms	0.0128 (0.0150)	0.0128*** (0.00493)	0.0124 (0.0161)	0.0124** (0.00584)
T2: Empathy	0.0258* (0.0144)	0.0258** (0.0112)	0.025 (0.0154)	0.025* (0.013)
T3: Guilt/regret	0.00574 (0.014)	0.00574 (0.00891)	0.00615 (0.0151)	0.00615 (0.00933)
T4: Self-benefits	0.00483 (0.0126)	0.00483 (0.0134)	0.00419 (0.0134)	0.00419 (0.0139)
Interaction T1 and donor	0.00203 (0.0181)	0.002 (0.0166)	0.0033 (0.0188)	0.0033 (0.018)
Interaction T2 and male	0.011875 (0.0219)	0.01187 (0.02185)	0.01322 (0.023)	0.01322 (0.0234)
Interaction T3 and donor	0.0153 (0.0192)	0.0153 (0.02106)	0.01365 (0.0204)	0.0136 (0.0215)
Interaction T4 and male	0.0312 (0.0224)	0.0312* (0.0169)	0.0333 (0.0244)	0.0333* (0.019)
Time to respond to the last question (seconds)	-0.000119 (0.000109)	-0.000119 (0.000102)	-0.000128 (0.000116)	-0.000128 (0.000117)
Donor	0.00651 (0.0124)	0.00651 (0.0153)	0.00707 (0.0127)	0.00707 (0.0166)

Male	0.00701 (0.00979)	0.00701 (0.0142)	0.00607 (0.0102)	0.00607 (0.0150)
Age	-0.00468*** (0.000866)	-0.00468*** (0.00125)	-0.00477*** (0.000958)	-0.00477*** (0.00124)
Health status	0.00454* (0.00260)	0.00454*** (0.00102)	0.00482* (0.00274)	0.00482*** (0.00107)
Physical activity	0.00927 (0.00646)	0.00927** (0.00431)	0.00918 (0.00666)	0.00918** (0.00452)
Medicine and Surgery School	0.0306 (0.0192)	0.0306*** (0.00416)	0.0295 (0.0207)	0.0295*** (0.00282)
Engineering and Architecture School	0.0036 (0.0155)	0.0036 (0.00231)	0.00218 (0.0162)	0.00218 (0.00141)
Biology and Pharmacology School	0.0351 (0.0155)	0.0351*** (0.00231)	0.0345 (0.0245)	0.0345*** (0.0062)
Human Sciences School	0.0073 (0.0152)	0.0073 (0.00517)	0.00555 (0.0160)	0.00555 (0.00437)
Economics, Law and Political Sciences School	0.00845 (0.0157)	0.00845*** (0.00250)	0.00759 (0.0167)	0.00759*** (0.00185)
Risk propensity	-0.00202 (0.00132)	-0.00202 (0.00146)	-0.00221* (0.00133)	-0.00221 (0.00140)
Time preference	0.00289 (0.00193)	0.00289** (0.0012)	0.00285 (0.00202)	0.00285** (0.0012)
Ambiguity propensity	-0.000503 (0.00109)	-0.000503 (0.00113)	-0.000582 (0.00109)	-0.000582 (0.00112)
Altruism	-0.00254 (0.0022)	-0.00254 (0.002)	-0.00242 (0.00225)	-0.00242 (0.00193)
Positive Reciprocity	-0.00166 (0.00173)	-0.00166 (0.00135)	-0.00163 (0.00177)	-0.00163 (0.00125)
Negative Reciprocity	-0.00126 (0.00146)	-0.00126 (0.00124)	-0.00121 (0.00152)	-0.00121 (0.00136)

Trust	0.00134 (0.00153)	0.00134 (0.00125)	0.00124 (0.00151)	0.00124 (0.00123)
Frequency of blood donation	0.000175 (0.00302)	0.000175 (0.00246)	0.0000469 (0.00301)	0.0000469 (0.0026)
He/she has received a blood donation	0 (.)	0 (.)	0 (.)	0 (.)
Knowledge of Donors	0.000704 (0.0127)	0.000704 (0.00763)	0.00125 (0.0134)	0.00125 (0.00786)
Knowledge of people who received a blood donation	-0.00277 (0.00615)	-0.00277 (0.00673)	-0.0029 (0.00635)	-0.0029 (0.00677)
Not knowing if he/she can donate	-0.00851 (0.00744)	-0.00851 (0.008)	-0.00824 (0.0077)	-0.00824 (0.0092)
Observations	3782	3782	3782	3782
<i>AIC (model)</i>	1160.75	1106.75	1162.77	1108.77
<i>BIC (model)</i>	1360.36	1137.94	1362.39	1139.96

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

*Notes:* The correct interaction marginal effects are calculated with the STATA “ginteff” command. The “He/she has received a blood donation” variable is dropped because every subject who donated blood has never received a blood donation. When all schools’ dummies are equal to zero, we consider students from Sciences School.

Considering the time gap in days between filling out the questionnaire and actual donation, using regressions with different controls and functional forms, the only variables that always remain statistically significant and seem to reduce this gap of about three days are having received the T1 message with the social norm and knowing other donors (see Table 2.A.4 in Appendix 2.A). This is an interesting result because, as opposed to de-responsiveness, where one might expect to know that other people will donate, this seems to be a “call to action” and social contagion due to the norm effect. (Schröder et al., 2023a, 2023b).

### 2.4.3. Incentives belief

We now consider participants' opinions about the effect of paying for blood donations. The data reveals a significant contrast between beliefs about oneself and those about others, as illustrated in Figure 2.1. In fact, when considering one's own propensity to donate if paid, nearly 70% of subjects believe they would donate the same, compared with 26% who would donate more often and just over 4% who would donate less. In contrast, as many as 92% of participants believe that other people would donate more if paid, just over 7.5% would donate the same amount, and less than 0.5 percent would donate less. This gap widens more when considering females (Figure 2.A.7 in Appendix 2.A), who would donate the same at 75% (vs. 60% of males) but feel that other people would donate more if they were paid at 92.5% (vs. 90.5% of males). These patterns are consistent with our hypothesis H<sub>6</sub> and, considered together, could reflect either a sense of distrust of others, a moral superiority bias (Tappin & McKay, 2017), or a social approbation effect, especially among women (Lacetera & Macis, 2010). This phenomenon may be attributed to the absence of established norms regarding the acceptability of incentives in the Italian context (Graf et al., 2023). The pattern is more pronounced than in Lacetera and Macis's experiment (where they used a Likert scale instead of a predicted behavior).

We also applied models for discrete ordinal variables (having three levels) to analyze beliefs about incentives, using both ordered probit and ordered logit, with robust standard error and clusters for schools. The results obtained among the various models are consistent; therefore, we report those obtained with the models that minimize the AIC and BIC information criteria. Regarding the propensity to donate if one were to be paid (using an ordered logit with cluster SE; see Table 2.A.5 in Appendix 2.A), the coefficients of the variables related to the belief that others would donate if they were paid turn out to be positive and highly statistically significant (p-values close to zero), thus indicating that one attributes to others preferences similar to one's own: those who would donate if they were paid are more likely to believe that others would (although the divergence shown in the graph is present). Also positive and with p-values close to zero are the coefficients of the male gender (confirming the results in the graph), negative reciprocity, and being a donor (the latter with a p-value of 0.066). In contrast, the variables related to age, altruism, trust, frequency of donation, and knowledge of people who have received blood transfusions (the latter with a p-value of 0.023) are negative but highly statistically significant. There is also heterogeneity among schools.

Considering beliefs related to the behavior of others if they were paid (using an ordered probit with SE cluster; see Table 2.A.6 in Appendix 2.A), we find similar results. The variables related to beliefs about

one's behavior under incentives and being risk averse have a positive and statistically significant coefficient, with p-values close to zero and 0.069, respectively. In contrast, the coefficients of male gender (p-value 0.003), age, trust, and having received a transfusion (p-value 0.011) are negative and highly statistically significant. Again, there is heterogeneity among schools.

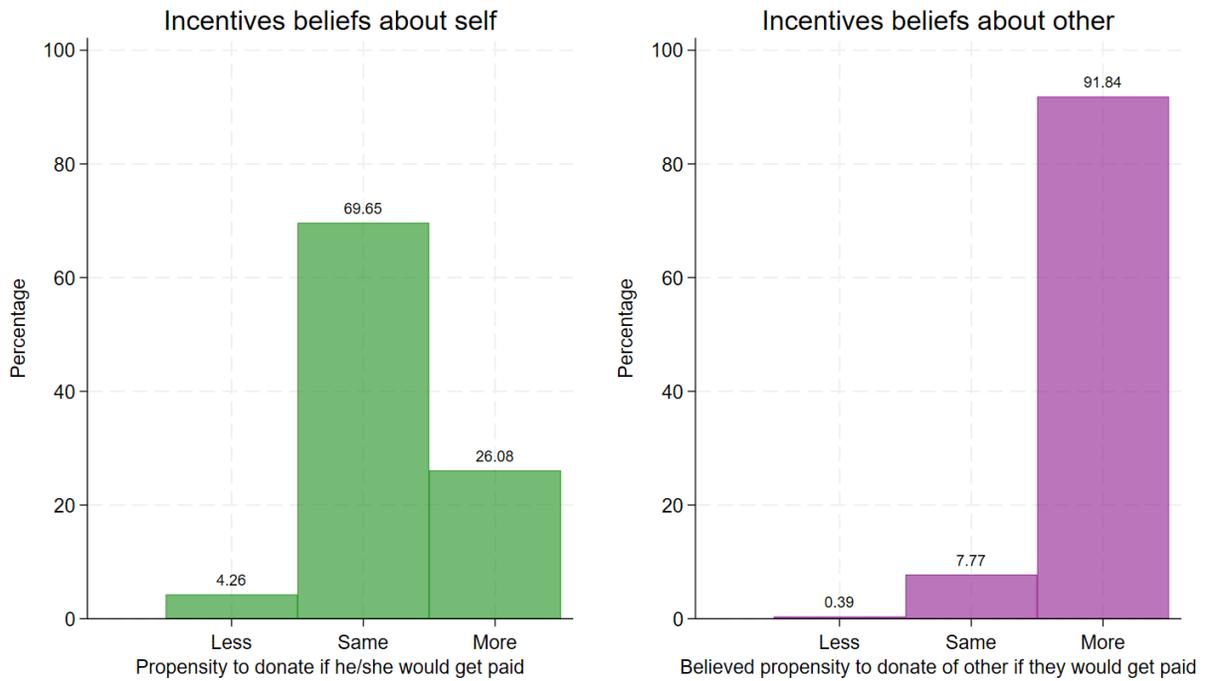


FIGURE 2.1. INCENTIVES BELIEFS ABOUT SELF AND OTHERS

Results from these models confirm our hypothesis  $H_6$  and intuitively show that variables related to prosocial and trust attitudes and having received a transfusion or knowing someone who has received one, along with age, reduce expectations about the effect of incentives on others' behavior. These results also confirm that the divergence increases in women (with the male gender coefficient taking the opposite sign in the two models).

## 2.5. Discussion, policy implications, and concluding remarks

Results from the field experiment confirmed many of our initial hypotheses based on previous literature. The importance and originality of this study consist of being, as far as we know, the first to compare the effect of different potential motivators both on the intentions to donate and to the actual blood donations. Overall, our study shows that different framed messages are effective for different individuals, depending, especially on gender, whether they are habitual donors or non-donors.

As we have seen, there is a systematic gap between stated intentions and actual behavior: this gap might be reduced in several ways: a) by simplifying the donation processes (via apps or other commitment devices); b) increasing the availability of donation points (as show by the fact that the majority of participants decided to donate near their department); c) informing the potential donors about the safety of donation process.

The existence of this gap also cautions us against extending to actual donations the results obtained from previous studies which focused only on the intention: in fact, while the positive intention is one of the most important predictors for actual behavior (Ferguson et al., 1996) the factors affecting intention and behavior, as we have seen, may be different.

Regarding the first hypothesis  $H_1$ , we observe that the message based on social norm (T1 - norms), although with mild significance and not always confirmed by all tests, seems to led to a generalized increase of actual donations. It also reduces the temporal distance between the expression of the intention and the day when the donation takes place. A similar effect is associated with being acquainted with other donors. This would confirm donors' internalization of the social norm of donation (Armitage & Conner, 2001; Godin et al., 2005; Masser et al., 2009).

We also find that the recourse to the “guilt/regret” motive, as in T3, has no effect at all. We, therefore, reject hypothesis  $H_3$ . This is probably because people do not feel guilty about not donating: we will return to this point later when discussing the last hypothesis.

As for hypotheses  $H_2$  and  $H_4$ , we do observe a gender effect, albeit in different forms. The “self-benefits” motivation (T4) is highly effective in increasing intention, but contrary to our expectations, mainly for women; however, when we consider actual donations, the effect is present only in men, which is consistent with hypothesis  $H_4$ . The “empathy with identifiable victim effect” message implemented in T2 is never effective for intentions, although it led to an increase in the number of donations for all subjects. This seems to suggest that the “empathy with identifiable victim effect” does not affect the

chain “intention – behavior” (which relates to more “reasoned” aspects regarding motivations), it would directly affect emotions, thus inducing “unintended” behavior. Thus, for similar reasons when we make salient the personal benefits aspect (T4), this is effective on men’s actual behavior but also for women's intentions (which may not have considered these aspects before) (Carver et al., 2008; Hupfer, 2006; Mellström & Johannesson, 2008).

Hypothesis H<sub>5</sub> was intended to test for the consistency between self-reported motivations and the efficacy of the messages based on similar motivations in promoting actual donation. Our results find a good degree of consistency, as we get that altruistic motive, information on donation, and norms importance are among the most reported motives to donate, as well as good motivators for actual donation. On the other hand, guilt and reluctant altruism are among the least reported reasons and the least effective messages.

Finally, hypothesis H<sub>6</sub> is strongly supported, with nearly 70% of subjects stating that they are insensitive to being paid for donations but believing nearly 92% that others would donate more in the same situation, with this gap even greater for women. This contradiction may be due to the presence of a sort of “moral superiority bias” (Tappin & McKay, 2017). This would also translate as a symptom of distrust of others and could explain why T3 (burden to not donate) did not prove effective, as it would instead increase the diffusion of responsibility phenomenon. It is noteworthy that among female students, where the gap is greater, the “self-benefits” motivation (T4) increases the intention the most, as they probably were ashamed to report donating more often if they were paid. This further confirms the presence of a social approbation effect, especially among women (Lacetera & Macis, 2010).

The results show that two other factors exert a strong positive effect on intention and donation: individuals’ health status and information about donation procedures. As for the former, those who play sports and consider themselves healthy are likelier to express a positive intention and to actually donate. This result suggests that the privileged and target population for donation campaigns should be sportsmen and sportswomen. Regarding the second factor, we observe that medical, biology, and pharmacology students intended to donate more and actually do it. This result is probably due to a better understanding of the processes behind blood donation and a higher awareness of the social impact of such a choice. The likelihood of having a positive intention to donate also depends on knowing donors and people who have received blood (Schröder et al., 2023a, 2023b), whereas conversely, not knowing whether one can donate decreases that likelihood. Therefore, information campaigns are needed to provide information about it’s

the safety, simplicity, and importance of blood donation. In particular, it is important to make people understand whether they can donate blood to develop a sense of responsibility toward this possibility.

In summary we can say that messages, especially, those which appeals to self-benefits and empathy are effective in stimulating donations. However, their efficacy is conditional to the subjects who receive them. That means that a successful campaign that want to promote blood donation must address different groups of people with different messages. We also observe a large gap between the expressed intention to donate and the actual donations. That means, among the other things, that the access costs to donation play an important role and should be minimized. Finally, we highlighted a systematic bias in the perception that participants have about the reasons that motivate other participants. Actions aimed at countervailing such a pessimistic view may help to align people's expectations with their real behavior and, in this way, to activate preferences for conformity and imitative behavior.

These implications may be relevant for the design of successful promotional campaign; however, they have to be interpreted taking into account the limitations of this study. Although our data confirm well-established patterns found in previous studies and align with what we observe in the population at large (with the donation rate very close to the national rate), one must be aware that the study's target population is made up of university students. Although young people represent the most attractive segment of the population in terms of possible donations, because they are healthier and have more free time than adults, among other things, nevertheless, we cannot directly generalize the results we get from the youth population to the whole population. Secondly, we could observe only the behavior of those participants who completed the questionnaire, which, even if incentivized, may have introduced some form of self-selection. Thirdly, four treatments were tested on two variables in this experiment (even if the intention was assumed to be a proxy for donation).

Although the results are resistant to several robustness checks, as well as confirming and replicating those of several previous, the significance of the results decreased when correcting the p-values for multiple testing. Considering the family-wise error rate, only treatment 4 (self-interests) on intention and treatment 2 (empathy) on donation remain statistically significant, with adjusted p-values taking values around 0.6 using List and colleagues' correction and 0.10 using Bonferroni and Holm correction (List et al., 2019) (see Table 2.8). However, it is possible that this reduction is due to the conservative nature of the correction and the relatively weaker impact of messages compared to traditional policy interventions. For privacy reasons, we cannot test whether the nudge effect on the first donation has a long-term effect by making the person a habitual donor. Finally, we considered some of the reasons to donate in a way

that may appeal to similar but distinct motivations. There are, in fact, many forms of self-benefits, as well as empathy or guilt and regret. All these aspects leave room for further research aimed at testing different populations and/or more precise and subtle messages that better target underlying motivations.

TABLE 2.8 – MULTIPLE HYPOTHESIS TESTING CORRECTION FOR MAIN HYPOTHESIS

	Coefficients	Bootstrap-based unadjusted p-values	Adjusted p-values List et al. (2019)	Adjusted p-values with Bonferroni	Adjusted p-values with Holm
T1 (intention)	0.040	0.191	0.496	1	0.955
T2 (intention)	0.009	0.738	0.738	1	0.738
T3 (intention)	0.012	0.537	0.748	1	1
T4 (intention)	0.050	0.014	0.060	0.115	0.100
T1 (donation)	0.009	0.165	0.520	1	0.988
T2 (donation)	0.023	0.011	0.061	0.091	0.091
T3 (donation)	0.008	0.208	0.532	1	0.831
T4 (donation)	0.010	0.426	0.804	1	1

*Notes:* The multiple testing correction was computed using the “mhtreg” command in STATA, which asymptotically controls the familywise error rate. It is based on List et al. (2019), but modified for use in a multivariate regression setting. The procedure allows testing families of hypotheses based on combinations of multiple outcomes and multiple treatments (from the same or different regressions), also controlling for covariates and clustered standard errors, in this case for all covariates used in the regressions, and using clustered standard errors for schools.



## Chapter 3

### The Italian North-South divide.

#### Cultural and contextual determinants of cooperation and trust.

Gabriele Ballicu<sup>a</sup>

Valeria Concas<sup>b</sup>

Vittorio Pelligra<sup>c</sup>

University of Cagliari

University of Cagliari

University of Cagliari

#### Abstract

Modern Italy has the most pronounced North-South economic divide in Europe. Several recent studies have tried to explain this gap by focusing on the different attitudes towards cooperation and trust of citizens from the two macro-regions, but have failed to prove whether this depends on the intrinsic characteristics of individuals or on the type of relationship they have with each other. To fill this gap, we conduct a survey experiment to investigate whether the levels of cooperation and trust of Northern and Southern individuals are measured in three different information conditions: a) without information about the regional origin of the counterpart; b) knowing that they are interacting with individuals from their own region; c) knowing that they are interacting with individuals from the opposite macro-area. We find no significant behavioural differences between North and South in the no-info treatment, but a large difference in the info treatment when Southern individuals interact with each other. We conclude that much of the difference cannot be explained by individual characteristics, but by the negative expectations that people from the South have about their cor-regionals.

**Keywords:** cooperation, trust, social capital, cultural differences, amoral familism, survey experiment

**JEL Codes:** A13, C90, R23, Z13

---

<sup>a</sup> Department of Economics and Business, University of Cagliari, V.le S.Ignazio 17, 09129, Cagliari, Italy. E-mail: [gabriele.ballicu@unica.it](mailto:gabriele.ballicu@unica.it) (Corresponding author)

<sup>b</sup> Department of Economics and Business, University of Cagliari, V.le S.Ignazio 17, 09129, Cagliari, Italy. E-mail: [v.concas@studenti.unica.it](mailto:v.concas@studenti.unica.it).

<sup>c</sup> Department of Economics and Business, University of Cagliari, V.le S.Ignazio 17, 09129, Cagliari, Italy. E-mail: [pelligra@unica.it](mailto:pelligra@unica.it).

### 3.1. Introduction

The gap between Northern and Southern Italy represents a paradigmatic case of within-country differences (Putnam et al., 1993; Guiso et al., 2004; Buonanno et al., 2009; Nannicini et al., 2013). This gap concerns not only GDP per capita but also the characteristics of the economic system, the labor market, educational attainments, the nonprofit sector, voters' turnout, and many other social, political and economic variables. Numerous scholars have studied the so-called "Southern Question" to explain the causes of the peculiar gap that characterizes the Italian peninsula. Several theories have identified generalized trust and the ability of individuals to cooperate as the main determinants of a country's economic development. Moreover, empirical studies would seem to confirm a lower propensity of Southerners to trust and cooperate. However, most of the evidence is mixed and so far inconclusive: in particular, these results could also depend on expectations about group members. There is a significant body of scientific literature in the fields of economics and psychology that demonstrates the influence of social identity on economic decision-making (Akerlof & Kranton, 2000; Gneezy et al., 2009): this literature indicates that individuals are more likely to trust and provide assistance to those within their in-group than to those outside of it (Berreby, 2008; Chen & Li, 2009; Turner et al., 1979).

Nevertheless, there are instances in which individuals belonging to an in-group may engage in self-discrimination if the prevailing social norm is perceived as unfavorable towards them. The phenomenon of self-discrimination has been observed in a number of different contexts. The performance of children belonging to India's lower castes on cognitive tasks is demonstrably inferior when their social identity is made explicit, as opposed to when it is anonymous (Hoff & Pandey, 2006). Fanon's (1952, 1961) studies, for instance, investigated how the colonized might adopt behaviors and values of the colonizer, thereby alienating themselves from their original identity. Evidence of this phenomenon has been documented in Colombia between individuals of high and low socioeconomic status (Blanco & Guerra, 2020; Bogliacino et al., 2017), among individuals of Eastern origins in Jewish society (Fershtman & Gneezy, 2001), and among African Americans in the United States (Banaji & Greenwald, 2014). Wealthier individuals tend to trust others of similar socioeconomic status more, while those with lower socioeconomic status trust less (Lei & Vesely, 2010). Furthermore, it appears that a higher level of trust in one's in-group is associated with a greater level of trust in institutions (Cao et al., 2015) and a greater level of trust in one's out-group (Delhey & Welzel, 2012). Consequently, the objective of this study is to test whether a similar phenomenon occurs in the South of Italy, which requires the separation of one's culture of origin from the interaction with.

This study bridges the gap in the literature by focusing on the distinction between the culture of origin and the social context in which subjects interact, thus allowing a comparison of the main hypotheses advanced in the literature. Through a survey experiment conducted on a representative sample of the Italian population, we investigate whether the propensity to trust and cooperate of individuals from the South and the North depends on the intrinsic characteristics of the subjects or whether it is affected by external elements that influence perceptions, beliefs and expectations about others' behavior. Specifically, the levels of trust and cooperation of people from the South and the North are compared under different scenarios and with three different treatments where we vary the level of information about the regional origins of the counterpart with whom they interact: the case in which they have no information, the case in which they belong to their macro area, and finally the case in which they belong to the opposite macro area. We observe that the level trust of people from the South is significantly lower than that from the North in different tasks only when they know they are interacting with people from the South. On the other hand, there are no differences when they have no information or when the macro area is the opposite, thus showing that people from the North trust those from the South more than those from the Southern regions trust themselves.

The rest of the paper is organized as follows: Section 3.2 will analyze the North-South divide and the main theories that have tried to explain its causes. Section 3.3 examines empirical studies in the literature. Section 3.4 will present the design of the experiment. Section 3.5 reports the results obtained from the various descriptive and econometric analyses. Finally, section 3.6 concludes.

## **3.2. The North-South divide in Italy**

### **3.2.1. Historical background and data**

The North-South divide has been a feature of Italian economic development for more than a century and a half (Accetturo et al., 2022; De Philippis et al., 2022). The gap between the two macro areas concerns several aspects.

The economic system of the South is mainly composed of small businesses (resulting in lower production volumes) operating in non-technologically advanced sectors. The South's territory is also fragmented and lacks adequate infrastructure and public services. This leads to a lower ability to react and adapt to external economic shocks, resulting in a higher risk of default for businesses (Caravella et al., 2022). In

addition, the greater prevalence of organized crime and the lower efficiency of institutions make access to the credit market more complicated, with costs higher than the national average. The result is a lower propensity of entrepreneurs to apply for financing and a consequent reduction in growth prospects. Additional causes that explain the lower growth are progressive aging and depopulation, which reduce the labor force. This trend is much more pronounced in the South (Istat, 2022c) where, according to demographic projections, between 2020 and 2040, the number of individuals of working age is set to shrink by more than 24 percent, compared with 14 percent in the North-Center, with pessimistic predictions on GDP per capita, particularly for the South (De Philippis et al., 2022). It also seems to present greater phenomena of shrinking and absenteeism in the South, even in the same companies (Ichino & Maggi, 2000).

The peculiar characteristics of the production system in the South also mean that unemployment rates are higher than in the rest of the country. The undersize of the private sector increases inequality in the country and makes it difficult to create jobs in the southern regions, resulting in high levels of unemployment, lower wage levels, and greater precarity. The SVIMEZ report (Bianchi, 2022) shows that in 2021, workers with a fixed-term contract for more than five years in the South were 23.8 percent, compared to 13 percent in the North, while the percentage of workers with an involuntary part-time contract in the South was 77.5 percent, 22.8 percent more than in the Center-North (Accetturo et al., 2022). All this also contributes to the prevalence of undeclared work. The gap is even more pronounced when referring to the conditions of women and young people. According to Istat data (2023b), in 2021, only 45.7 percent of young people aged 25-34 were employed in the South, a difference of 26.7 percent compared to the North (72.4 percent). As for female employment, the employment rate of women aged 15-64 is 34 percent in the South, compared with a national average of 51.4 percent.

The gap between the North and South is also observed in the endowment of human capital and education, which affects the use of digital technologies and the ability to attract college graduates. Northern entrepreneurs with a college degree outnumber Southern entrepreneurs by 2%. This data is even more pronounced (+14 percent) when looking at the percentage of managers with a college degree (Baltrunaite et al., 2022). Differences also relate to the course of study undertaken, with a higher rate of managers and entrepreneurs in the North graduating in economics and STEM subjects. Although a gradual improvement in education levels has been observed in recent years, differences remain at the territorial level: graduates average 17.2 percent in the Center, 14.3 in the North, and 13.8 percent in the South. More pronounced is the difference in the number of graduates in municipalities with more than 250

thousand residents, where graduates are 29 percent in Milan and Bologna, almost twice as high as in Palermo, Naples, and Catania (Istat, 2023a). Moreover, even at the same level of education, the INVALSI 2022 Report shows substantial differences in skills between the North and the South concerning levels of implicit dispersion, that is, the share of students who, despite having finished school, have not acquired the minimum skills in Italian (achieved by 61 percent in the North versus 50 percent in the South), mathematics and English (achieved by 78 percent in the North versus 65 percent in the South).

Finally, the role of "social capital," understood as interpersonal and social relations, is also crucial. As we will see later, numerous theories (Putnam, 1993; Guiso et al., 2004; Cartocci, 2007) identify the cause of the Mezzogiorno's economic backwardness precisely in different participation in collective life, that is, in less civic engagement, reciprocity, trust, and generalized cooperation. A first indicator of a different endowment of social capital can be identified in the distribution across the Italian territory of active nonprofit institutions, which, according to Istat data (2022b) as of December 31, 2020, are 50.2 percent in the North, 22.2 percent in the Center, 18.2 percent in the South and 9.4 percent in the Islands. Political participation of the population is also an indicator of individuals' interest in the community: in the 2019 European Parliament elections, there was a higher turnout in Northern Italy with 63.75%, followed by the Center with 59.84%, the South with 48.3% and the Islands with 37.20%. Similarly, differences in participation between regions are also evident in the 2022 Referendum, with those in the North being more virtuous<sup>7</sup>. Blood donation is another indicator to consider: data collected by AVIS<sup>8</sup>, the largest voluntary blood association, show that in 2022, blood donations from northern regions accounted for 60.6 percent of total donations. All these indicators would seem to confirm that the gap in the well-being of the southern regions may also depend on a different degree of participation in community life and civiness, which results in a reduced level of cooperation, solidarity, and social commitment.

### **3.2.2. Theories on the causes of the gap**

The different degree of development between the North and the South, referred to as the "Southern Question," has been studied since the first decades of Italian unification in 1861. Some scholars argue that pre-unification Italy did not have substantial differences in economic development between North

---

<sup>7</sup> Source: Italian ministry of internal affairs data

<https://elezionistorico.interno.gov.it/index.php?tpel=F&dtel=12/06/2022&es0=S&tpa=I&lev0=0&levsut0=0&ms=S&tp=A>

<sup>8</sup> Source: Avis blood donation data <https://www.avis.it/chi-siamo/dati-donazioni/>

and South, but it was the Risorgimento processes of unification and the resulting socioeconomic policies that marked this gap. In fact, the locution "Questione Meridionale" was first used in 1873 by Antonio Billia, a Lombard deputy, to define the situation of backwardness that characterized Southern Italy only in the post-unification period (Romano, 1945). Pre-unification Northern Italy was described as purely agricultural, while the Center-South was in a situation of modest economic development. The tax system of the unified state, aimed at recovering the capital needed to unify the country and provide it with the infrastructure it needed, was said by some to have economically exploited the South to advantage the North, thus representing the leading cause of the South's backwardness (Nitti, 1901). However, this would not explain why this gap remained and grew persistently over time.

One of the most accepted theories is that the gap between North and South manifested before the unification of Italy and that the causes should be sought in the impact on the population of the different historical experiences that occurred in the various Italian regions since the Middle Ages. In 1861, territories with different histories, educational levels, and institutional and sociocultural structures were unified. In fact, while in the North, many cities were developing experiences of self-government and in the countryside, feudal-type relations were decaying in favor of an agrarian bourgeoisie, in the South, at that time, still under foreign rulers, there was an intensification of the feudal system and vertical relations typical of absolute monarchy. These different political regimes would thus impact the individuals' propensity to cooperate, leading to a differentiated accumulation of "social capital." Social capital is defined as the social fabric and civil rules that can foster the spread of trust and discourage opportunistic behavior (Putnam, 1993; Putnam & Helliwell, 1995). The concept became known from sociologist Putnam's studies of Italy, although it was previously used by other scholars (Bourdieu, 1980; Coleman, 1988; Hanifan, 1916) and later further developed (Fukuyama, 1996; Knack & Keefer, 1997). Using several indicators (associationism, daily circulation, and political participation), Southern regions would have a lower level of civic mindedness than the North, which could result in lower political accountability and efficiency of institutions (Nannicini et al., 2013), more corruption (Buonanno et al., 2020, Putnam, 1993) and crime (Buonanno et al., 2009), as well as lower levels of trust (Algan & Cahuc, 2013).

A concept related to these theories is "amoral familism", proposed by Banfield (1958) following a field study conducted between 1954 and 1955 in a southern Italian village conventionally called Montegrano (which corresponds to the village of Chiaromonte). Amoral familism represents the extreme nature of family ties, which lead individuals to concern themselves exclusively with their welfare and that of individuals belonging to their close family circle at the expense of the collective interest and assuming

that everyone else behaves the same way. Montegrans are described as closed-minded, suspicious individuals, unable to trust people outside the family, and without a sense of community. These characteristics are such that they prevent any form of cooperation, limit progress and innovation (Pizzorno, 1966), and disfavor the provision of public goods, spontaneous forms of associationism, and volunteerism. Legality is also questioned: individuals considered licit any behavior, even if formally unlawful when it is justified by family interest. This attitude sets the stage for cronyism, mafia, and corruption. One of the main objections to this theory is that the results come from a single case that cannot necessarily be generalized to the entire South. The same author acknowledges that there exist additional causes that have prevented economic development in Montegrano such as poverty, illiteracy, and the absence of reliable institutions. Thus, the absence of generalized trust and community ethics would result from the misery, leading individuals to seek specific and immediate benefits rather than invest in collective action (Pizzorno, 1966). Other critiques of amoral familism concern the role of family ties as a brake on development and civicness. Although different approaches in different contexts have argued and shown that overly strong family ties can disfavor the community as a whole (Alesina et al., 2010; Barr, 2003; Fukuyama, 1996; Granovetter, 1973; Weber & Kalberg, 1904), other studies have shown instead that they can contribute to the development of ethical values and independence from public assistance (Fukuyama, 1999; Ljunge, 2010; Lucifora & Meurs, 2012; Nichols, 1975), as well as ties foster cooperative and socially beneficial attitudes (Dang & Dang, 2021; Fukuyama, 1996). Thus, in Italy, social closure may increase local cooperation (less crime), but it may also hinder cooperation with outsiders (more tax evasion) (Buonanno & Vanin, 2017). So, the prevalence of social solid ties (bonding) in the South might prevent the autonomous creation of the social capital (bridging) necessary for the well-being of society (Granovetter, 1973). According to this line of thought, social capital is not necessarily positive, and the difference lies precisely in the attitude to the collective good (*good culture*). Thus, high levels of social capital may not be due to a greater propensity to serve community interests, but rather to a preference for interacting with the community through associations rather than directly (Olson, 1965, 1982).

Taking into account the previous criticisms, another class of explanations maintains that the gap emerges as a consequence of entertaining different beliefs and from the effect that these beliefs have on individuals' socioeconomic behavior. These theories introduce the concept of civic capital, understood as a set of values and beliefs shared by a community, transmitted intergenerationally, that foster the cooperation of individuals and reduce free-riding behavior (Guiso et al., 2011). These beliefs would be

derived from lived and transmitted experiences, both positive and negative, and the context in which a person has been exposed throughout his or her life (Fehr, 2009). Optimistic beliefs are the consequences but also the causes of higher level of cooperation. Pessimistic beliefs develop, especially in deprived areas, as a form of protection from social risk, particularly the risk of betrayal. This generates either a virtuous or a vicious circle. If more people cooperate, then the payoff from cooperation increases further the benefits from cooperation. That makes it easier for parents to transmit good values of optimism and trust to their children. On the contrary, a low level of perceived well-being leads individuals to have pessimistic expectations about the trustworthiness of others and, consequently, not to cooperate. This facilitates the transmission of norms of non-cooperation and opportunism. Even a quick analysis of two iconic works of 19th century Italian literature, such as “I Promessi Sposi” (*The Betrothed*) by Alessandro Manzoni which describes the reality of the North and “I Malavoglia” (*The House by the Medlar Tree*), by Giovanni Verga which, instead, describes the society of the South, reveals important differences from this point of view. In “I Promessi Sposi” the protagonists (optimists) overcome their adversities through faith in God and the help of others. In contrast, in “I Malavoglia”, the characters (pessimists) embody the model of amoral familism and fail to achieve economic and social success.

### **3.3. The experimental approach to the North-South divide**

Several studies have tried to test experimentally theories of amoral familism and social capital. Bigoni and colleagues (2016) carried out a lab-in-the-field experiment using as samples subjects from two cities in the North and two in the South, chosen from among those with the most extreme levels of social capital. The extremes in the North are Faenza,<sup>9</sup> which has the highest social capital, and Cuneo, which has the lowest level, while in the South, Ragusa (the highest) and Crotona (the lowest) were selected. Participants played several games, including a Trust Game and a Public Good Game, to measure levels of cooperation, a Dictator Game, and finally, lotteries to investigate risk attitude. The results show a behavioral difference between North and South, with the North cooperating more, which remains significant even when controlling for individual social capital levels and preferences. In contrast, there appears to be no difference in preferences between individuals in the North and in the South, which is inconsistent with the amoral familism theory. Cooperation is correlated between games and individual

---

<sup>9</sup> The city with the highest level of social capital in the North is Ravenna but was discarded because it has more than 100,000 inhabitants, unlike the other selected cities that have between 50,000 and 100,000 inhabitants.

trust levels, while measures of social capital are not statistically relevant. According to the authors, the persistence of disparities suggests that individuals' different propensities to cooperate are shaped by social expectations and norms.

In a second study Battiston and Gamba (2016) conducted a laboratory experiment where individuals from different geographical regions of Italy played a Public Good Game with six rounds without knowing who the members of their group were. Participants were randomly divided into four groups: one consisting only of Southern students, one of Central-Northern students, and two mixed groups. Starting from the third round, the names of group participants and previous contributions were revealed, and after the fourth round, members of each group were allowed to communicate for two minutes. The results show that groups of individuals of the exact geographical origin contributed more to the Public Good Game than mixed groups. In particular, contributions increased significantly after identifying group mates, but only in groups of individuals of the same geographic origin. The last important finding was that the average contribution of students from the North was higher than the South's, particularly in the later stages. The authors conclude that the gap between North and South may depend not only on the presence of different institutions and opportunities but also on the propensity to take advantage of incentives and opportunities for cooperation.

Other differences between individuals from the North and South emerge in the study by Attanasi and colleagues (2017), whose results show that people living in the North, compared to those in the South, report higher levels of generalized trust and less dishonesty, finding a correlation between the two. No bias was then observed by northerners toward southerners (and vice versa) concerning dishonesty in social interactions as measured by the likelihood or not of recovering a lost wallet in different locations (in the respondent's hometown, in the South, or the North). However, the study has limitations due to the self-selection of respondents and the prevalence of individuals from Southern Italy.

Some theories identified socioeconomic differences as the cause of different levels of trust: through an online experiment, Bigoni and colleagues (2022) tested whether differences in preferences existed between Low SES and High SES areas of the Bologna metropolitan area using an Investment Game and questionnaires. The results show no discrimination between the different areas, as behaviors did not vary according to the participants' area. However, participants from the High SES area trust more, are more trustworthy, and have optimistic expectations about the trustworthiness of others than those from the Low SES area. According to the authors, beliefs are the primary variable that can explain trust because

of the “false consensus effect”, which is the tendency of individuals to formulate expectations about the trustworthiness of others based on their reliability and values. In fact, the authors observed a strong correlation between trustworthiness and beliefs about the trustworthiness of others.

In another experimental study, Bigoni and colleagues (2019) also investigated the behavioral roots underlying the gap in cooperation between North and South through a study consisting of two experiments. In the first experiment, participants played a modified Public Good Game<sup>10</sup> to study preferences for conditional cooperation. The result was that about 2/3 of the subjects were conditional contributors, 62% in the North and 70% in the South, thus showing no significant differences in preferences. In contrast, the second experiment investigated social risk aversion and beliefs about others' ability to cooperate. Participants were asked to estimate levels of cooperation in a Public Good Game performed in a previous experiment in the cities of Cuneo and Crotone in northern and southern Italy, respectively (Bigoni et al., 2016). The result was that participants believed there had been higher contribution levels in Cuneo. Two games were used to test betrayal aversion: a Trust Game and a Risky Dictator. The ability of the Risky Dictator to capture preferences toward the risk of nature comes from the fact that the second mover is passive, and a random draw determines the choice, whereas, in the Trust treatment, another player decides the final allocations (social risk)<sup>11</sup>. To test for the presence of greater social risk aversion than natural risk, the minimum acceptable probabilities (MAP) stated in the Trust treatment and the Risky Dictator treatment were compared. The result is that Southern participants show significant betrayal aversion, reporting higher MAP in the Trust treatment than in the Risky Dictator treatment.

However, a recent study by Aassve and colleagues (2021) obtained different results. Differences in behavior between North and South were analyzed by not providing respondents with information on the geographic origins of the counterpart, thus avoiding eliciting bias and allowing differences to be tested universally. The results show no systematic differences in social capital, cooperation, expectations about the trustworthiness of others, altruism, social risk aversion, and strength of family ties. Both Southerners and Northerners are conditional cooperators in that the rate of return increases on average in proportion to the amount they receive, but the only difference that emerges is that Southerners tend to give back less

---

<sup>10</sup> Taken from Fischbacher and colleagues (2001) where participants had to make two investment decisions: unconditional and conditional. In the first part participants were asked how many tokens to invest in the public good, while in the second part they were asked to fill in a contribution table taking into account the average contributions of the group.

<sup>11</sup> By nature risk, we refer to the risk associated with all those harmful events that are determined by chance and are beyond human control. Social risk, on the other hand, refers to the harm caused by the choices of others

than Northerners. In addition, having at least one Southern parent is associated with lower reliability, regardless of current residence, similar to SgROI and colleagues (2020). Unlike findings in other studies, Aassve and colleagues claim that the gap in cooperation between North and South lie in differences in the willingness to reciprocate and not in beliefs.

The mixed results emerging from this strand of the literature seem to confirm the difficulty in identifying a universal cause that can explain the persistence of the North-South gap and instead point to the context in which one lives or the culture in which one grew up as the main possible opposing factors. Moreover, many of these experiments have low external validity because they were conducted on a sample of college students, which is not representative of the population.

To try to overcome these limitations, we consider a survey-experiment with two representative samples of the population from a group of regions from the North and a group of regions from the South. In particular, we focus on the role of information about the regional identity of the counterpart to investigate whether beliefs and prejudices about the counterparts' willingness to cooperate modify one's own willingness to cooperate and whether this depends on knowing that one is dealing with one from one's own part (South-South or North-North) or another part of Italy (North-South). We compare these information-loaded situations with similar situations (South-South or North-North and North-South) where no information about the geographical origin is provided.

### **3.4. Experimental design and assumptions**

Through a survey-experiment conducted on a representative sample of the population, we put under scrutiny some of the main results emerged from previous studies: the prevalence of amoral familists in Southern Italy, perceptions of dishonesty in different contexts, social risk aversion to betrayal, intergenerational transmission of beliefs; and the role of expectations on the cooperation of others. In addition, through the simulation of different tasks and games, it was possible to investigate the presence of any disparities in individuals' ability to trust others and cooperate. The design of the experiment was pre-registered on OSF<sup>12</sup>. The original element of this study is the use of information that we provide to the participants about the counterpart's geographical origin in the games or the location of the different

---

<sup>12</sup> <https://osf.io/s8xfb>

scenarios: in treatment T0, our control group, we provide no information on the origin of the counterparty ; in treatment T1, we provide information about the fact that participants are interacting with participants from the same area (North-North and South-South); in treatment T2, we provide information about the fact that participants are interacting with participants from a different area (North-South and South-North).

This structure makes it possible to highlight whether information about the counterpart's geographic origin can modify individuals' behavior. The design of the experiment allows us to test whether the disparities are due to inherent characteristics of the respondents or are the result of beliefs and pre-judices about others' behavior. For each of the three treatments, there are two groups composed of only Southern and Northern individuals, respectively. Five different questionnaires were then administered (since the one without information is common for individuals from the North and South) to a representative sample of the population. Given that the experiment was conducted using a between-subject design and the information was conveyed without strong priming, we were able to avoid the potential influence of experimental demand effects. Moreover, it is not possible for this phenomenon to occur because it is not evident a priori whether the in-group will demonstrate greater levels of cooperation.

The questionnaires consisted of 38 items (see Appendix B). The first 25 questions and the last 7 are common to all questionnaires and were administered to the entire sample. Specifically, the first seven questions concern the sociodemographic characteristics of the respondents (gender, age, education level, occupation, and household income). Questions 8 and 9 concern the parents' place of birth, which is useful for understanding the intergenerational transmission of beliefs (Aassve et al., 2021; Sgroi et al., 2020). To measure the strength of family ties, questions 10 and 11 were used, while questions 12<sup>13</sup>, 13, and 14 refer to the three main proxies used to measure the endowment of social capital (political participation, blood donation, and membership density). Questions 15 and 16, on the other hand, represent self-reported measures of trust in others. Specifically, question 15<sup>14</sup> is used by the World Value Survey to measure generalized trust, while question 16<sup>15</sup> refers to trust in different categories (family, neighbors, acquaintances, foreigners, members of other religions, and strangers). Question 17, on the other hand, analyzes the perception of dishonesty in the public and private sectors (Attanasi et al., 2017).

---

<sup>13</sup> Question taken from the World Value Survey Questionnaire Italy 2005 (V24-V33) Source: <https://www.worldvaluessurvey.org/WVSDocumentationWV5.jsp>

<sup>14</sup> Question taken from the World Value Survey Questionnaire Italy 2005 (V23)

<sup>15</sup> Question taken from the World Value Survey Questionnaire Italy 2005 (V125-V130)

Time preference, risk aversion, positive and negative reciprocity, altruism, and trust in others (questions 18-23) were also measured using questions from the General Preference Survey (Falk et al., 2018). Question 24<sup>16</sup> refers to the perception of having control over one's life, while question 25 is about Big Five personality traits (Gosling et al., 2003). The final part of the questionnaire focuses on the role of culture in shaping individual values and behavior (questions 32-38), referring to the use of dialect, local traditions, cultural identity, propensity to change residence, and religiosity. Finally, to test the persistence of the role of culture in shaping individual beliefs and behaviors, pessimistic proverbs prevalent in Southern Italy and optimistic ones in Northern Italy were used (question 32). These proverbs were paraphrased to make them less recognizable and divided into five topics: sharing and doing good, cooperation, trust, leaving one's place of origin, and optimistic or pessimistic expectations about the possibility of changing one's condition. Respondents were asked to choose one response for each of the five different pairs of statements. The first three paraphrased phrases were based on the following Southern proverbs from Giuseppe Pitrè's collection (1880): “Do not make loans, do not make gifts, do not do good than bad will come to you”, “When your neighbor's house is on fire, bring water to your house”, and “Cursed is that man who trusts another man”. In contrast, three optimistic proverbs were chosen “Sharing is multiplying”, “Joining forces, sharing burdens”, and “Trust is the first step in building a solid future”. The last two Southern proverbs used for comparison, namely “Blessed is that bird that nests in his little village” and “He who changes the old for the new worse he finds”, were extrapolated from *“The House by the Medlar Tree”* (I Malavoglia) (Verga, 1881), while the last two from the North “The homeland is where one is well” “And God never troubles the joy of his children, except to prepare for them a more certain and greater one” from *“The Betrothed”* (I Promessi Sposi) (Manzoni, 1840-42)<sup>17</sup>.

Questions 26 through 31 represent hypothetical scenarios and simulated games in which participants are asked to interact with other people. Specifically, the following were simulated:

- an Investment Game to test levels of trust, reciprocity, and expectations about the behavior of others, both as trustor (and trustee (question 26);
- a Public Good Game to measure cooperation and expectations about the behavior of others, particularly the inhabitants of different regions (question 27);

---

<sup>16</sup> Question taken from the World Value Survey Questionnaire Italy 2005 (V46)

<sup>17</sup> See the Appendix (Italian) for the Italian version.

- a Cooperation Vignette to measure trust in one's hypothetical co-workers and expectations about their cooperativeness (question 28);
- a Wallet Task (Attanasi et al., 2017), where they are asked to estimate the probability of getting back a lost wallet with its contents, which allows them to measure the perception of honesty in others (question 29);
- a Social Risk and Natural Risk Vignette (Aassve et al., 2021) that measures whether individuals have a higher aversion to the risk of being betrayed, called social risk, than to the risk of events that are beyond human control, called natural risk (questions 30-31). The variable of interest related to social risk aversion used natural risk as a benchmark<sup>18</sup>.

These questions were modified in the different questionnaires. Specifically, in the control group (T0-no info), the questionnaire was administered without reference to the geographic origin of the counterpart (questions 26-27-28) or the location of the vignette (questions 29-30-31). In treatment T1 (info + same area), information was provided that the people with whom one was interacting were from the same area as the respondent, that is, a region in Southern (Northern) Italy for respondents from Southern (Northern).. Finally, in treatment T2 (info + different area), the questions were modified by including the information "a region in Southern Italy" in the questionnaire administered to Northern respondents and "a region in Northern Italy" for Southern respondents.

Based on previous literature we formulate and test seven different (sometimes mutually or non-mutually exclusive) hypotheses:

*Hypothesis 1: Southern and Northern subjects have different psychological and behavioral traits.*

Specifically, we expect that among individuals in the South, there is a prevalence of amoral familists (Banfield, 1958), a lower endowment of social capital (Putnam, 1993), a prevalence of conscientious and neurotic individuals (as they are the most distrustful) (Heckman et al., 2006), higher risk aversion (Attanasi et al., 2017), and lower positive reciprocity (Aassve et al., 2021).

---

<sup>18</sup> The Social and Natural Risk Vignette questions were designed to measure respondents' preferences toward risk. In both scenarios, participants have to choose between two different cab companies: one with a fixed price and one with a variable price. The optimal choice in both cases is the company with the variable price, as only once in five times is the cost of the route greater than the fixed price. In the "Natural Risk" scenario, the price increase is caused by natural events (rainfall) while in the "Social Risk" scenario it is due to dishonesty of the taxi driver. The purpose is to test whether risk preferences vary as the nature of the risks to which individuals are exposed changes: nature risk and social risk of cheating.

*Hypothesis 2: Southern subjects are more pessimistic and less likely to trust than Northern subjects.*

Specifically, we expect Southerners to demonstrate a greater distrust of others with more pessimistic expectations about their behavior (Bigoni et al., 2019) and prefer pessimistic Southern Italian proverbs (Guiso et al., 2008). We also expect Southerners to show greater attachment to local culture and traditions, use dialect more in social interactions, and be less likely to move outside their home region.

*Hypothesis 3: Intergenerational transmission of beliefs.*

We expect that having at least one parent from the South will reduce individuals' propensity to trust and cooperate regardless of their current place of residence (Aassve et al., 2021; SgROI et al., 2020) since parents decide what values to pass on to their children, influencing their choices (Tabellini, 2008), making it challenging to change optimistic or pessimistic beliefs and expectations about others.

*Hypothesis 4: The North is more cooperative and has higher trust levels than the South.*

In the simulated games and hypothetical scenarios, in T0 (no info), people from Northern Italy trust and cooperate more than people from Southern Italy (Battiston et al., 2016; Bigoni et al., 2016). We also expect southern Italian regions to be perceived as less cooperative (*Hypothesis 4.1*), and consequently, the results show a lower average expectation of the contribution of southern Italian regions than those in the North (Bigoni et al., 2019). This difference could depend on the elicitation of respondent biases (Aassve et al., 2021).

*Hypothesis 5: Increased cooperation and trust levels among peers.*

In the simulated games and hypothetical scenarios, we expect greater cooperation and higher levels of trust in T1 (in both the North-North and South-South cases) than in T0 (no info), as the identification of group members might favor greater cooperation within homogeneous groups (Battiston & Gamba, 2016). However, we expect less cooperation in T1 South-South than in T1 North-North (*Hypothesis 5.1*), consistent with Hypothesis 4, which hypothesizes that the North is more cooperative than the South (Bigoni et al., 2019).

*Hypothesis 6.A: Priority of the culture over the context.*

The prioritization of internalized culture over the context in which one interacts should lead individuals in the South and the North to behave and act in a manner consistent with their beliefs without being influenced by the identification of the individuals with whom they are called upon to interact or the external environment in which they find themselves. So, in the case where individuals prioritize culture over context, we should observe similar levels of cooperation and trust between T0 (no information) and T2 (information + different area) in both the Southern Italian and Northern samples. Nonetheless, in line with the earlier hypotheses, we expect lower levels of cooperation from Southerners than from Northerners. These results could be explained by the “false consensus effect” (Butler et al., 2015), according to which we tend to project our thinking and actions onto others. As a result, we expect respondents from the North, who are more optimistic and confident, to have optimistic expectations of their counterpart's cooperation regardless of their geographic origin. In contrast, Southern respondents, who are more pessimistic and distrustful, would project their pessimistic expectations on others cooperating and trusting less than the Northern sample. The sub-hypotheses are as follows:

- *Hypothesis 6.A.1:* In T2 North-South, individuals in the North have the same levels of trust and cooperation as in the no info treatment (T0);
- *Hypothesis 6.A.2:* In T2 South-North, Southern individuals have the same levels of trust and cooperation as in the no info treatment (T0);
- *Hypothesis 6.A.3:* In T2 South-North, respondents cooperate and trust less than in T2 North-North. If Hypotheses 6.A.1 and 6.A.2 are true (there is no difference between T2 and T0), as well as Hypotheses 4 (North more cooperative and trusting than South in T0) and 5.1 (more cooperation between North-North than South-South), then T2 North also has higher levels of cooperation and trust than T2 South.

*Hypothesis 6.B.: Priority of context over the culture.*

Contrary to the previous hypothesis, the continuous exposure of individuals to stimuli from the external environment might be able to shape behaviors, beliefs, and expectations. In addition, the pervasive effect of judgmental heuristics could promote the spread of stereotypes and the development of biases. One example is the availability heuristic, which is the predisposition to overestimate the importance of

elements easily recalled in our minds. The emphasis used by the mass media on organized crime, political dishonesty, inefficiencies in the use of public money, and increased tax evasion contributed to the formation of prejudices about Southern Italy. Introducing the origin of the counterpart or the location of the vignettes into T1 and T2 could create biases in individuals' behaviors, reducing observed levels of cooperation and trust. So, in the case where individuals prioritize context over culture, we should observe lower levels of cooperation and trust in T2 (information + different area) treatment than in T0 (no information) treatment in the Northern Italian sample, while higher levels of cooperation and trust in the Southern Italian sample. The sub-hypotheses are as follows:

- *Hypothesis 6.B.1*: Northern respondents trust and cooperate less in T2 (info + North-South) treatment than in T0 (no information). Trust and cooperation are, therefore, undermined by the elicitation of preconceptions and a stereotypical image of Southerners (Aassve et al., 2021);
- *Hypothesis 6.B.2*: Higher trust and levels of cooperation in T2 South-North treatment than in T0. This is because respondents from the South would interact with individuals from the North who are considered more cooperative and trustworthy;
- *Hypothesis 6.B.3*: Higher levels of trust and cooperation with people in the North and less with people in the South if Hypotheses 6.B.1 and 6.B.2 are true.

*Hypothesis 7: Lower cooperation and trust levels among groups from different areas*

Greater in-group cohesion (ingroup love) could promote the creation of negative attitudes toward out-groups (outgroup hate) (Allport et al., 1954). We expect to observe lower levels of trust and cooperation in T2 (South-North and North-South) than in the T0.

## **3.5. Results**

### **3.5.1. Data and Descriptive Analysis**

The survey was fielded by a demographic analysis firm (Demetra opinioni.net Srl) to ensure proper randomization and representativeness of the sample which was selected from registered users on the institute's platform. The questionnaire was completed online, and respondents were financially rewarded for participation. The questionnaires were administered to six different groups, with three groups (one

for each treatment) from southern Italy and three from northern Italy. Based on the official classification, Northern Italy comprises Liguria, Lombardy, Piedmont, Friuli-Venezia Giulia, Veneto, Emilia-Romagna, Trentino-Alto Adige and Valle d'Aosta. The last two regions were not included in our sample because of the high cultural distance from the rest of Northern Italy and the presence of different linguistic communities, mainly due to the influence of neighboring European states. Emilia-Romagna was not chosen as well because of its proximity to Central Italy. The southern regions are Abruzzo, Molise, Basilicata, Calabria, Campania, Puglia, and two main islands, Sicily and Sardinia. Again, Abruzzo and Molise were not chosen because of their proximity to the regions of Central Italy. Sardinia was not considered in because of its geographic and behavioral peculiarities. In fact, from a social capital perspective, Sardinia seems closer to North-Central Italy's regions than the South (see Figure 3.1 for a map of regions in Italy).

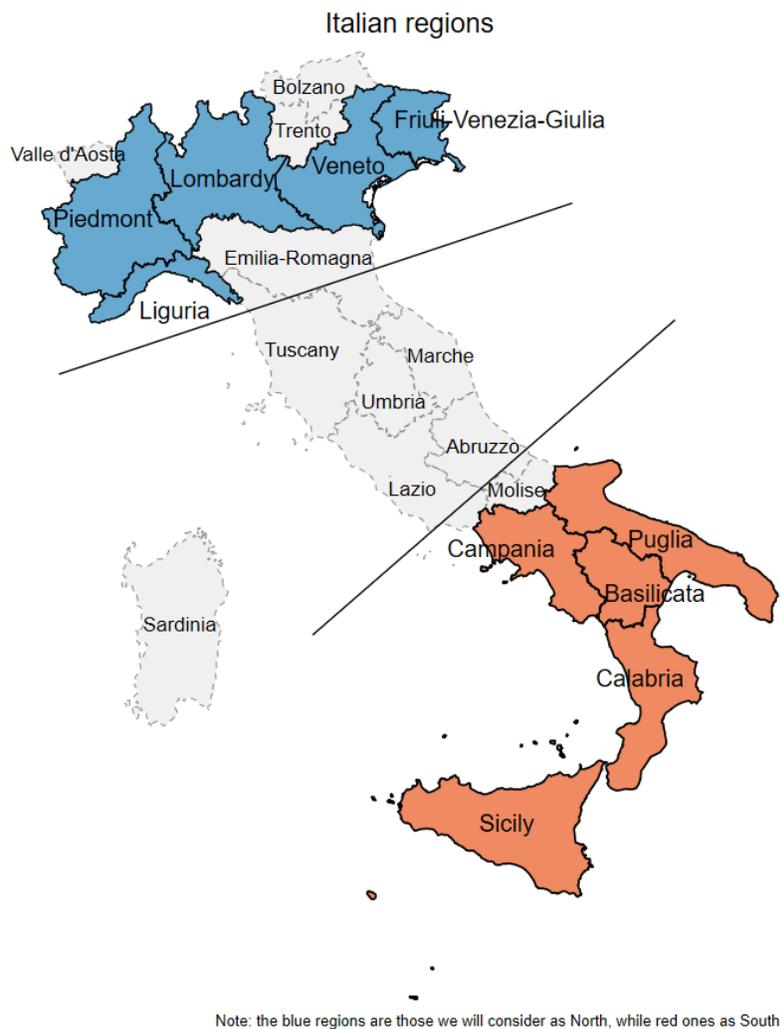


FIGURE 3.1. MAPS OF ITALIAN REGIONS

In selecting the sample, reference was made to the respondent's residence and not their place of birth. As a result, within the sample, a small percentage of individuals who are foreigners or born in other regions of Italy are not part of the chosen macro areas. In particular, the sample also includes 14 individuals born in other southern (Abruzzo or Molise) or northern (Valle d'Aosta, Trentino-Alto Adige and Emilia-Romagna) regions, 30 individuals born in central Italy and Sardinia and 41 born in EU and non-EU countries who were classified as foreigners.

For subjects born in different regions or with parents from regions not considered in the sample, special dummy variables were created, as well as in the case where a person born in the South had moved to the North and vice versa.

Randomization was done for the main observable demographic characteristics (gender, age, and education level) and was verified by Spearman and Hotelling tests. The final Survey-Experiment sample consists of 2406 observations, equally distributed by gender, with at least 400 observations for each of the six groups. The respondents ranged in age from 18 to 92 years, with an average age of about 50.

The southern region with the most observations is Campania (16.67%), followed by Sicily (14.39%), Puglia (11.93%), Calabria (5.28%), and Basilicata (1.62%). As for the North, the most represented region is Lombardy (22.74%), followed by Veneto (11.14%), Piedmont (9.98%), Liguria (3.49%), and Friuli-Venezia Giulia (2.74%). The choice of the number of observations from different regions is not random but was made to ensure that the sample is representative of the composition of the population in northern and southern Italy.

### **3.5.2. Econometric analysis**

The variables used for testing and as dependent variables in the models include both those related to the psychological and cultural characteristics of the subjects and those related to individuals' choices and expectations about others' behavior in the different scenarios and hypothetical games. The leading independent variables used are the subjects' geographic origin, as well as having been assigned to the different treatments (T0, T1, and T2) in the case of the different questions between groups. In addition, demographic variables (age, educational level, gender, occupation, and the role of religion), cultural (the importance of culture and local dialect, parental background, amoral familism, and social capital), and psychological (General Preference Survey, Big Five, and trust levels) are considered.

### 3.5.2.1. Psychological preferences and characteristics

*Result 1: North and South have no significant differences in individual preferences or self-reported trust measures. However, subjects from the South are more attached to the traditions of their local area but are less trusting than their fellow citizens. They are also more conscientious and less optimistic. Similar results are obtained when considering the influence of having at least one Southern parent.*

Using Kruskal Wallis test with adjusted p-value to compare Northern and Southern, the analysis of personality traits reveals, as predicted in Hypothesis 1, lower conscientiousness in Northern respondents, even if the difference is weakly significant (p-value of 0.093). This characteristic is related to cautious and controlled behaviors; therefore, more conscientious individuals in Southern Italy could explain any observed differences in trust and cooperative behaviors (Heckman et al., 2006). However, the analysis also shows that respondents from the North are less altruistic (p-value less than 0.001) and, in contrast to the initial hypotheses concerning neuroticism, there are no significant differences between North and South. From the point of view of psychological characteristics, apart from less agreeableness for those from the North (p-value of 0.006), there are no other differences in either extroversion and openness or individual preferences as measured by the Global Preference Survey (see Table 3.A.1 in Appendix). These results seem to be in line with those of Bigoni and colleagues (2016).

Regarding cultural differences, results of the tests (see Table 3.A.1 in Appendix) shows that respondents from the North speak less in dialect daily, are less religious, and are less attached to family and local traditions (see Figure 3.2.a for regional data), as well as higher prevalence of amoral familists (all with p-values less than 0.001) (Banfield, 1958), especially in Calabria and Puglia (see Figure 3.2.b for regional data). Similar differences also emerge among Northerners that have at least one Southern parent: in fact, it is associated with greater importance attached to the nuclear family and the prevalence of amoral familists, confirming *Hypothesis 3*. The cause of this greater attachment could be found in the influence of cultural values and traditions strongly rooted in Southern regions.

Regarding self-reported measures of generalized trust, there are no significant differences in either the question taken from the General Preference Survey or the binary question from the World Value Survey. Thus, the generalized trust does not appear to vary according to the geographic origin of respondents. If we consider trust towards certain social groups, no significant differences emerge in trust towards people from other nations and people with different religious beliefs (see Table 3.A.1 in Appendix). In contrast, differences are significant when considering the categories of people closest to the respondents: North

has higher trust toward family, neighbors and acquaintances than the South (with p-values ranging from 0.003 to less than 0.001). Also in this case, having at least one parent from the South further decreases trust levels. These results seem to confirm the presence of amoral familism in Southern Italian subjects, which results in a lower sense of community (Banfield, 1958).

In contrast to the hypotheses, the different tests show significant statistical differences between North and South related to blood donations in the past year (p-value of 0.003), a proxy variables of social capital, but with the South having a higher level of social capital. This divergence from previous studies is probably related to the fact that the groups were randomized for demographic variables, making them less representative of the demographic characteristics of individual regions. That, however, was necessary to allow us to make the subjects in the different groups comparable. In fact, fitting the different controls into the regressions for the social capital variables shows no statistically significant differences between North and South, and the differences seem to depend instead on demographic factors (such as age and education) (see Table 3.A.2 in Appendix 3.A). There are also differences between North and South in the last proxy of social capital, namely membership in voluntary organizations (with several p-values less than 0.001): people who live in the South are more likely to belong to different social groups (see Table 3.A.1 in Appendix 3.A). These latter findings, namely the prevalence of amoral familists and a higher endowment of social capital in Southern Italy, would seem at odds with each other. However, the observed greater associationism in the South may not be a result of a greater propensity for altruism, but rather a consequence of the preference for interaction with the community through the mediation of associations, rather than direct engagement. For this reason, the presence of high levels of social capital in the South cannot lead to economic growth simply because “Olson associationism” is not driven by moral values aimed at the collective interest, which is still seen as an alternative to individual welfare (Granovetter, 1973; Olsen, 1965, 1982).

In addition, in contrast to initial assumptions, respondents from Southern Italy also perceive higher levels of honesty in several public sector organizations than those who live in the North. However, this difference could be due to a general distrust of the public sector and a preference for the private sector. This result is also confirmed by comparing trust in local and national institutions (Istat, 2022a): higher levels of trust in local (56.1 percent) and regional (46.7 percent) institutions are observed in the North than in national institutions (37 percent). In contrast, higher levels of trust in national institutions are observed in the South (41 percent), while values ranging from 24 percent to 28 percent are observed locally. The North could perceive national politics as dishonest and opaque, intending to pursue self-

interest at the expense of community interest. Conversely, stereotypes about Southerners might reduce trust in local institutions in favor of greater trust in national institutions.

In contrast, *Hypothesis 2*, about greater optimism in Northerners than Southerners, turns out to be confirmed. In fact, those who live in the North are more likely to mirror the optimistic proverbs in Northern Italy (see Table 3.A.1 in Appendix). In particular, this difference is statistically significant for the last two pairs of proverbs about feeling at home not necessarily in one's native place (p-value of less than 0.001) and the positive view of change (p-value of 0.034) (see Figure 3.2.c for regional data). These proverbs were those extrapolated from “*The House by the Medlar Tree*” (I Malavoglia) for the pessimistic proverbs and “*The Betrothed*” (I promessi sposi) for the optimistic proverbs. The result thus seems to confirm that culture plays a predominant role in shaping individuals' beliefs. In contrast, the hypothesis about northerners' greater perception of having control over what will happen in their lives does not seem to be confirmed.

### 3.5.2.2. Behavior in games and scenarios

We now turn to the analysis of the questions (26-31) related to trust, cooperation, honesty and betrayal-aversion to see whether different information and matchings (no information, information about the same area, or information about the opposite area) about the games' counterpart, in the Trust Game, Public Good Game, Cooperation Vignette, or context, in the Wallet Task, Social Risk Vignette, and Natural Risk Vignette, have a significant effect on individuals' choices and expectations. We applied OLS linear regression models controlling for several characteristics and using standard error robust to heteroscedasticity (see Table 3.1 and Table 3.2). The results are the same using robustness check, like using standard error for clusters based on province of birth, as well as removing observations of people from Liguria (we will see later why), those who changed from South-North and vice versa, and those born in the center or outside Italy (see Table 3.A.3 and 3.A.4 in Appendix 3.A). Moreover, Dunn's Pairwise Comparison was also used as an additional test of the results, but even controlling for comparisons of different pairs (including those not to be tested), most results confirmed the regressions findings (see Appendix 3.A, Table 3.A.5 to Table 3.A.9)<sup>19</sup>.

---

<sup>19</sup> Tests for games and scenarios where no difference emerged between treatments and areas, consistent also with regressions, were not reported

*Result 2: Game analysis shows no significant differences between Northerners and Southerners when they do not know the geographic origin of the individuals with whom they are interacting or do not have information about the region in which the scenarios take place.*

This result is in line with that of Aasve and colleagues (2021) and in contrast to that of Bigoni and colleagues (2016). In the wallet scenario, comparing subjects living in the North with those in the South in the no-information treatment (T0), we obtain that those living in the North are more distrustful than those living in the South (with a test p-value of 0.0115, see Table 3.A.6 in Appendix) and in the investment game those living in the North expect to receive back less when the other subjects is the trustee in the no-info treatment (T1). However, the regression models controlling for several variables do not confirm the results, as shown in Table 1 (Model 4) and Table 3.A.3 (Model 4) in Appendix 3.A. Regarding differences in risk perception, the model shows a lower social risk aversion to betrayal in Northerners (p-value of 0.052) than in Southerners (see Model 5 in Table 3.1). However, this difference between North and South is not confirmed by tests and robustness check (see Table 3.A.3 in Appendix 3.A). These results are contrary to *Hypothesis 4*, because North and South individuals show similar levels of cooperation and trust in games.

*Result 3: Knowing that they are dealing with partners from the same area does not seem to have a positive impact on the level of cooperation. On the contrary, people in southern regions show lower trust when they know they are interacting with their co-religionists than when having no information.*

This result is obtained by comparing T0 and T1 and is strongly in contrast with that obtained by Battiston and Gamba (2016). In the Northern group, knowing they are dealing with people from the same area does not affect neither choices nor expectations. Using Dunn's Pairwise Comparison test, the null hypothesis that there are no differences between groups in all games is never rejected. Only when considering the regressions (in Table 3.2) did the coefficient of the variable of this first treatment turn out to be negative and statistically significant (with p-values between 0.032 and 0.066) in the investment game in the role of the second player; namely players tend to give back less and expect to receive back less; however, this result is not confirmed by the different tests for people in the North but is valid for those in the South. In fact, in the Southern group, considering both roles in the investment game (p-values of 0.0545 and 0.0603) and the wallet task (p-value of 0.0457), information from the same area reduces the levels of trust and cooperation. (see Table 3.A.6, 3.A.7 and 3.A.9 in Appendix). Figure 3.3.a shows that in the North, information from the same region reduces trust in other subjects as trustee only in

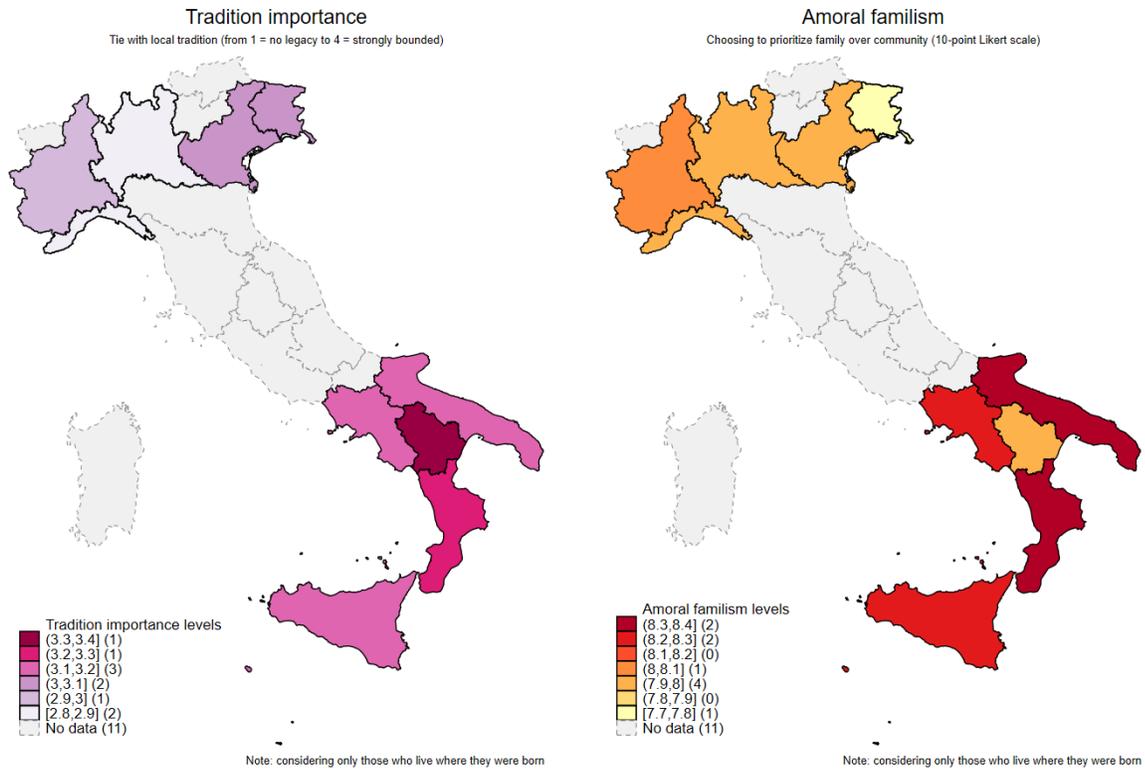
Lombardy (but close to zero) and Liguria. In contrast, the information effect is negative for most southern regions, except for Basilicata, where it is positive, which is consistent with lower levels of amoral familism (as shown in Figure 3.2.b. These results lead us to reject *Hypothesis 5* about increased cooperation and trust among cor-regionals. Considering the regression for the cooperation scenario (see Model 3 in Table 3.1 and Table 3.A.3 in Appendix 3.A), the treatment coefficient  $tI$  turns out to be negative only for the Southern group (since the interaction coefficient  $tI*north$  turns out to be positive with an absolute value equal to that of  $tI$ ). So, people from South cooperates less with people from the same area than people from the North with northerners, even though, in this case, group identification did not increase cooperation if compared with the no-information treatment. This result would seem to confirm *Hypothesis 5.1*, that is, the presence of negative and ungrounded expectations of Southerners' cooperation in Southerners. The lower level of cooperation observed in T1 (South-South) with respect both to T1 (North-North) and to T0 could depend on the influence of stereotypes of Southerners about themselves. However, there is heterogeneity among southern regions in the effect of information on the same region, as demonstrated in Figure 3.3.c. The figure illustrates the change in cooperation levels from T0 to T1 in the cooperation scenario. Sicily shows a positive, similar to those in the North (with the exception of Friuli-Venezia Giulia). Calabria, Campania and Puglia exhibit a negative effect, with a strong negative effect for Campania.

*Result 4: Higher levels of trust and cooperation with partners from a different area are observed compared to having no information for both Southerners and Northerners.*

This result is in line with that of Attanasi and colleagues (2017). Comparing T0 and T2 we find that in the lost wallet scenario both Southern and Northern participants tend to trust people more when they know they are from the other area more than when they have no information, with p-values close to zero (see Model 5 in Table 3.1 and Table 3.A.3 in Appendix 3.A). Moreover, in terms of expectations about the behavior of others, in the investment game, the North trusts the South more in both roles, with the p-values of the coefficient  $t2*north$  of 0.008 as trustor expectations and 0.032 as trustee expectations (see Table 3.2 and Table 3.A.4 in Appendix 3.A). These results are confirmed by tests (Table 3.A.7, 3.A.8 and 3.A.9 in Appendix 3.A) and robustness checks (see Table 3.A.4 in Appendix 3.A), leading us to strongly reject *Hypothesis 7* about lower levels of trust and cooperation among different groups.

(a)

(b)



(c)  
**Proverbs: Malavoglia vs Promessi Sposi**  
Malavoglia (South-pessimistic) vs Promessi Sposi (North-optimistic)

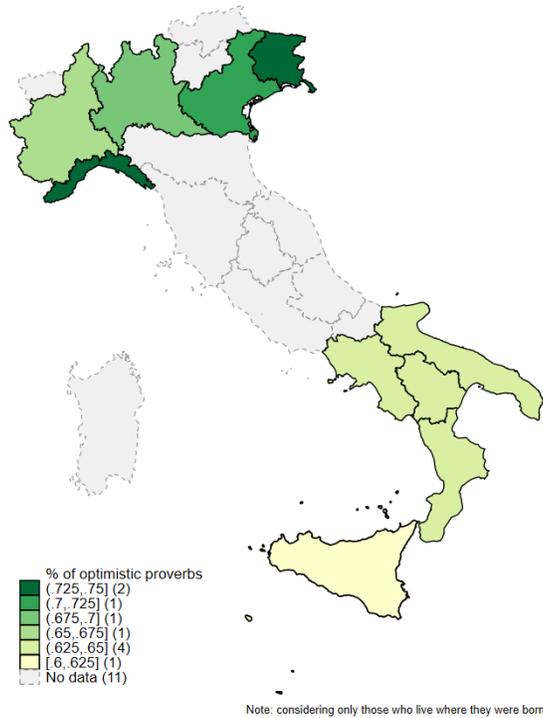


FIGURE 3.2. MAPS OF MAIN CULTURAL VARIABLES ACROSS REGIONS  
(a) (b)

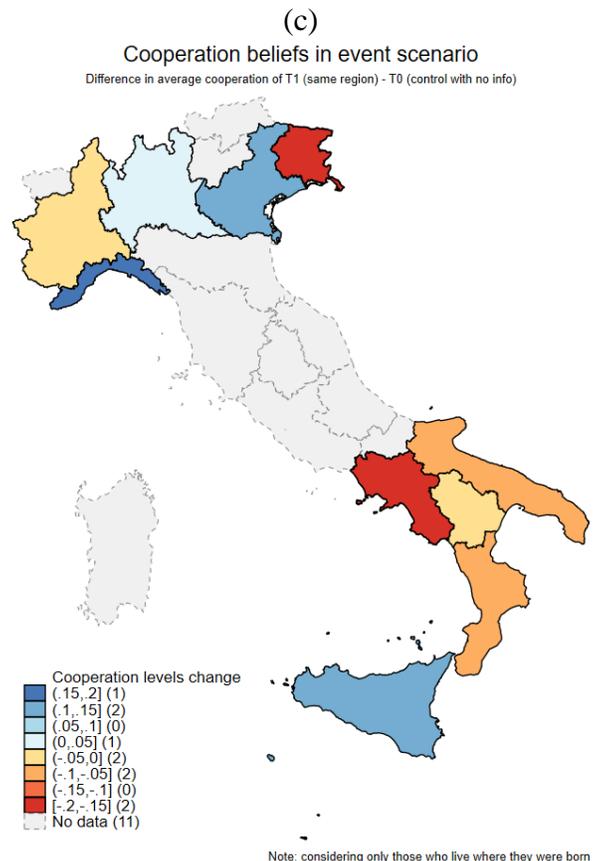
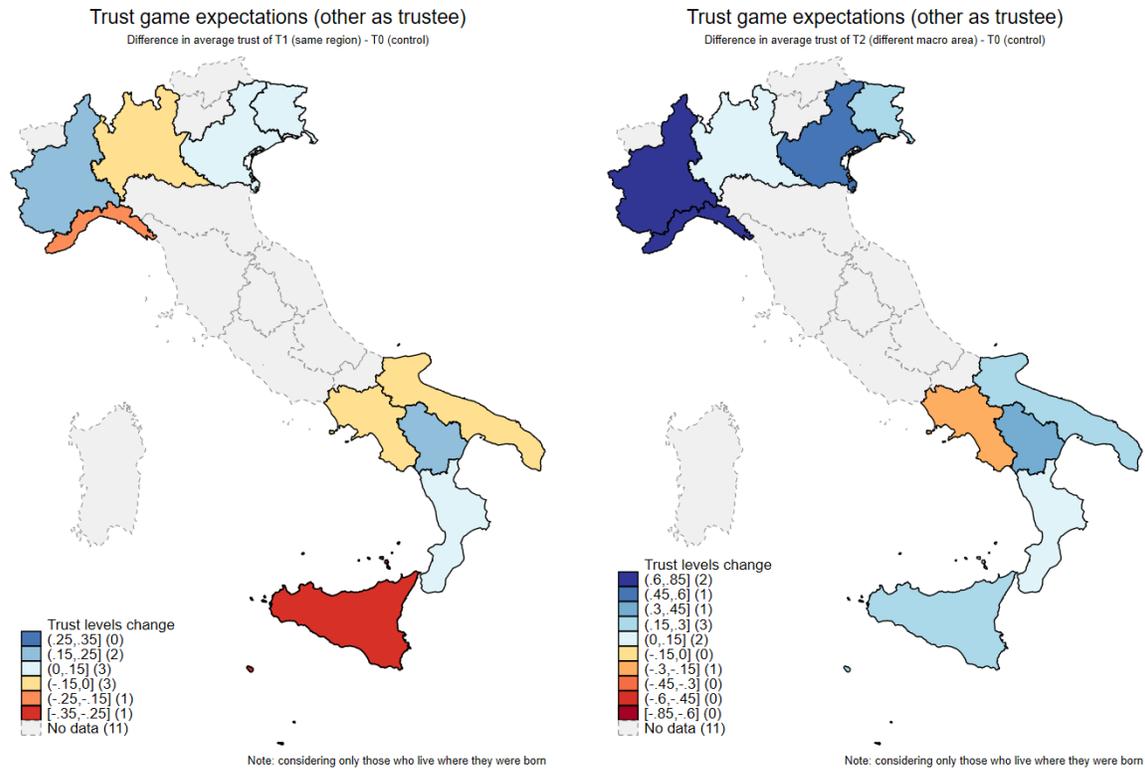


FIGURE 3.3. MAPS OF MAIN GAME DIFFERENCE ACROSS REGIONS

Taken together, these results suggest that in the North, the culture of origin has greater relevance, confirming *Hypothesis 6.A.1* and rejecting *Hypothesis 6.B.1*. This result also seems to be confirmed when comparing T1 (info + same region) and T2 (info + different region), since identification in homogeneous groups does not promote cooperative behavior (see Table 3.A.6, 3.A.8 and 3.A.9 in Appendix 3.A). In addition, the higher levels of trust and cooperation observed in T2 (North-South) rules out the existence of prejudices and discrimination against Southern Italy. We can see this in Figure 3.3.b, where all regions in the North report increased confidence in Investment Game when the trustees come from the South. Information on the opposite area also has positive effects for the South (with the exclusion of Campania), especially Basilicata. So, these results for the Southern Italian sample show that the context in which they interact is more important to them than the internalized culture, corroborating *Hypothesis 6.B.2* and leading us to reject *Hypothesis 6.A.2*. The presence of higher levels of cooperation and trust observed in T2 (South-North) than in T0 (no info) and especially in T1 (South-South) - where, in the latter, levels of cooperation and trust decrease - seems to indicate that prejudices about themselves condition Southerners and that external factors easily influence their decisions. This result is in line with the literature that sees the root of the gap in Southerners' pessimistic expectations of cooperation from other Southerners (Bigoni et al., 2019). The pessimistic expectations of Southerners are, therefore, not general, and Southerners are willing to trust and cooperate only with individuals perceived as more cooperative.

The only game in which no differences emerge between groups is the simulated Public Good Game. However, when we look at the expectations that subjects have regarding cooperation among groups from other regions, it emerges that both Southern and Northern subjects believe that Southern regions (Calabria, Campania, Sicily, and Puglia) have cooperated less than Northern regions (Piedmont, Trentino, and Lombardy). The only exception is Liguria, which is perceived as the region with the lowest level of cooperation overall. This result would seem to suggest the presence of prejudice against that region, stemming from the stereotype that sees Ligurians as stingy individuals (see Figure 3.A.1 in Appendix)<sup>20</sup>. These data confirm *Hypothesis 4.1*, namely that Southern Italian regions are perceived as less cooperative with each other, especially by those in the North, in line with the findings of Bigoni and colleagues (2019). Taking into account the results of the previous games, this prediction seems to be confirmed by the fact that people in the South actually trust those who live in the same area less and are, therefore, less

---

<sup>20</sup> The data of the Ligurians actually show a peculiar phenomenon: they are the last in the ranking of how much they would contribute in the control (average contribution of about 47.83), the second to last in the case of information with the macro area of the South (about 45.2), as well as being second to last in the case of the expectation of the contribution of the other subjects in the no info case (in both cases, the last ones turn out to be the Calabrians). Nevertheless, the Ligurians turn out to be the first contributors in T1 (with about 67.05), distancing even the second, the Piedmonts, by almost 15 points.

cooperative. However, for regions with available data, residents have more optimistic expectations for their region (in the case of the question on previous experiment) than the average expectations for that region from all others by about 5 points (excluding Liguria, as mentioned, the lowest, where expectations coincide).

TABLE 3.1 – REGRESSION MODELS FOR GAMES AND SCENARIOS

	(1) PGG Contribution	(2) PGG belief in other	(3) Cooperation beliefs (scenario)	(4) Wallet scenario	(5) Taxi scenario trust
North (live)	1.273 (2.491)	2.389 (2.172)	-0.0287 (0.0340)	-0.128 (0.0909)	0.144* (0.0741)
T1 (info same area)	-1.742 (1.885)	-0.280 (1.690)	-0.0729*** (0.0273)	-0.0856 (0.0728)	0.00427 (0.0546)
T2 (info different area)	-1.682 (1.892)	0.0596 (1.630)	-0.0339 (0.0272)	0.261*** (0.0740)	0.0752 (0.0557)
Interaction T1*North	-0.609 (2.713)	-1.599 (2.373)	0.0801** (0.0388)	0.0965 (0.100)	-0.0362 (0.0765)
Interaction T2*North	-0.366 (2.727)	0.188 (2.367)	0.0433 (0.0393)	0.0486 (0.105)	-0.118 (0.0779)
Male	1.322 (1.274)	0.165 (1.103)	0.0152 (0.0189)	0.0180 (0.0482)	0.0509 (0.0363)
Age in years	-0.0310 (0.0511)	-0.0115 (0.0452)	0.00199*** (0.000768)	-0.00164 (0.00197)	0.00285* (0.00155)
Education	-0.518 (0.565)	-0.361 (0.496)	-0.00933 (0.00824)	-0.0335 (0.0221)	-0.00789 (0.0168)
Household income	1.706*** (0.600)	0.754 (0.518)	0.0117 (0.00908)	0.0591** (0.0233)	-0.0518*** (0.0173)
City size	1.699*** (0.601)	1.536*** (0.520)	-0.00394 (0.00851)	0.0398* (0.0228)	0.00567 (0.0170)
From South to North	-3.047 (3.474)	-0.346 (3.178)	0.0217 (0.0519)	0.226* (0.121)	-0.0574 (0.0916)
From North to South	2.673 (8.505)	3.290 (5.410)	0.0379 (0.113)	0.675* (0.356)	0.0419 (0.269)

Born Center/Sardinia	2.178 (5.735)	-0.748 (5.148)	0.0478 (0.0729)	0.0452 (0.210)	-0.0881 (0.117)
Born foreign country	0.488 (4.006)	1.744 (3.484)	0.159*** (0.0577)	-0.0580 (0.162)	0.0294 (0.102)
South parent(s)	-1.513 (1.888)	-1.247 (1.614)	-0.0303 (0.0261)	-0.0614 (0.0696)	0.0825 (0.0562)
Family bound	-0.520 (0.420)	-0.198 (0.363)	-0.00314 (0.00655)	-0.0594*** (0.0170)	0.0173 (0.0121)
Religiosity	-1.043 (0.640)	-0.235 (0.563)	0.0123 (0.00902)	0.0657*** (0.0238)	-0.0180 (0.0188)
Dialect	-0.0732 (0.739)	0.570 (0.648)	-0.0170 (0.0110)	0.0743** (0.0289)	-0.0273 (0.0212)
Traditions	1.497* (0.813)	0.948 (0.728)	0.0288** (0.0122)	0.0349 (0.0317)	-0.0217 (0.0238)
Work outside	1.027* (0.535)	0.392 (0.468)	0.00834 (0.00754)	-0.00115 (0.0201)	0.0212 (0.0147)
Constant	-6.598 (7.339)	-2.348 (6.528)	2.999*** (0.110)	2.033*** (0.287)	1.859*** (0.213)
Dummies for jobs	✓	✓	✓	✓	✓
Social capital proxies	✓	✓	✓	✓	✓
GPS controls	✓	✓	✓	✓	✓
Big Five controls	✓	✓	✓	✓	✓
Observations	2405	2405	2405	2405	2405
$R^2$	0.134	0.096	0.172	0.192	0.031
Adjusted $R^2$	0.118	0.080	0.157	0.178	0.014
<i>AIC</i>	22699.6	22055.3	2363.8	6992.8	5588.0
<i>BIC</i>	22948.3	22304.1	2612.5	7241.5	5836.8

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

TABLE 3.2 – REGRESSION MODELS FOR THE INVESTMENT GAME (DIFFERENT ROLES)

	(1) Investment game (subject as the trustor)	(2) Investment game (subject as the trustee)	(3) Investment game (belief in the other as the trustor)	(4) Investment game (belief in the other as the trustee)
North (live)	0.0825 (0.0913)	0.0208 (0.107)	-0.0886 (0.0984)	-0.193 (0.120)
T1 (info same area)	-0.0255 (0.0708)	-0.186** (0.0864)	-0.0878 (0.0778)	-0.173* (0.0938)
T2 (info different area)	-0.0285 (0.0693)	-0.0325 (0.0848)	0.000782 (0.0777)	0.0877 (0.0945)
Interaction T1*North	-0.0548 (0.100)	0.0713 (0.121)	-0.0169 (0.107)	0.179 (0.132)
Interaction T2*North	-0.0157 (0.0984)	-0.0369 (0.119)	0.285*** (0.108)	0.287** (0.134)
Male	0.0145 (0.0468)	-0.0456 (0.0560)	0.0213 (0.0507)	0.0255 (0.0628)
Age in years	-0.00211 (0.00198)	-0.00167 (0.00234)	-0.00262 (0.00214)	-0.0000418 (0.00254)
Education	0.00579 (0.0225)	0.0339 (0.0257)	-0.0208 (0.0234)	-0.0103 (0.0281)
Household income	0.0282 (0.0227)	0.0257 (0.0268)	0.0246 (0.0234)	0.00678 (0.0293)
City size	0.0212 (0.0216)	0.0162 (0.0267)	0.00588 (0.0239)	0.0229 (0.0294)
From South to North	0.127 (0.129)	0.124 (0.143)	0.193 (0.140)	0.290* (0.173)
From North to South	0.111 (0.328)	-0.211 (0.425)	0.276 (0.338)	0.297 (0.330)
Born Center/Sardinia	-0.0426 (0.194)	-0.193 (0.220)	-0.0935 (0.207)	-0.103 (0.233)
Born foreign country	-0.0444 (0.142)	0.0504 (0.187)	-0.140 (0.142)	0.260 (0.198)

South parent(s)	0.0787 (0.0696)	-0.105 (0.0810)	-0.0702 (0.0753)	-0.129 (0.0902)
Family bound	-0.0334** (0.0160)	-0.0666*** (0.0183)	-0.0232 (0.0180)	-0.0236 (0.0204)
Religiosity	-0.0128 (0.0236)	-0.0309 (0.0277)	0.0141 (0.0254)	-0.00929 (0.0314)
Dialect	0.0807*** (0.0274)	-0.0285 (0.0337)	0.0591** (0.0300)	0.0195 (0.0370)
Traditions	0.0592* (0.0310)	0.108*** (0.0376)	0.0585* (0.0325)	0.0889** (0.0402)
Work outside	0.00991 (0.0190)	0.0654*** (0.0237)	-0.0190 (0.0208)	0.00374 (0.0264)
Constant	1.409*** (0.278)	2.752*** (0.335)	2.018*** (0.316)	2.083*** (0.367)
Dummies for jobs	✓	✓	✓	✓
Social capital proxies	✓	✓	✓	✓
GPS controls	✓	✓	✓	✓
Big Five controls	✓	✓	✓	✓

---

Observations	2405	2405	2405	2405
$R^2$	0.113	0.098	0.109	0.079
Adjusted $R^2$	0.097	0.082	0.093	0.063
<i>AIC</i>	6804.3	7716.8	7216.7	8216.5
<i>BIC</i>	7053.1	7965.5	7465.5	8465.2

---

Standard errors in parentheses  
 \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

### 3.6. Discussion and Conclusions

The goal of this Survey Experiment was to investigate the effect of information about the geographical origin of their counterparts on the willingness to cooperate, trust, trustworthiness, and expectations formation as determinants of the North-South divide in Italy.

Our results show no significant differences between North and South regarding individual preferences and self-reported measures of trust, although respondents from Southern Italy report a lower level of trust in their communities (particularly toward neighbors and acquaintances), which is in line with Banfield's concept of amoral familism. Indeed, the analysis shows the presence of greater family ties in Southern Italy, as well as the prevalence of amoral familyists.

The central results of the paper are that in T0 with no information about the regional origins we do not observe differences between Northerners and Southerners in the games and scenarios we use to measure cooperation, trust, trustworthiness and expectations of honesty. The provision of such information brings out significant differences. Contrary to other studies, knowing that they are dealing with partners from the same macro area (T1) does not seem to positively impact the level of cooperation, showing that the perception of being part of a homogeneous group is insufficient to bring out trust. More interestingly for the Southern group, knowing they are interacting with people from the same area causes a reduction in the observed levels of cooperation. This suggests a negative effect of pessimistic but ungrounded expectations of Southerners about the willingness to cooperate of people from their own regions. Expectations that are much more negative than that possessed by people from the North about Southerners. We also observe that both the Northern and Southern groups are more likely to cooperate with individuals from the different area. Southerners seem to be prisoners of their own prejudices about themselves. The stereotype of Southerners being less trustworthy by Southerners themselves would prevent the establishment of widespread trust relationships, except through the intermediation of institutions, even though such pessimistic expectations turn out to be ungrounded given their actual behavior. There are, in fact, no significant differences between individuals from the South and the North, apart from those driven by the information. Discrimination performed by Southerners on themselves would also represent a phenomenon in which the discriminated discriminates against themselves, also present in other contexts such in Colombia between high and low SES (Blanco & Guerra, 2020; Bogliacino et al., 2017), individuals of Eastern origins in Jewish society (Fershtman & Gneezy, 2001),

African Americans in America (Banaji & Greenwald, 2014), the lower castes in India (Hoff & Pandey, 2006), and in Algeria with respect to French culture (Fanon, 1952, 1961).

Northerners would thus prioritize the culture of belonging when called upon to interact with strangers, demonstrating that they are not influenced by the introduction of explicit priming on the geographic origin of the counterpart. In contrast, Southern Italy would demonstrate a prevalence of the context in which one interacts over the culture of belonging. Despite this pessimistic view of other Southerners, Southern Italians are more likely to identify with their home region, speak a dialect more often in social interactions, and are more attached to the local area, tradition, and culture.

This study has limitations: as a survey experiment, responses are not incentivized, and a laboratory experiment would be needed to test actual behaviors. In addition, multiple hypotheses were tested, forcing the use of adjusted p-values for multiple hypothesis testing, which may make some results less precise.

Summarizing we tried to contribute to this strand of the literature comparing the (hypothetical) behavior and expectations of a representative sample of individuals from northern and southern Italy by separating their cultural aspect from that of the context in which they interact, stressing the fundamental role of prejudices and stereotypes that people from the South have about themselves and how this can prevent the emerginf of cooperation and meaningful trusting relationships.



## Chapter 4

### Altruistic excuse to risk: An experiment on prosocial risk-taking

Gabriele Ballicu<sup>a</sup>  
University of Cagliari

Federico Atzori<sup>b</sup>  
University of Cagliari

Vittorio Pelligra<sup>c</sup>  
University of Cagliari

#### Abstract\*

Based on the concepts of “karma belief” and “prosocial risk-taking”, we develop a model and a lottery experiment to investigate the effect of altruism on risk-taking behavior. We use a between-subjects design with three groups: in the first group (control) subjects complete a standard Holt and Laury lottery. In the second group (karma belief), subjects could engage in “good behavior” by donating to a chosen charity before completing the Holt and Laury task. In the third group (prosocial risk), subjects complete a modified version of the Holt and Laury task where they could choose between a safe outcome against a risky payoff for themselves with a certain amount to be donated to a chosen charitable organization. This study investigates whether the possibility to engage in altruistic actions has an impact of participants attitude towards risk. Our results highlight an “altruistic excuse to risk” in the prosocial risk-taking group, but only among men, while for women, on the contrary, there seems to be an “excuse not to give”, which leads them to risk less.

**Keywords:** altruism, risk, prosocial risk-taking, karma, optimism, charity, gender difference.

**JEL Codes:** C70, C91, D64, D81

---

<sup>a</sup> Department of Economics and Business, University of Cagliari, V.le S.Ignazio 17, 09129, Cagliari, Italy. E-mail: [gabriele.ballicu@unica.it](mailto:gabriele.ballicu@unica.it) (Corresponding author)

<sup>b</sup> Department of Economics and Business, University of Cagliari, V.le S.Ignazio 17, 09129, Cagliari, Italy. E-mail: [federico.atzori2@unica.it](mailto:federico.atzori2@unica.it).

<sup>c</sup> Department of Economics and Business, University of Cagliari, V.le S.Ignazio 17, 09129, Cagliari, Italy. E-mail: [pelligra@unica.it](mailto:pelligra@unica.it).

\* *Acknowledgments:* We thank all those who provided feedback and comments during the presentations of the preliminary work at the CIMEO Workshop on Experimentetrics & Behavioral Economics in Soletto, at the 11th BEEN in Bologna, at the University of Cagliari, at the Mohammed VI Polytechnic University, at the University of Crete, and at the University of Tilburg, whom they also provided their laboratory and subject pool for the experiment. We thank Jan Potters, Anna Conte, Luca Corazzini, Antonio Filippin, and Giorgio Coricelli for their comments and advice. We also thank Cristian Usala, who provided valuable advice on STATA codes.

Protocol was approved after review by TiSEM Institutional Review Board (IRB): approval EXE 2023-058. The study was pre-registered on OSF: <https://osf.io/m4phg>

## 4.1. Introduction

Two aspects of human decision-making are the effect of our choices on other subject and the individual's attitude towards risk. There exists a huge amount of evidence that show, on the one hand, that people are averse to risk and ambiguity and, on the other, that they very often act in an other-regarding manner. Risk aversion means that individuals prefer outcomes with low risk over those with high risk, even if the average outcome of the first is equal to or lower in monetary value than the riskier one (Kahneman & Tversky, 1979; Rabin & Thaler, 2001). On the other hand, ambiguity aversion implies that people prefer known risks over unknown risks, even when the unknown alternative can give a greater utility (Ellsberg, 1961; Machina & Siniscalchi, 2014). Other-regarding behaviors are driven by some form of concern for others' well-being and may be motivated by altruism, fairness, and reciprocity, but also spite and envy (see Cooper and Kagel, 2017 and Drouvelis, 2021). Risk-taking is often viewed as a "negative" quality (connecting it, for example, to impulsiveness or lack of caution), whereas altruism is typically perceived as a "positive" trait. We are interested in exploring the relation between these two important aspects of human decision-making. Previous studies have focused this link and more specifically on risk-taking for others (Eriksen et al., 2020; Polman & Wu, 2020), social preferences under risk (Gaudeul, 2015, 2016), sharing of risks (Brennan et al., 2008; Krawczyk & Le Lec, 2010), and the effect of risk on giving (Brock et al., 2013; Exley, 2016). However, to the extent of our knowledge, economists have paid little attention to the direct effect of altruism on risk-taking, a phenomenon that neuroscientist define "prosocial risk-taking", which consists of engaging in a risky decision to help other individuals (Do et al., 2017). The only economic study we could find focussed on the effect of altruism in risk taking is Mukherjee's (2022) who report a significant and positive correlation, particularly in the case of social risk-taking.

Our study aims to contribute to this emerging topic. In particular, we aim to understand if there is an altruistic effect on risk-taking, and so to test if altruistic acts (in this case, a charity donation) increase the likelihood of taking risks. This would suggest the existence of an "altruistic excuse to risk" bias, which makes people less risk-averse by justifying risk-taking through altruistic motives. The present study makes a contribution to the existing literature on decision-making anomalies in risk situations, with a particular focus on prosocial behaviours. It provides experimental validation for the findings of psychological and neuroscientific literature on this topic. Furthermore, it would also contribute to the field of marketing literature related to the development of public interest messaging and advertising communication (that can be utilized by firms, public policy, and non-profit organizations) that connects altruism and risk-taking. These results would provide an explanation for the effectiveness of certain

fundraising strategies, such as raffles, which combine lottery prizes with giving a part of the revenue to charity (eg. Scratch Cards sold by airlines). These strategies have been demonstrated to be highly effective in increasing donations and financing public goods (Bhati & Hansen, 2020; Carpenter & Matthews, 2017; Goerg et al., 2016; Morgan, 2000; Morgan & Sefton, 2000; Lange et al., 2007). This can also explain the success of viral trends like the “ALS ice bucket challenge”, which combines altruistic motives with “risky” activities (Fazio et al., 2023; Mukherjee, 2022). Finally, this study contributes to the literature on altruistic behavior as evolutionary characteristic because these psychological biases can explain what factors can favor the emergence of indirect reciprocity and cooperation (Axelrod & Hamilton, 1981; Fehr & Fischbacher, 2003; Nowak & Sigmund, 2005) and could help explain why some people risk their own lives to save the lives of others (Farthing, 2005; Hyman, 2006; Kelly & Dunbar, 2001).

We ran a lab experiment with three groups: in the first group (control), subjects played the standard Holt and Laury lottery. In the second group (karma belief), subjects could do “good”, that is, donating to a chosen charity an amount earned in a precedent real-effort task, to check the presence of positive “karma belief” that may decrease risk-aversion. In the third group (prosocial risk), subjects played a modified lottery task where they could choose between a safe option for themselves or a risky option that included a certain amount to be donated to a chosen charitable organization. By comparing observed behaviors in these different treatment groups we were able to identify an “altruistic excuse to risk” tendency among males by at the same time ruling out the effect of karma in the prosocial risk-taking group. In contrast, while being more altruistic, women become more risk-averse and prefer safer lotteries. Controlling for their altruism, there would seem to be an “excuse not to give” that leads them to risk less.

The rest of this paper is organized as follows: Section 4-2 provides the theoretical background and a discussion of the relevant literature on the interaction between risk-taking and prosocial behavior. Section 4.3 present a simple model for prosocial risk-taking, considering the effect of altruism on risk aversion. Section 4.4 describes the design of the experiment. Section 4.5 presents the main results and section 4.6 concludes.

## **4.2. Relevant literature**

### **4.2.1. The deep link between prosocial behavior and risk-taking**

Altruism and risk-taking, often seen as opposing traits, are closely linked. Evolutionary anthropology shows that humans have evolved social strategies like cooperation and sharing to adapt to risks (Tucker & Ferson, 2008). Neuroscientific studies reveal that the same brain regions are activated for both prosocial and risky decision-making, suggesting a genetic basis for their connection (Do et al., 2017; Hu et al., 2017; Huettel et al., 2006; Jabbi et al., 2007; San Martín et al., 2016; Singer et al., 2009; Xiong et al., 2020). Research, including studies on twins, indicates that risk and giving preferences are heritable, accounting for about 20% of individual variance (Cesarini et al., 2009).

Adolescents are studied extensively due to their brain still developing, demonstrate a positive correlation between risk-taking and prosocial behaviors over time (Armstrong-Carter et al., 2022; Blankenstein et al., 2020; Armstrong-Carter et al., 2023). The concept of "prosocial risk-taking" may refer to risky actions that benefit others, such as defending a bullying victim (Do et al., 2017). A Prosocial Risk-Taking Scale has shown that this behavior correlates with empathy and sensation seeking but negatively with general risk tolerance (Armstrong-Carter et al., 2021). Different types of individuals emerge from combining altruism and risk aversion (see Appendix 4.B). Prosocial risk-takers are perceived as more trustworthy and kinder, enhancing the likelihood of future cooperation (Ames et al., 2004; Capraro & Kuisler, 2016; FeldmanHall & Shenhav, 2019; Jordan et al., 2016; Kappes et al., 2018; Perez-Escudero et al., 2016; Xiong et al., 2020).

Although seemingly non-adaptive, heroic behaviors are prevalent and often preferred by women in mates, suggesting an evolutionary advantage (Farthing, 2005; Kelly & Dunbar, 2001; Margana et al., 2019). Studies show men, particularly young ones, are more likely to engage in risky rescues, a trend consistent even with changes in gender roles in hazardous jobs (Hyman, 2006). This gender difference hypothesis has been corroborated by experiments (Alves de Amorim et al., 2018; Cavalcanti & Leibbrandt, 2024), although certain limitations must be acknowledged. These include the relatively small sample involved, the lack of specificity in the experimental design, and the fact that deception was used.

#### **4.2.2. Optimism and karma belief: a link between altruism and risk-taking?**

Mukherjee's survey (2022) found that altruism and risk-taking are positively correlated and linked with optimism. This relationship extends to uncertainty, as individuals with higher ambiguity tolerance are more optimistic about favorable outcomes in social contexts, such as repairing trust or cooperation (Pulford, 2009; Wally & Baum, 1994). Optimism may connect altruism and risk-taking due to shared neural bases and karma.

Karma, a principle in many religions like Hinduism, Buddhism, and Sikhism, suggests that good and evil deeds have repercussions in this life or the next. Belief in karma is influenced by cultural traditions and is positively correlated with belief in God and the afterlife among Hindus, Buddhists, and Sikhs, but negatively among Christians (White et al., 2018). Cross-cultural studies indicate that karma belief is like the "belief in a just world" (Furnham, 2003; Hafer & Begue, 2005; Lerner, 1980; Lerner & Miller, 1978; Reich & Wang, 2015; White et al., 2018).

Experiments with children show that belief in karma emerges naturally and is not solely influenced by family religion (Banerjee & Bloom, 2017). Adults also exhibit karmic behaviors – called "karmic bargaining" – such as believe that donating to charity could improve life outcomes, especially when they feel the outcomes are beyond their control (Converse et al., 2012). However, this behavior is not purely selfish, as people who believe strongly in karma are likelier to donate when they think only the recipients will benefit (Kulow & Kramer, 2016). Priming karma beliefs can increase honesty and reduce selfishness (White et al., 2019; Wiese, 2023).

Karma belief, part of a "teleological bias" to see life as meaningful, might naturally develop independent of education types and serve as a psychological adaptation to maintain optimism and life satisfaction (Banerjee & Bloom, 2013, 2014, 2015; Kelemen, 1999; Willard & Norenzayan, 2013; Correia et al., 2009; Jiang et al., 2016). It relates to moral superiority and optimism biases: people see themselves as more moral and expect better outcomes (Tappin & McKay, 2017; Sharot, 2011; Weinstein, 1980, 1984, 1987). Experiments show guilt leads to risk aversion, while pride leads to risk-taking (Mancini & Gangemi, 2004). Optimism bias increases when people feel morally superior, but karma belief wasn't a significant moderator in some studies, possibly due to methodological issues (Teeuwen & Stavrova, 2020).

### 4.2.3. Experiments on the interaction between altruism and risk

Experiments on the interaction between altruism and risk reveal a tendency to be more risk-averse for others' benefit than personal gain. For example, in Dictator games with risky outcomes, people are more averse to charity risk than self-risk, using uncertainty as a moral wiggle room to justify less generous behavior without feeling guilty (Bar-El et al., 2023; Brock et al., 2013; Freundt & Lange, 2017; Garcia et al., 2020; Gauriot et al., 2022; Exley, 2016). Regarding taking risks for others, the extensive literature on economics and psychology has used different methodologies, framing the choice in different ways (accountability, agent theory, prosocial behavior, etc.), obtaining mixed results (Eriksen et al., 2020; Polman & Wu, 2020). Other experiments focus on social preferences fairness in probabilistic Dictator Game, founding that people prefer to play fair but risky social lotteries rather than receive safe but unfair social outcomes. Subjects are also more risk-averse when facing social lotteries than those that only involve themselves (Brennan et al., 2008; Brock et al., 2013; Gaudeul, 2015, 2016; Krawczyk & Le Lec, 2010). There is still a gap in understanding what factor could explain this behavior since the propensity to increase the other's payoff in the interpersonal risk task did not significantly correlate with the prosocial behavior in the standard dictator game (Bradler, 2009). Studies with other games obtained similar results (Kwak et al., 2014; San Martin et al., 2016; Selten & Ockenfels, 1998).

Literature on lying – a behaviour that shares common brain areas with risk-taking and prosocial behavior (Greene & Paxton, 2009; Ruff & Rothbart, 2001) - shows an interesting pattern: people lie more if they can justify it with an altruistic motive (Gino et al., 2013; Wiltermuth, 2011). This suggests a possible "altruistic excuse to risk," where individuals might take risks for altruistic reasons without feeling guilty about potential losses. Regarding the literature on giving, people seem to experience greater happiness when they spend on others than on themselves (Dunn et al., 2008); however, contrary to the literature on lying, if altruistic and selfish motivations are combined, the intention to give might decrease (Alempaki et al., 2023; Feiler et al., 2012). A recent experiment (Chen & Zhong, 2024) found that people behave more altruistically in situations of uncertainty. The researchers hypothesized that this mechanism is due to the anxiety associated with uncertain situations, which leads subjects to behave more altruistically to secure an outcome (thus considering the "karmic bargaining" hypothesis).

In conclusion, the intertwining of altruism, risk-taking, and optimism, influenced by beliefs like karma, reveals complex motivations behind human social behaviors. Understanding these interactions can provide insights into why people might take risks for the benefit of others and how cultural and psychological factors shape these decisions.

### 4.3. A theoretical model for altruism effect on risk

Various models have been developed for conditions under risk (Machina & Siniscalchi, 2014; O'Donoghue & Somerville, 2018) and for considering altruism and social preferences (Fehr & Schmidt, 2006). Some models have attempted to combine uncertain situations with prosocial behavior. Gauriot and colleagues (2022) used a Constant Relative Risk Aversion utility function (CRRA) to integrate the jointly elicited risk and altruistic preferences obtained by lotteries, estimating two different risk parameters depending on whether one is risking for oneself or for others. Stark et al. (2022) developed a model with probabilistic payoffs that connects risk preferences (measured by the coefficient of relative risk aversion) with altruism, which they formalized as the willingness to give part of their payoffs to another. They assumed that the relative risk aversion is a function of the altruism coefficient because, according to their hypothesis, an altruistic person is more risk-averse than a non-altruistic one. Finally, Elmshausen (2022) used a model that considers heterogeneous levels of altruism and ambiguity to explain behaviors in the centipede game.

In our model we assume a CRRA power form (Brurhin et al., 2010; Dohmen et al., 2023; Lattimore et al., 1992) for the utility function of the subjects  $i \in \{1, \dots, N\}$ . This is a convenient choice for several reasons. Firstly, it requires only one parameter for the curvature, which is a significant advantage. Secondly, it is one of the most commonly used models and has been shown to fit a wide range of data. Thirdly, we are interested in relative risk aversion. Finally, we do not have situations with zero outcomes in the lotteries, which would make the model less applicable.

$$U(X_g) = \begin{cases} \frac{X_g^{1-r_i}}{(1-r_i)}, & \infty < r_i < \infty \\ \ln(X_g), & r_i = 1 \end{cases} \quad X_g \geq 0$$

Where  $X_g$  is the monetary payoff of lotteries and  $r_i$  the curvature of the utility function. In the following, we will refer to this parameter as the “risk aversion parameter” for simplicity, as it will be the only risk aversion parameter considered. If  $r$  is equal to 1, the function is transformed using logarithmic to avoid the undefined behavior of one over zero. Every subjects  $i$  evaluates every binary lottery  $\mathcal{G}_g = (X_{1g}; p_{1g}; X_{2g})$ ,  $g \in \{1, \dots, G\}$  where  $|X_{1g}| > |X_{2g}|$  (so where  $X_{1g}$  is the desired outcome), and so the estimated lottery’s relative utility will be:

$$U(\mathcal{G}_g) = U(X_{1g})w(p_{1g}) + U(X_{2g})(1 - w(p_{1g}))$$

From this equivalence, we can get the risk-taking behavior of each individual. Given this basic model, which remains the reference one in case there is no altruistic behavior involved (as in our first and second groups), we extend it integrating with altruism. In the modified Holt & Laury lottery that we use in the third treatment of our experiment, the monetary payoff  $X_g$  is composed by a part that direct benefit the subject  $i$  ( $X_{Mg}$ ) and another part that is donated to charity ( $X_{Dg}$ ). We assume that subjects have social preferences (Margolis, 1984), so the utility also depends on charity donations, introducing the altruism parameter  $\alpha_i$  that weighs the utility obtained from and the amount donated. We assume it can take a value between  $0 \leq \alpha_i \leq 1$ . We can measure the individual altruism parameter with the Dictator Game ( $\alpha_i = \text{donation} / \text{budget}$ ): because the payoff for others goes to charity, we can avoid considering other factors, such as inequality aversion. Because in the lotteries for prosocial risk behavior the risky choice guarantees a payoff for others, the utility given by the possible outcomes is therefore now (see Appendix 4.C for the Mathematical Appendix with further details):

$$U(X_g) = \begin{cases} \frac{[(1 - \alpha_i) X_{Mg} + \alpha_i X_{Dg}]^{1-r_i}}{(1 - r_i)}, & \infty < r_i < \infty \\ \ln((1 - \alpha_i) X_{Mg} + \alpha_i X_{Dg}), & r_i = 1 \end{cases} \quad X_{Mg} \geq 0; X_{Dg} \geq 0; 0 \leq \alpha_i \leq 1$$

Different from Gauriot and colleagues (2022), we can use this model that assumes only one risk parameter since the payoff in charity is always certain if the risky lottery is chosen, thus not having to consider how risk aversion changes in the case of lotteries for oneself or others. In fact, in this specific scenario we have that  $X_{Dg} = X_{D1g} = X_{D2g}$  both for risky and safe lotteries (in the latter case, it will be equal to 0).

In the case of the excuse not to give, the weight of altruism on payoffs should be less than the subject's actual weight in a non-risk situation, thus leading to greater risk aversion than estimated. In contrast, in the case of excuse to risk, subjects would be more risk-seekers by giving more weight to the payoff in charity than to their actual levels of altruism. When subjects are entirely self-interested ( $\alpha_i = 0$ ), the model coincides with the previous one without altruism. If, on the other hand, subjects are extremely altruistic by donating everything to charity ( $\alpha_i = 1$ ), the model predicts that they will always choose the risky lottery (as the only one with a payoff to a charity).

The utility function exhibits the expected properties of continuity and differentiability for  $X_g > 0$  and  $0 < \alpha_i < 1$ , and it shows appropriate monotonic behavior with respect to  $X_g$ . The behavior with respect to  $\alpha_i$  varies, reflecting the trade-off between personal and altruistic payoffs (details in Appendix 4.C).

The choice of the lotteries depends on every condition's respective payoff and weighted probability  $w(p_{1g})$ , given by a linear-in-log-odds function (Dohmen et al., 2023; Lattimore et al., 1992):

$$w(p_{1g}) = \frac{\delta_i p_{1g}}{\delta_i p_{1g} + (1 - p_{1g})}, \quad \text{with } \delta_i \geq 0$$

Where  $p_{1g}$  is the probability that the desired monetary payoff  $X_{1g}$  will occur and  $\delta_i$  is the curve elevation parameter of the weighted probability function. In contrast with the previous studies, we assume, for simplicity, that the curvature parameter of the probability weighting function is equal to 1. This is because we use a single lottery (the use of more could have undermined the effect of prosocial risk taking in the task). Consequently, to derive the individual parameters to risk (in this case only of the curvature of utility function, without the weighted probability function), we did not use an estimation method based on the Maximum Likelihood Estimator, but we used an iterative solution and substituted into the mathematical formulas the values obtained from the different tasks, namely altruism (from the Dictator Game), optimism (from the Optimism Game), and switching point (from the Holt and Laury lotteries, which tells us the whether a utility of one lottery is greater than another).

The curve elevation is instead mainly regulated by the parameter  $\delta_i$ , which also measures the relative levels of optimism. The larger the value of  $\delta_i$  for gains, the more elevated is the curve, and so more weight is given to each likelihood consequently ceteris paribus, the more optimistically the forecast is valued for the desired outcome (in this case, we have assumed be  $X_{1g}$ ). We can get this parameter from an Optimism game (Corazzini et al., 2015); we will see in the next section. Subjects with  $\delta_i < 1$  are pessimists, those with  $\delta_i = 1$  are realists, and those with  $\delta_i > 1$  are optimists. Taking into account optimism, in addition to improving risk estimates, allows us to analyze whether it is related to a belief in karma. In case it is present, it might lead subjects to be less risk averse by increasing their initial optimism.

The karma belief bias and prosocial risk-taking cannot be measured with a task, but we can measure their effect by comparing the risk aversion parameters of the control group with the first and second treatments, respectively. Regarding the model's structure and parameters, they will be used to obtain the risk aversion to be used as the dependent variable in the analyses.

#### 4.4. The experiment: design, procedures and behavioral hypotheses

We ran the experiment at Tilburg University Experimental Lab with a total of 315 subjects, 105 for each of the three treatment groups<sup>21</sup>.

Once in the lab participants had to complete five tasks plus a final questionnaire. Before starting the experiment, the experimenter reads the instructions aloud while the subjects read them into the computer screen. At the end of this introductory part, if there are no questions, the subjects must answer three comprehension questions. The average payoff for participating in the experiment is 8 euros, plus a 5 euros show-up fee and the possibility of donating at least one euro to charity independent of one's payoff. The instructions (see Appendix 4.D) clearly explain how the final earnings uniquely depend on the outcome of one single task – except the effort task, which we will explain later – and to consider every task as independent and avoid the money house effect. Subjects were randomly compensated for their participation in the experiment. The system selected an activity for each participant with the same probability of selection ( $p=1/4$ ) from the Dictator game, the Eckel-Grossman lottery, the Optimism task, and the Holt & Laury lottery. At the end of the experiment, participants were informed of the results and the activity that was chosen for final payment to avoid influencing their optimism. Additionally, participants were given the option to donate a portion of their payment to a charity of their choice.

We describe below the five tasks of the experiment – although the order of the first three tasks was randomized by session – and only the fourth task differs across groups (see Appendix 4.D). The first task is the Dictator Game (“Allocation Task”), where the subjects can keep for themselves part of the total budget of 10 euros. The other part can be donated to a charity organization chosen from a list (Médecins Sans Frontières, Red Cross, UNICEF, WWF, Greenpeace)<sup>22</sup>. It also allows subjects to indicate one of their choices in the “Other” option. This allows the measurement of altruistic behavior based solely on empathy, without confounding factors like reciprocity, recipient identity, and inequality aversion (Cartwright & Thompson, 2023; Cesarini et al., 2009; Eckel & Grossman, 1996; Fong, 2007). Furthermore, the single-role protocol is more accurate in measuring altruism preferences than the dual-

---

<sup>21</sup> We aimed to reach a sample size of 105 subjects for each of the three groups based on the *a-priori* power analysis for a comparison of two groups ran on STATA, considering a minimum effect in risk parameter change of 0.5 (i.e., one level jump in lotteries), a standard deviation of 1 (i.e., two levels of risk above and below), and a power of 0.95 (higher than the standard 0.80, to allow us to perform subgroups analysis). The experiment design has been pre-registered on OSF (<https://osf.io/m4phg>), and Tilburg University IRB approval was obtained.

<sup>22</sup> These charities have been chosen to try to include various causes (children, environment, animals, health) so as not to force the choice on one but also not to cause confusion by too many choices. The order of the charities is random.

role one because, in the latter, the dictator might empathize with the recipients or, on the contrary, feel less responsible (Grossman et al., 2020). The altruism parameter is obtained by weighing the utility gained from a payoff for oneself and the utility gained from donating. Since we are using charity donations, subjects may exhibit more altruistic behavior than in a standard dictator game with another participant (Cartwright & Thompson, 2023). To avoid downward bias in the donation, we frame the choice as “keep and give” instead of only “donate”, as demonstrated in various experiments (Keser et al., 2023; Korenok et al., 2018; Zarghamee et al., 2017).

The second task is the Optimism Game (“Card Task”), where we can measure the optimism of the participants using an incentive-compatible game (Corazzini et al., 2015). In this game, a random sample of 21 covered cards is selected from a maze of 52 poker cards, and each participant picks one card from the sample that is retrieved: for each card that matches their color, they receive 0.70 euros. Afterward, participants were asked to estimate how many of the 21 cards would match their color and offered a reward of 5 euros if they proved true: these beliefs captured the optimism of the subjects. The expected value is 11 cards (considering the Bayesian probability conditional on already choosing a card of that color), so higher values indicate an optimistic view, while lower ones are pessimistic. The optimism parameter is calculated by normalizing the number of cards selected by 11. This task was chosen to measure optimism because, unlike questionnaires, it uses an incentive task. Additionally, it can measure optimism in risk-taking situations where the probability is known.

The third task is the Eckel and Grossman (2008) lotteries list (“Decision Task”), whose usefulness is to check whether subjects from different groups have similar risk attitude. Furthermore, the risk parameters estimated with this lottery have been shown to be consistent in subjects with experience in experiments, such as the lotteries listed in task four, and the lotteries list is easy to understand (Charness & Chemaya, 2023; Charness et al., 2023). Finally, we can test whether a greater gender difference is present using this elicitation method (Filippin & Crosetto, 2016).

The fourth task is a standard Holt & Laury task (2002). We chose to use Holt & Laury lotteries because they are easier to understand by the subjects with respect to BDM (Asioli et al., 2021), allowing us to compare a risky situation where there is a certain amount that can be given to a charity and a risky situation where the exact amount is for self, as well as proven to be consistent (Charness & Chemaya, 2023; Ert & Haruvy, 2017). If subjects make inconsistent decisions, where they prefer safer lotteries after having chosen a riskier one with a lower probability of realizing the positive payoff (“backward” choices), a warning message appears saying: *“In making your choices at some point, you switch from*

column B back to column A. Verify if it is not a mistake, otherwise go ahead”. In this phase, we aim to measure risk aversion and, as explained later, the effects of prosocial risk behavior and karma beliefs. This task is the only one that differs across the groups.

Subjects in the first group (T0) – the control group – did the standard lotteries list, where they had to choose between a safe and a riskier option (see Table 1).

TABLE 4.1 – GROUPS AND TASKS ORDER

<b>Control (T0)</b>	<b>Karma belief (T1)</b>	<b>Prosocial risk (T2)</b>
Standard H&L lotteries	Effort task	Modified H&L lotteries
Effort task	Standard H&L lotteries	Effort task

The second group (T1) – the “karma belief” group – follows a similar structure, but in this case, we aim to analyze the presence of a karma belief bias. So, before playing the same lotteries as the control group, subjects could choose to do an effort task with 32 sliders (De Araújo et al., 2016; Gill & Prowse, 2012) called “Independent Task” and to donate the amount earned to a chosen charity. In the case of a donation, they receive a message thanking them for their good behavior in order to induce a belief in karma (but avoiding an experimental demand effect). We chose to leave the option to not complete the task, to make it a free choice to mimic karmic bargaining. Moreover, it allows us to compare altruistic-karma believer subjects, who chose to do the effort task, with the selfish ones who did not. In fact, subjects in the first and third groups could also do this effort task, but after the lottery tasks. The amount that can be donated to the charity is fixed for everyone (1 euro) and can be obtained only by completing all 32 sliders. We chose to use a fixed amount to avoid heterogeneity and to be comparable with modified lotteries (where, as we will see, the amount to charity is always 1 euro). We assume that the decision made in the Dictator game does not elicit karma belief bias for two reasons: the first is that the task is only “potential” in contrast to the concrete act in the effort task; the second is that in the Dictator game is only a decision made, whereas the effort task is an action that requires commitment, similarly to karmic bargaining.

Finally, in the third group (T2) – the “prosocial risk” group – subjects did a modified lotteries list, where they can choose between a safe outcome for themselves against a risky payoff consisting of a sure part (equally split between the subject and the charity – 2 euro) and a risky part. The amount of the risky

payoff is the same as the standard one, while a certain part of the risky payoff has the amount of the standard one equally shared between self and a charity.

Given these different treatments, two main hypotheses will be tested:

-  $H_1: r_{T0} > r_{T1}$ . *The karma belief group subjects will exhibit more risk-seeking behavior than the control group*

Comparing risk aversion (as switching points and as estimated risk parameters  $r_i$ ) obtained in standard lotteries of the control group (T0) with the one in karma belief (T1), we can test if there is a karma belief bias, and so if subjects become less risk averse. Moreover, we are checking whether there are differences between religious and non-religious people (Banerjee & Bloom, 2017; Malhotra, 2010; White et al., 2018).

-  $H_2: r_{T0} > r_{T2}$  *The prosocial group subjects will exhibit more risk-seeking behavior than the control group.*

Comparing risk aversion (as switching points and as estimated risk parameters  $r_i$ ) obtained in standard lotteries in T0 (and T1, if there is karma belief bias) with those obtained in the modified lotteries list in T2, we can test if there is a prosocial risk-taking effect if subjects became less risk averse (or have the same risk aversion) but are more selfish in the Dictator Game. In fact, this would represent non-rational behavior: if they are more selfish, they should prefer the safe lottery even more since they would value the payoff of the risky one even less. On the other hand, if they were more risk averse, there might be an excuse not to give. This comparison will be made especially by checking whether there are differences between men and women (Farthing, 2005; Hyman, 2006; Kelly & Dunbar, 2001; Margana et al., 2019). In contrast to the design proposed by Cheng and Zhong (2024), this design allows for the estimation and separation of the effects of karma belief and prosocial risk-taking in case there is an altruistic excuse for the risk-taking phenomenon.

The subjects have previous experience with experiments, so their decision on risk-taking might be more consistent in Holt & Laury lotteries and Eckel-Grossman lotteries (Charness & Chemaya, 2023; Charness et al., 2023; Ert & Haruvy, 2017). At the end of the experiment all the subjects had to complete a questionnaire (see Appendix 4.D). We collected various demographic data to understand the heterogeneity in many parameters, like risk aversion (females are usually more risk averse) (Byrnes et al., 1999; Charness & Gneezy, 2012) and altruism (females, healthy persons, and non-economists are usually more altruistic) (Croson & Gneezy, 2009). We also use general questions about altruism,

reciprocity, trust risks, ambiguity, and time preferences: it has been proved that they are a good predictor for attitude and are widely used to compare different populations (Dohmen et al., 2011; Falk et al., 2018, 2023). We chose to use a Likert scale with ten levels (from “strongly disagree” to “strongly agree”): we chose an even value of the scale to avoid neutral bias (while the other Likert scales follow the validated by each study). We also use four questions regarding ambiguity preference (Cavatorta & Schröder, 2019) to check if it is a good predictor of prosocial behavior under risk (Vives & FeldmanHall, 2018), but we couldn’t use it as due to its low Cronbach's alpha (less than 0.43).

We also use a short version of the Big Five test with ten items and a five-point Likert scale (Rammstedt & John, 2007) because personality might be important in risk preference and prosocial behavior. In fact, some studies found that risk propensity is positively correlated with extraversion and openness and negatively correlated with neuroticism (Becker et al., 2012; Nicholson et al., 2005), while prosocial behavior and altruism are positively correlated with agreeableness and extraversion (Becker et al., 2012; Dargan & Schermer, 2022; Trishala, 2021). We leave the questions at the end to avoid influencing the subjects' behavior in lotteries and games. We developed a Prosocial Risk-Taking Scale with a five Likert scale like Armstrong-Carter and colleagues (2021) that can also be used for non-adolescent subjects, and we will check if prosocial risk-taking will be positively correlated with prosocial behavior, empathy levels, and sensation seeking, while negatively correlated with risky behavior and risk tolerance. We measure life orientation-optimism and belief in karma with a seven-point Likert scale (Do and colleagues, 2017; Mukherjee, 2022). We can experimentally validate all these scales by checking if they are correlated with the relative estimated parameters. Finally, we asked about other subjects' expected behavior regarding choices in the dictator game and how they evaluate from the perspective of social appropriateness the different scenarios in the dictator game (Eckel et al., 2023) using the Krupka-Weber method (Krupka & Weber, 2013). This last question is given that it is situated after questions and tasks that could act as priming, as well as after different treatments, it was done as an exploratory analysis for future studies on prosocial behavior and social norms (House, 2018).

## **4.5. Results**

### **4.5.1. Data and Descriptive Analysis**

The experiment was conducted at Tilburg University's CentERlab facility, using the university's student subject pool. Each subject received a participation fee of five euros. The experiment was programmed

using the open-source platform oTree (Chen et al., 2016). Fourteen experiment sessions were conducted between November 24 and December 7, 2023. The participants were randomly assigned to one of three treatments in a two-step process. First, upon entering the laboratory, they selected a card from a deck of turned cards containing the workstation number. Then, at the beginning of the experiment, the system randomly assigned them to a treatment. A total of 535 slots were made available for the experiment, and 418 students booked sessions. Ultimately, 351 observations were collected (with an average show-up rate of 84%). Some of them were removed for different reasons<sup>23</sup>. After data cleaning, we have a final sample of 271 observations. The sample size is slightly smaller than that obtained from the a priori power analysis, but the sample's standard deviation is much smaller than that of the a priori estimates, making it reliable for analysis. Proper randomization was assessed using several methods. A multinomial logit model was used with the treatment group as the dependent variable and the different characteristics as independent variables. The findings indicated that there were no significant differences between the characteristics of the different groups. Correct randomization was also confirmed by comparing different groups using various tests, including the Hotelling test (using all main subject characteristics), Pearson Chi-Square test, Spearman test, and Wilcoxon rank sum test (specifically by gender, religion, and the values of the first three tasks). Table 2 shows that the groups have a balanced number of observations, age, gender (with slightly more women), and similar in terms in optimism, altruism, risk aversion, lotteries, and importance of religion.

The average age of the subjects is 21 years and four months. They exhibit a slight tendency towards pessimism and donate an average of 2 euros in the Dictator Game. In terms of university schools, the majority of participants (59.41%) are from the School of Economics and Management, followed by the School of Social and Behavioral Science, followed by the School of Social and Behavioral Science (16.24%), the School of Humanities (12.55%), and the Digital Sciences and Law School (11.44%). Most participants are bachelor's students (72.69%), with the remaining 25.09% being master's students. Taking

---

<sup>23</sup> We dropped out: subjects who did not indicate any charity because of a bug (9 observations); however, we give the money they earned to a charity randomly selected. Subjects with inconsistent (multiple switches, 36 observations) or irrational choices (preferring a lower certain payoff to a higher certain one, 11 observations) in the Holt and Laury lotteries (43 observations). Non-binary subjects (3 observations) because they were too few to have reliable estimations. Subjects who skipped the effort task (25 observations). This is for two reasons: the first is that in the “karma” group, we could not have considered them since they would not have performed a “good deed” before the lotteries; the second is because those who skipped the task are disinterested in the charities (since they were not losing anything of their payoffs). We kept 11 subjects who had completed 28 out of 32 sliders and were not in the karma groups. These subjects might not have completed the task due to a page bug, but they probably had a positive intention to donate. There is no significant difference in dropout rates between the three groups, with the exception of a slight increase in the number of subjects who exhibited inconsistent behavior in the prosocial group. This may be attributed to the complexity of the task

into account the observations dropped, the average payoff was 12.71€ (including 5€ show-up fee) with an average donation of 1.38€ and a total charities donation of 487€. 90% of the subjects declare to understand the instructions between 4 and 5 on a scale from 1 to 5.

As found in the literature, males tend to be less altruistic, donating an average of one euro less in the Dictator Game, with 50% of males donating nothing, as shown in Figure 4.1. Additionally, males tend to be one point more risk-seeking on average, particularly in Eckel and Grossman lotteries, probably due to this specific type of elicitation method (Filippin & Crosetto, 2016). These results are also confirmed by different tests. On the other hand, there appears to be no difference in optimism in the Card Game (Figure 4.2). According to recent study findings by Umer and colleagues (2022), dictators share approximately 20% of their endowment. Additionally, when dictators play with a charity of their choosing, the average donation value increases from 1.88 to 4.58, as found by Livingston and Rasilmukhamedov (2023).

TABLE 4.2 – MAIN DESCRIPTIVE STATISTICS OF GROUPS AND POPULATION

	Control	T1 (Karma)	T2 (Prosocial)	Total
Holt & Laury switch	5.55	5.81	6	5.79
Eckel-Grossman (inverted) choices	6.05	6.25	6.04	6.12
Dictator Game altruism	2.04	1.97	1.98	2
Card Game optimism	0.9	0.89	0.9	0.89
Male	48%	45.6%	46%	46.5%
Age	21 years 6 months	21 years 8 months	21 years 2 months	21 years 4 months
Religion importance	1.83	1.82	2.08	1.91
N	90	92	89	271

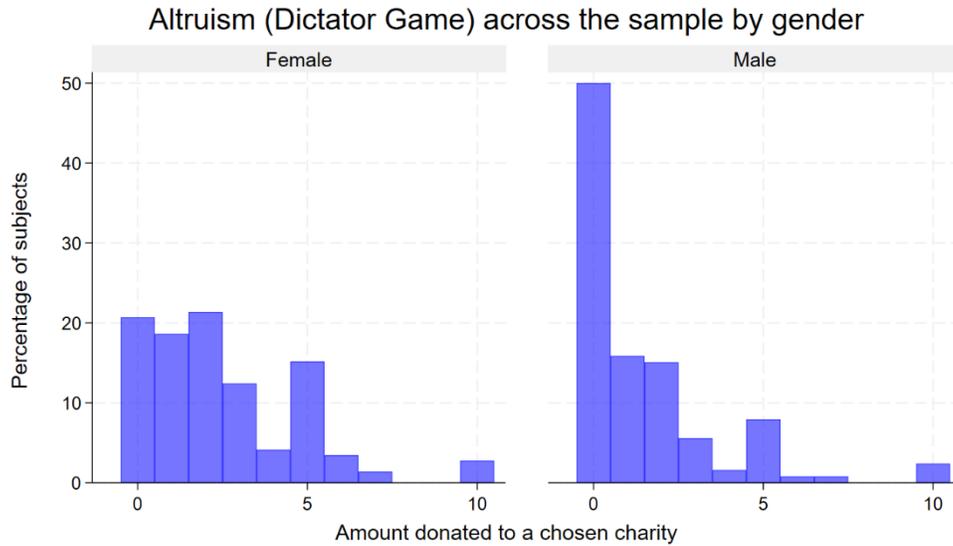


FIGURE 4.1. DICTATOR GAME DONATIONS BY GENDER

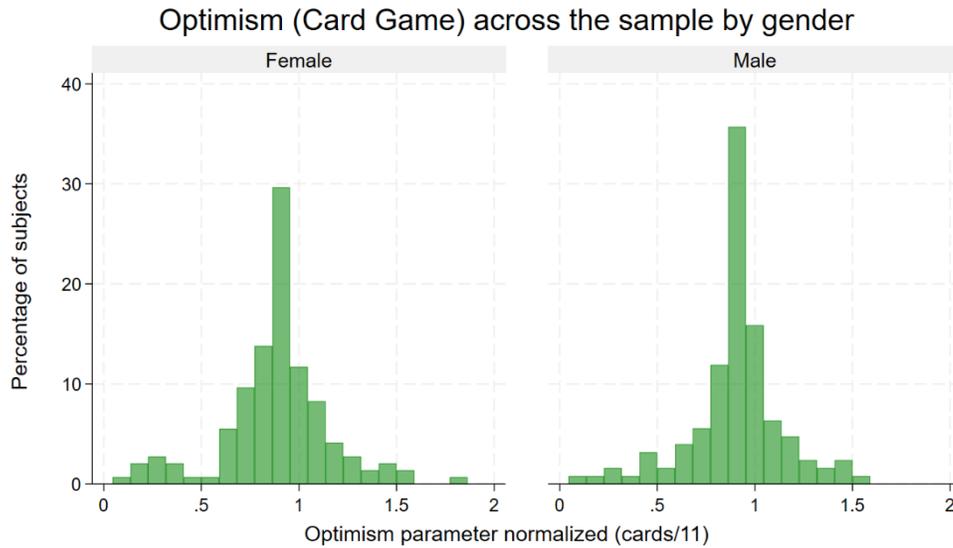


FIGURE 4.2. CARD GAME OPTIMISM BY GENDER

The General preference survey variables are found to be correlated with the respective behaviors (such as risk aversion in lotteries and levels of altruism with choices in the Dictator Game). In contrast, the Big Five's psychological characteristics are not particularly relevant in predicting behaviors. Concerning risky behavior, smoking is correlated with risk propensity (in Eckel and Grossman lotteries) but not with alcohol drinking and self-reported health.

#### 4.5.2. Econometric analysis

We consider as dependent variables the choice of switching point in Holt & Laury's lotteries and related risk parameters obtained from the CRRA model with altruism and optimism from Section 4.3. We use nonparametric tests (Spearman, Wilcoxon rank sum, and Kruskal Wallis test) for both. We then use Ordered Logit models for the switching point and interval regression models for the risk parameters. In all cases, we assume standard errors are robust to heteroskedasticity (although the results obtained can be confirmed using standard errors for clusters based on schools or task order in the sessions).

Instead, sex, age, religion and its importance in life, and the values of the first three tasks (altruism in the Dictator Game, optimism in the Card Game, and risk aversion as measured in the Eckel and Grossman lotteries) are used as main independent variables for the models. However, we do not use the risk aversion obtained with Eckel and Grossman in the model with all subjects due to the gender-specific difference (Filippin & Crosetto, 2016). Education, which is correlated with age, was not used as the main independent variable. However, the results did not change even this, and the different faculties were included. As additional controls, we use the values obtained from the Big Five personality traits, the responses from the General Preference Survey, and the three questionnaires on optimism, karma belief, and prosocial risk-taking behavior. Moreover, even when considering all variables (such as self-reported health and risky behavior, experience in other experiments, understanding of instructions, altruism expected by others, and order of the first three tasks), changing the functional forms (Ordered Probit, OLS linear regression, or risk parameters obtained without optimism), or by including inconsistent subjects (obtaining the switching point as the ratio of safe to total choices, as Holt and Laury do) and those who skipped the effort task (who showed that they are not interested in the charity), the main results do not change (see Table 4.A.1 and 4.A.2 in Appendix 4.A).

-  $H_1: r_{T0} > r_{T1}$ . *The karma belief group subjects will exhibit more risk-seeking behavior than the control group*

Regarding the karma belief hypothesis, if we compare the risk aversion values of the control group with the first treatment group, both using the different nonparametric tests and looking at the significance of the group coefficient in the models, the high p-values lead us never to reject the null hypothesis that the difference between these is not significantly statistically different from 0. This result remains confirmed even considering population subgroups (such as gender or religiosity). In contrast to the control group, none of the subjects in the karma group decided to switch immediately to the risky choice (see Figure 4.3).

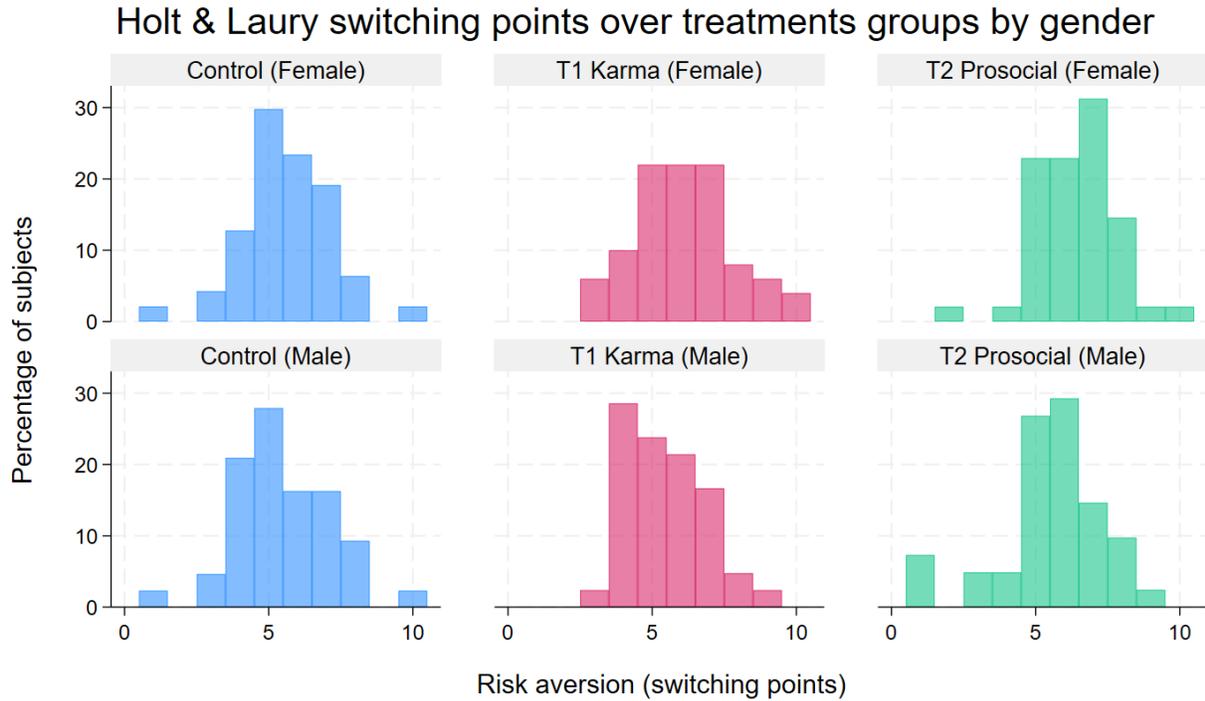


FIGURE 4.3. HOLT & LAURY SWITCHING POINTS DISTRIBUTIONS OVER GROUPS BY GENDER

-  $H_2: r_{T0} > r_{T2}$  The prosocial group subjects will exhibit more risk-seeking behavior than the control group.

When considering the prosocial risk-taking behavior hypothesis, the results become more complex, comparing the control group with the second treatment. Nonparametric tests conducted on the entire sample led us to reject the null hypothesis that the difference between the values of the two groups is statistically significant, with p-values of approximately 0.0165. When analyzing the coefficient of the second group in the Ordered Logit models, it takes, on average, a value of 0.6 with mildly significant p-values (with values ranging from 0.017 to 0.06) in the different models by including the different controls. However, when robustness checks are performed, the second treatment's coefficient becomes less statistically significant (as in the case of OLS linear regression). This coefficient is also not statistically significant when considering interval regression for the risk parameters obtained with the CRRA model with optimism and altruism.

Previous studies have shown that prosocial risk-taking (or heroic) behaviors are mainly performed by men (Hyman, 2006) and viewed as a positive signal by women (Farthing, 2005; Kelly & Dunbar, 2001; Margana et al., 2019). Figure 4.4 shows the average switching point between groups by gender: we note that in the case of men, risk aversion does not seem to increase as it does in the case of women and as should have been the case according to the predictions of the CRRA model (obtained using the mean risk aversion of the control group and the mean values of optimism and altruism of the prosocial risk group). Furthermore, if we look at the distribution of switching points in Figure 4.3, we see that none of the male participants in the prosocial group chose to switch at the end, in contrast to the control group and the same group of females. From one subject deciding to switch immediately to the risky choice in the control group, it changes to three (while for the women, on the contrary, it changes from 1 to 0). We then analyze whether heterogeneity for gender is present in prosocial risk-taking lotteries by conducting analyses for the two subsamples.

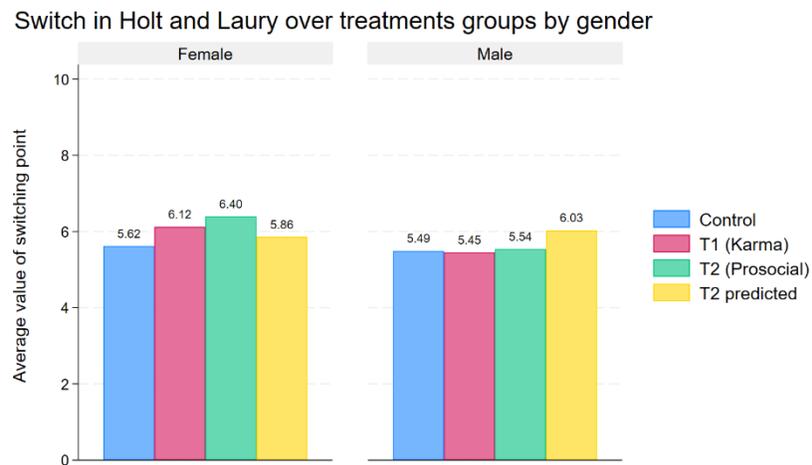


FIGURE 4.4. AVERAGE SWITCH IN HOLT & LAURY LOTTERIES OVER GROUPS BY GENDER

We begin the analysis by considering the subsample of women: using the previous nonparametric tests, we reject the null hypothesis that the switching points between the prosocial treatment and control group are equal, with a p-value of about 0.0075 (see Table 4.3). The second treatment coefficients in the different Ordered Logit models are always significant (with p-values ranging between 0.004 and, at most, reaching 0.032 by including all controls) and take a value ranging from 0.927 to 1.05 (see Table 4.4). Other factors that appear to be influential are risk aversion as measured by Eckel and Grossman (found to be positively correlated) and religiosity (more religious women are risk-seeking, contrary to Noussair and colleagues (2013)). Considering the models with interval regression for the parameters, the

coefficient of treatment is not significant, while the coefficients of the tasks of altruism and optimism are significant (with p-values always less than 0.024, with the exclusion of optimism that became not significant using all controls) and have a positive sign (see Table 4.5). These results together indicate that there does not seem to be any phenomenon of altruistic excuse to take risks for women. On the contrary, there may be a phenomenon of an excuse not to give, as the coefficient of altruism is positive, thus increasing risk aversion: in other words, higher levels of altruism do not proportionally increase the propensity to take risks. The coefficient of optimism is also found to be statistically significant with a positive sign in the case the risk-taking parameters are obtained using the CRRA model with altruism and optimism, while it is not significant in the case it was obtained only using altruism: optimism would thus not appear to be influencing lottery choices in women. These results are confirmed by the robustness checks (see Table 4.A.1 in Appendix 4.A).

If we consider only men instead, the various nonparametric tests lead us not to reject the null hypothesis that the switching points of the control group and prosocial treatment are equal. If we run the same tests on the risk parameters obtained from the CRRA model with altruism and optimism, we instead reject the null hypothesis that the risk parameters are the same between the two groups (with p-values of about 0.08 for the lower bound and 0.0155 for the upper bound), as shown in Table 4.3. If we consider the different Ordered Logit regression for the switching point, the coefficients of the treatments are never found to be statistically significantly different from zero. Risk aversion measured with the Eckel and Grossman is also not significant, which it was for women; this variable in the model could, therefore, capture a specific risk sensitivity not present in men due to the methodology used (Filippin & Crosetto, 2016). On the contrary, the coefficients of altruism (with p-values on average of 0.02) and optimism (p-values always less than 0.01) are statistically significant and have a negative sign. In particular, the coefficient of optimism, which is highly significant, from the value of the coefficients would seem to be one of the most important factors in reducing risk aversion (see Table 4.6). Unlike women, men's lottery choices thus seem to be strongly influenced by their levels of optimism. Some of the other variables found to be relevant are the psychological characteristics of the Big Five (such as neuroticism and conscientiousness, which increase risk aversion) and the General preference survey (such as altruism, which conversely increases risk seeking). In contrast to women, men who are religious and value religion are more risk averse, as found by Noussair and colleagues (2013). We exclude that the absence of change in switching points between groups in men is due to insensitivity to change in payoffs, as this change affects the choice to switch for women in the prosocial group. Moreover, this observed value in women coincides with the predicted value. We also exclude that it is due to a misunderstanding of payoffs by

males, as they win on average more than females (13.42 vs. 12.52 euros), report on average higher values of understanding of instructions (4.44 vs. 4.25), and finally have optimism values closer to the expected "rational" value. Analyzing the interval regression models for the parameters obtained with the CRRA with optimism and altruism, the coefficient of prosocial treatment is always significant (with p-values between 0.003 and 0.034) and with a negative value of about  $-0.35$ , thus indicating a significant reduction in estimated risk aversion parameter (see Table 4.7). These results together seem to indicate that a prosocial risk-taking phenomenon occurs in men, leading them to take more risks if the risky choice results in a certain altruistic outcome. Also in this case, robustness checks confirm the results (see Table 4.A.2 in Appendix 4.A). A comparison between the control group and treatment 2, using different models and with the interaction between treatment and gender, is provided in Table 4.A.3 of Appendix 4.A. The prosocial- risk-taking scale, the karma belief scale, and the optimism scale (the latter two appear to be correlated with each other) are not relevant in the models and fail to explain behaviors in the different tasks and treatments.

TABLE 4.3 – TEST COMPARING HOLT & LAURY SWITCH AND RISK PARAMETER IN CONTROL AND PROSOCIAL GROUPS (T2) BY GENDER

	Female			Male		
	Spearman test	Wilcoxon rank-sum test	Kruskal Wallis test	Spearman test	Wilcoxon rank-sum test	Kruskal Wallis test
<b>Control vs T2</b>						
Holt & Laury Switch	0.0072	0.0073	0.0076	0.4899	0.4916	0.4878
Risk parameter (lower bound)	0.952	0.9535	0.9518	0.0799	0.0804	0.08
Risk parameter (upper bound)	0.8874	0.889	0.8869	0.0152	0.0153	0.0157

TABLE 4.4 – ORDERED LOGIT FOR HOLT & LAURY SWITCHING POINTS (RISK AVERSION) FOR FEMALES

	(1)	(2)	(3)	(4)
T1 (Karma group)	0.586 (0.409)	0.621 (0.460)	0.460 (0.497)	0.469 (0.504)
T2 (Prosocial group)	1.025*** (0.367)	1.050*** (0.368)	0.985** (0.401)	0.928** (0.433)
Risk aversion (EG)	0.148*** (0.0568)	0.152** (0.0614)	0.169** (0.0730)	0.163* (0.0848)
Altruism (DG)	0.0262 (0.0690)	0.0194 (0.0685)	0.0150 (0.0701)	0.0325 (0.0871)
Optimism (Card Game)	-0.576 (0.596)	-0.637 (0.703)	-0.757 (0.698)	-0.953 (0.923)
Age	-0.0510 (0.0655)	-0.0408 (0.0622)	-0.0642 (0.0711)	-0.0550 (0.0740)
Religious	-0.928*** (0.353)	-0.899** (0.366)	-1.037** (0.444)	-0.969* (0.510)
Religion importance	0.0398 (0.141)	0.0364 (0.141)	0.109 (0.161)	0.0301 (0.206)
Big Five		✓	✓	✓
GPS controls			✓	✓
All controls (including Optimism, Karma, and Prosocial Risk scale)				✓
Observations	145	145	145	145
<i>AIC</i>	545.6	546.5	553.4	573.7
<i>BIC</i>	596.2	612.0	636.7	704.6

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Notes: cuts for each value of the dependent variable are not reported

TABLE 4.5 – INTERVAL REGRESSION MODELS FOR RISK PARAMETERS FOR FEMALES

	(1)	(2)	(3)	(4)
T1 (Karma group)	0.218 (0.161)	0.221 (0.169)	0.180 (0.177)	0.157 (0.176)
T2 (Prosocial group)	0.0915 (0.150)	0.0987 (0.140)	0.0750 (0.149)	0.0215 (0.140)
Risk aversion (EG)	0.0625** (0.0245)	0.0627*** (0.0243)	0.0621** (0.0254)	0.0539** (0.0262)
Altruism (DG)	0.0836*** (0.0303)	0.0788*** (0.0294)	0.0803*** (0.0309)	0.0814*** (0.0307)
Optimism (Card Game)	1.489*** (0.329)	1.478*** (0.326)	1.464*** (0.322)	1.376*** (0.320)
Age	-0.0174 (0.0236)	-0.0150 (0.0226)	-0.0187 (0.0228)	-0.00684 (0.0246)
Religious	-0.315** (0.134)	-0.272** (0.132)	-0.300** (0.143)	-0.330** (0.145)
Religion importance	-0.00805 (0.0487)	-0.00456 (0.0482)	0.0119 (0.0536)	-0.00277 (0.0612)
Big Five		✓	✓	✓
GPS controls			✓	✓
All controls (including Optimism, Karma, and Prosocial Risk scale)				✓
Constant	-0.915 (0.650)	-1.981* (1.104)	-1.353 (1.107)	-1.734 (1.480)
Insigma Constant	-0.314*** (0.0941)	-0.345*** (0.0874)	-0.360*** (0.0848)	-0.405*** (0.0785)
Observations	145	145	145	145
AIC	587.2	588.4	596.1	615.6
BIC	617.0	633.0	658.6	725.7

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

TABLE 4.6 – ORDERED LOGIT FOR HOLT & LAURY SWITCHING POINTS (RISK AVERSION) FOR MALES

	(1)	(2)	(3)	(4)
T1 (Karma group)	-0.455 (0.445)	-0.253 (0.450)	-0.296 (0.460)	-0.112 (0.518)
T2 (Prosocial group)	0.178 (0.399)	0.319 (0.401)	0.344 (0.407)	0.161 (0.455)
Risk aversion (EG)	0.207** (0.0920)	0.127 (0.102)	0.0831 (0.115)	0.0820 (0.137)
Altruism (DG)	-0.159* (0.0943)	-0.225** (0.0875)	-0.257*** (0.0954)	-0.270** (0.123)
Optimism (Card Game)	-2.175*** (0.820)	-2.913*** (0.905)	-3.900*** (1.013)	-4.766*** (1.428)
Age	-0.00736 (0.0593)	0.0248 (0.0595)	0.0324 (0.0587)	0.0462 (0.105)
Religious	0.806** (0.411)	0.955** (0.399)	1.183*** (0.405)	1.677*** (0.486)
Religion importance	-0.0173 (0.160)	-0.00185 (0.173)	0.197 (0.162)	0.346* (0.205)
Big Five		✓	✓	✓
GPS controls			✓	✓
All controls (including Optimism, Karma, and Prosocial Risk scale)				✓
Observations	126	126	126	126
<i>AIC</i>	469.3	457.8	449.2	448.5
<i>BIC</i>	514.7	517.4	525.8	570.4

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Notes: cuts for each value of the dependent variable are not reported

TABLE 4.7 – INTERVAL REGRESSION MODELS FOR RISK PARAMETERS FOR MALES

	(1)	(2)	(3)	(4)
T1 (Karma group)	-0.0457 (0.137)	0.0374 (0.128)	0.0145 (0.120)	0.0736 (0.114)
T2 (Prosocial group)	-0.411** (0.173)	-0.324** (0.146)	-0.333** (0.143)	-0.365*** (0.131)
Risk aversion (EG)	0.0404 (0.0364)	0.0116 (0.0346)	0.00270 (0.0368)	0.000889 (0.0396)
Altruism (DG)	-0.0379 (0.0363)	-0.0543* (0.0328)	-0.0443 (0.0371)	-0.0417 (0.0400)
Optimism (Card Game)	0.621* (0.335)	0.439 (0.315)	0.244 (0.307)	0.257 (0.263)
Age	-0.00193 (0.0213)	0.00466 (0.0205)	0.00424 (0.0192)	0.000386 (.)
Religious	0.223 (0.153)	0.274** (0.134)	0.314** (0.133)	0.386*** (0.110)
Religion importance	0.0113 (0.0609)	-0.00163 (0.0564)	0.0535 (0.0557)	0.0875 (0.0604)
Big Five		✓	✓	✓
GPS controls			✓	✓
All controls (including Optimism, Karma, and Prosocial Risk scale)				✓
Constant	-0.396 (0.502)	-2.349*** (0.747)	-1.118 (0.766)	-1.033 (0.839)
Insigma Constant	-0.353*** (0.106)	-0.457*** (0.0933)	-0.511*** (0.104)	-0.631*** (0.109)
Observations	126	126	126	126
AIC	505.7	490.2	489.5	492.6
BIC	534.1	532.8	549.1	597.6

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

## 4.6. Concluding remarks

In this experiment, we analyzed the relationship between risk and pro-social behavior while trying to disentangle other effects such as belief in karma and optimism capable of explaining these behaviors. To do so, we employed a laboratory experiment with two treatments that allowed us to shed light on this phenomenon with important economic consequences.

The experiment results indicate that there is no belief in karma bias, as opposed to hypothesis  $H_1$ , that leads subjects to be less risk averse after doing a good deed, or in other words, “karmic bargaining” people (Banerjee & Bloom, 2017; Malhotra, 2010; White et al., 2018). On the contrary, consistent with the psychological and neuroscience literature and hypothesis  $H_2$ , there would seem to be prosocial risk-taking behaviors that would make individuals more risk-averse in case the risky choice gives a certain benefit to another (in this case, a charity choice) (Armstrong-Carter et al., 2021; Do et al., 2017). However, there is a significant gender heterogeneity: only men exhibit this behavior while being less altruistic than women, all else being equal. This finding is consistent with the previous research, as men tend to engage in more risky rescues (Hyman, 2006), which may be influenced by sexual selection (Farthing, 2005; Kelly & Dunbar, 2001; Margana et al., 2019). In contrast, women would appear to follow the theoretical reference model (CRRA with optimism and altruism) by weighing their altruism in risky choices. We exclude that this is due to systematic errors in choices made by men, who, on the contrary, behave more rationally in some task choices (as shown, for example, by higher mean payoffs and levels of optimism closer to the expected value of the game). This result is robust using both the switching points variable and parametric risk parameters, nonparametric tests and models with different functional forms, and different controls or including all the subjects (inconsistent and those who skipped the effort task).

The original contribution of this study lies in demonstrating prosocial risk-taking behavior for the first time with an incentivized economic lab experiment, bridging the gap in the literature between risk-taking interaction and altruism. The modified lotteries of Holt and Laury and the extended CRRA model with optimism and altruism provide the foundation for further studies on this phenomenon. These findings are consistent with those reported by Chen and Zhong (2024), who observed that subjects demonstrated increased altruistic behaviors in uncertain situations, a result that challenges the predictions of standard models. However, in contrast to the aforementioned study, our experiment focuses on the context of a risk situation and develops a model and tasks that also take optimism into account. Furthermore, their design does not allow for a distinction between karma beliefs and prosocial risk-taking behavior. In fact,

the causes of the observed behavior are attributed to the former factor, which is contrary to the findings of this study.

Although the results remain valid when considering switching points, parametric assumptions have been made to obtain the risk parameters (albeit with a basic model used in different studies and with robust results even when optimism is removed), and only one way of measuring risk has been used to avoid making the prosocial risk-taking situation no longer "exceptional"; however, this means that we cannot assess whether this remains the case even when using other tasks to measure risk, as it could be different and thus require a robustness check (Pedroni et al., 2017). Second, only gain framing was considered, and we do not know whether this phenomenon can also occur in cases of loss framing. Actual prosocial risk-taking behaviors, such as rescues by a firefighter or someone defending a bullying victim, may involve potential costs for those performing them, not just opportunity costs. Third, the effort task guaranteed a fixed payoff and not one that varied according to effort; this may explain why no karma belief bias occurred. Alternatively, the effect of karma could be only on optimism and not risk aversion. Finally, we analyzed a risk-taking situation where, therefore, the probabilities are known, whereas phenomena of this type, in realistic cases, might be more comparable to situations of uncertainty and ambiguity where the probabilities are not known. Future studies may further develop this issue and test the presence of karma belief bias and prosocial risk-taking (or ambiguity) by going beyond these limitations. Neuroeconomic studies using fMRI could analyze whether different brain areas are activated and whether regret is lower in the case of prosocial risky choices: this could explain one of the causes that lead to performing prosocial risk behaviors.



## Appendix Chapter 2

## Appendix 2.A. Additional data information and results

TABLE 2.A.1 – DIFFERENT MESSAGES (ITALIAN)

Group	Message
<i>Control group</i> (T0)	[No message, only active choice]
<i>Norms</i> (T1)	<p>Per il 90% degli italiani, donare sangue è una responsabilità morale e un dovere civico. Donare sangue è infatti un gesto di reciprocità e di partecipazione sociale. Nel 2021 in Sardegna sono stati 40.000 i donatori e le donatrici di sangue, che hanno consentito la realizzazione di quasi 55.000 trasfusioni. Sempre più sardi stanno diventando donatori e donatrici: donando il sangue darai una mano anche tu ad una comunità sempre più grande in Sardegna. Il tuo contributo aiuta a fornire un bene pubblico. Come ti sentiresti se anche tu avessi bisogno di una trasfusione di sangue in futuro, ma non ci fosse abbastanza sangue per tutti?</p>
<i>Empathy</i> (T2)	<p>Donando il tuo sangue puoi aiutare bambini, ragazzi, uomini e donne di tutte le età che soffrono di gravi malattie o hanno avuto un incidente. Dietro ogni trasfusione c'è sempre una persona in difficoltà. Non sono responsabili del loro stato di salute, ma hanno bisogno urgentemente di ricevere una donazione. Come Samuele, che a soli 6 anni soffre di talassemia, e la sua famiglia non può permettersi cure sperimentali. O come Sara, che nonostante abbia sempre praticato sport, dovrà sottoporsi ad un trapianto di fegato. Stiamo cercando donatori e donatrici che siano compatibili con il loro gruppo sanguigno: quel donatore o donatrice potresti essere tu.</p>
<i>Guilt/regret</i> (T3)	<p>Negli ultimi anni si è registrata una drastica diminuzione del tasso di donazione di sangue, con un bilancio negativo di 25 mila sacche di sangue in Sardegna. Nonostante la regione spenda oltre 5 milioni di euro per importare tutte le sacche di sangue necessarie, molte persone che ne hanno bisogno potrebbero rimanere senza. Non sempre il gruppo sanguigno compatibile è disponibile, e attendere che si trovino altre persone per donare potrebbe essere fatale: la loro vita dipende anche dalla tua scelta. Puoi donare il tuo sangue e aiutare in questo modo tante persone meno sane e meno fortunate di te.</p>
<i>Self-benefits</i> (T4)	<p>Donare il sangue offre moltissimi vantaggi, non solo a chi ne ha urgentemente bisogno, ma anche a te. Se lavori, infatti, potrai avere un giorno libero quando sceglierai di donare. Se studi, potrai avere accesso a specifiche borse di studio e a premi riservati ai donatori e alle donatrici. Potrai inoltre monitorare con costanza la tua salute, grazie a controlli medici gratuiti che vengono effettuati prima di ogni donazione. I dati ci dicono che chi dona abitualmente riduce il rischio di cardiopatie del 33% e di attacchi di cuore dell'88%. Infine, la donazione stessa migliora il controllo glicemico e la funzione cardiovascolare, riduce lo stress ossidativo e aumenta il flusso di sangue arterioso: tutto ciò preserva la salute del cuore, del fegato e riduce il rischio di sviluppare diabete di tipo II. Fai la scelta migliore, per te e per tutti, dona!</p>

TABLE 2.A.2 – MODELS FOR POSITIVE INTENTION TO DONATE (PROBIT WITH ROBUST SE)

	(1) Demographics	(2) Schools	(3) GPS	(4) Blood attitude
Intention to donate				
T1: Norms	0.0532 (0.0842)	0.0590 (0.0845)	0.0694 (0.0853)	0.0585 (0.0856)
T2: Empathy	0.0184 (0.0822)	0.0286 (0.0827)	0.0220 (0.0838)	0.0200 (0.0840)
T3: Guilt/regret	0.0323 (0.0838)	0.0339 (0.0841)	0.00770 (0.0851)	-0.000487 (0.0855)
T4: Self-benefits	0.250*** (0.0879)	0.254*** (0.0883)	0.265*** (0.0894)	0.254*** (0.0897)
Interaction T1 and donor	0.304** (0.134)	0.293** (0.134)	0.301** (0.137)	0.306** (0.136)
Interaction T2 and male	0.0475 (0.120)	0.0434 (0.120)	0.0607 (0.122)	0.0494 (0.122)
Interaction T3 and donor	0.118 (0.124)	0.118 (0.124)	0.138 (0.127)	0.136 (0.127)
Interaction T4 and male	-0.144 (0.126)	-0.158 (0.126)	-0.181 (0.127)	-0.181 (0.128)
Male	-0.287*** (0.0636)	-0.259*** (0.0656)	-0.190*** (0.0677)	-0.189*** (0.0689)
Donor	0.484*** (0.0632)	0.482*** (0.0635)	0.438*** (0.0646)	0.273*** (0.102)
Time to respond to the last question (seconds)	-0.00158** (0.000702)	-0.00147** (0.000707)	-0.00154** (0.000709)	-0.00141** (0.000714)
Age	-0.00271 (0.00366)	-0.00204 (0.00369)	-0.00389 (0.00375)	-0.00362 (0.00381)

Health status	0.0627*** (0.0164)	0.0622*** (0.0165)	0.0453*** (0.0172)	0.0348** (0.0177)
Physical activity	0.0542 (0.0484)	0.0427 (0.0487)	0.0128 (0.0497)	0.00360 (0.0497)
Medicine and Surgery School		0.203* (0.105)	0.151 (0.106)	0.129 (0.106)
Engineering and Architecture School		-0.0137 (0.102)	-0.0441 (0.103)	-0.0482 (0.103)
Biology and Pharmacology School		0.330*** (0.115)	0.307*** (0.116)	0.302*** (0.117)
Human Sciences School		0.0206 (0.0973)	-0.00786 (0.0981)	-0.0153 (0.0985)
Economics, Law and Political Sciences School		0.000418 (0.0984)	-0.0395 (0.0990)	-0.0416 (0.0995)
Risk propensity			0.0411*** (0.0113)	0.0423*** (0.0113)
Time preference			0.00265 (0.0149)	0.000315 (0.0149)
Ambiguity propensity			0.0233** (0.00910)	0.0221** (0.00913)
Altruism			0.100*** (0.0160)	0.0986*** (0.0161)
Positive Reciprocity			0.000843 (0.0139)	-0.00322 (0.0140)
Negative Reciprocity			-0.0119 (0.0111)	-0.0132 (0.0112)

Trust			0.0371*** (0.0125)	0.0343*** (0.0125)
Frequency of blood donation				0.00681 (0.0275)
He/she has received a blood donation				-0.0148 (0.156)
Knowledge of Donors				0.158* (0.0809)
Knowledge of people who received a blood donation				0.120** (0.0485)
Not knowing if he/she can donate				-0.263*** (0.0573)
Constant	0.116 (0.182)	0.0296 (0.200)	-1.073*** (0.273)	-0.931*** (0.285)
Observations	3872	3872	3872	3872
<i>AIC</i>	3986.3	3973.3	3889.7	3865.2
<i>BIC</i>	4080.2	4098.6	4058.8	4065.6

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

*Notes:* When all schools' dummies are equal to zero, we consider students from the Sciences School.

TABLE 2.A.3 – MODELS FOR DONATION DURING BLOOD DRIVE (PROBIT WITH ROBUST SE)

	(1) Demographics	(2) Schools	(3) GPS	(4) Blood attitude
Donation				
Intention to donate	1.403*** (0.311)	1.401*** (0.310)	1.431*** (0.313)	1.427*** (0.313)
T1: Norms	0.166 (0.169)	0.159 (0.169)	0.152 (0.170)	0.156 (0.170)
T2: Empathy	0.291** (0.146)	0.292** (0.147)	0.289** (0.147)	0.298** (0.146)
T3: Guilt/regret	0.0856 (0.172)	0.0759 (0.172)	0.0689 (0.171)	0.0730 (0.172)
T4: Self-benefits	0.0522 (0.156)	0.0608 (0.158)	0.0538 (0.157)	0.0619 (0.157)
Interaction T1 and donor	-0.0271 (0.206)	-0.0207 (0.205)	-0.00522 (0.205)	-0.00191 (0.205)
Interaction T2 and male	0.0431 (0.202)	0.0639 (0.203)	0.0672 (0.203)	0.0485 (0.202)
Interaction T3 and donor	0.121 (0.211)	0.134 (0.211)	0.155 (0.209)	0.150 (0.210)
Interaction T4 and male	0.286 (0.212)	0.273 (0.214)	0.291 (0.214)	0.284 (0.215)
Male	0.0468 (0.117)	0.0871 (0.119)	0.0952 (0.123)	0.0905 (0.124)
Donor	0.167 (0.103)	0.157 (0.104)	0.145 (0.103)	0.0855 (0.163)
Time to respond to the last question (seconds)	-0.00189 (0.00148)	-0.00149 (0.00144)	-0.00160 (0.00144)	-0.00157 (0.00144)

Age	-0.0609*** (0.0105)	-0.0606*** (0.0107)	-0.0623*** (0.0106)	-0.0617*** (0.0108)
Health status	0.0704** (0.0333)	0.0708** (0.0330)	0.0670** (0.0336)	0.0599* (0.0342)
Physical activity	0.147* (0.0891)	0.129 (0.0894)	0.125 (0.0903)	0.126 (0.0909)
Medicine and Surgery School		0.345* (0.182)	0.350* (0.181)	0.343* (0.183)
Engineering and Architecture School		0.0393 (0.193)	0.0539 (0.193)	0.0461 (0.194)
Biology and Pharmacology School		0.366* (0.194)	0.363* (0.194)	0.373* (0.196)
Human Sciences School		0.0901 (0.183)	0.0956 (0.185)	0.0923 (0.185)
Economics, Law and Political Sciences School		0.0909 (0.186)	0.107 (0.186)	0.106 (0.187)
Risk propensity			-0.0286 (0.0174)	-0.0267 (0.0174)
Time preference			0.0382 (0.0253)	0.0381 (0.0254)
Ambiguity propensity			-0.00720 (0.0143)	-0.00663 (0.0144)
Altruism			-0.0340 (0.0291)	-0.0335 (0.0290)
Positive Reciprocity			-0.0217 (0.0227)	-0.0219 (0.0228)

Negative Reciprocity			-0.0157 (0.0191)	-0.0166 (0.0192)
Trust			0.0180 (0.0200)	0.0177 (0.0201)
Frequency of blood donation				0.00231 (0.0399)
He/she has received a blood donation				0 (.)
Knowledge of Donors				0.00928 (0.168)
Knowledge of people who received a blood donation				-0.0365 (0.0811)
Not knowing if he/she can donate				-0.117 (0.106)
Constant	-2.575*** (0.543)	-2.763*** (0.569)	-2.416*** (0.610)	-2.295*** (0.624)
Observations	3872	3872	3872	3782
<i>AIC</i>	1154.4	1152.8	1159.9	1160.7
<i>BIC</i>	1254.6	1284.3	1335.3	1360.4

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

*Notes:* When all schools' dummies are equal to zero, we consider students from the Sciences School.

TABLE 2.A.4 – MODELS ON GAP IN DAYS BETWEEN INTENTION AND DONATION

	(1) Basic linear OLS model	(2) More controls	(3) Cluster SE for schools
T1: Norms	-3.841*** (1.326)	-3.408** (1.499)	-3.408** (1.027)
T2: Empathy	-2.169 (1.358)	-0.948 (1.582)	-0.948 (0.790)
T3: Guilt/regret	-1.603 (1.546)	-1.622 (1.682)	-1.622 (1.353)
T4: Self-benefits	-0.504 (1.464)	0.505 (1.583)	0.505 (1.025)
Donor	-1.453 (0.930)	-0.428 (1.456)	-0.428 (0.797)
Male	-2.848*** (0.860)	-1.585 (1.073)	-1.585 (1.099)
Age	0.147 (0.130)	0.195 (0.160)	0.195 (0.140)
Health status	0.317 (0.391)	0.561 (0.415)	0.561 (0.382)
Physical activity	2.197** (0.970)	2.245** (1.031)	2.245** (0.635)
Medicine and Surgery School		2.578 (2.249)	2.578*** (0.538)
Engineering and Architecture School		-0.369 (2.282)	-0.369 (1.285)
Biology and Pharmacology School		1.531 (2.394)	1.531** (0.466)
Human Sciences School		3.787 (2.468)	3.787*** (0.290)
Economics, Law and Political Sciences School		1.680 (2.212)	1.680** (0.494)

Risk propensity		-0.166 (0.227)	-0.166 (0.174)
Time preference		0.410 (0.326)	0.410 (0.224)
Ambiguity propensity		0.223 (0.192)	0.223 (0.259)
Altruism		-0.00175 (0.306)	-0.00175 (0.366)
Positive Reciprocity		0.423* (0.241)	0.423 (0.274)
Negative Reciprocity		-0.0588 (0.250)	-0.0588 (0.0965)
Trust		-0.0563 (0.233)	-0.0563 (0.0848)
Frequency of blood donation		-0.297 (0.378)	-0.297 (0.325)
He/she has received a blood donation		0 (.)	0 (.)
Knowledge of Donors		-3.109** (1.233)	-3.109*** (0.668)
Knowledge of people who received a blood donation		0.391 (0.896)	0.391 (0.669)
Not knowing if he/she can donate		0.770 (1.309)	0.770 (0.532)
Constant	4.655 (4.394)	-5.792 (7.593)	-5.792 (7.032)
Observations	148	148	148
<i>AIC</i>	901.3	914.4	872.4
<i>BIC</i>	931.2	992.3	887.4

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

*Notes:* When all schools' dummies are equal to zero, we consider students from the Sciences School.

TABLE 2.A.5 – MODELS ON PROPENSITY TO DONATE IF HE/SHE WOULD GET PAID

	(1) Ordered Probit Robust SE	(2) Ordered Probit Cluster SE for schools	(3) Ordered Logit Robust SE	(4) Ordered Logit Cluster SE for schools
Propensity to donate if he/she would get paid				
Believed propensity to donate of other if they would get paid	0.686*** (0.0657)	0.686*** (0.0593)	1.317*** (0.127)	1.317*** (0.108)
Donor	0.223*** (0.0788)	0.223* (0.128)	0.414*** (0.139)	0.414* (0.225)
Male	0.366*** (0.0495)	0.366*** (0.0343)	0.666*** (0.0863)	0.666*** (0.0663)
Age	-0.0244*** (0.00362)	-0.0244*** (0.00515)	-0.0449*** (0.00693)	-0.0449*** (0.00908)
Health status (self- reported)	0.0134 (0.0163)	0.0134 (0.0114)	0.0246 (0.0298)	0.0246 (0.0219)
Physical activity	0.0460 (0.0437)	0.0460 (0.0461)	0.0756 (0.0781)	0.0756 (0.0916)
Medicine and Surgery School	-0.145 (0.0902)	-0.145*** (0.0109)	-0.203 (0.156)	-0.203*** (0.0222)
Engineering and Architecture School	-0.189** (0.0909)	-0.189*** (0.00515)	-0.284* (0.156)	-0.284*** (0.0109)
Biology and Pharmacology School	-0.212** (0.0935)	-0.212*** (0.0187)	-0.381** (0.163)	-0.381*** (0.0356)
Human Sciences School	-0.161* (0.0848)	-0.161*** (0.0187)	-0.247* (0.146)	-0.247*** (0.0326)

Economics, Law and Political Sciences School	-0.260*** (0.0867)	-0.260*** (0.0176)	-0.423*** (0.150)	-0.423*** (0.0286)
Risk propensity	-0.00152 (0.00961)	-0.00152 (0.00434)	-0.000553 (0.0173)	-0.000553 (0.00836)
Time preference	-0.00633 (0.0130)	-0.00633 (0.0161)	-0.0120 (0.0236)	-0.0120 (0.0292)
Ambiguity propensity	0.0144* (0.00802)	0.0144 (0.00884)	0.0255* (0.0145)	0.0255 (0.0159)
Altruism	-0.143*** (0.0156)	-0.143*** (0.0190)	-0.251*** (0.0266)	-0.251*** (0.0320)
Positive Reciprocity	-0.0184 (0.0124)	-0.0184 (0.0149)	-0.0343 (0.0225)	-0.0343 (0.0277)
Negative Reciprocity	0.0613*** (0.0102)	0.0613*** (0.00443)	0.108*** (0.0178)	0.108*** (0.00761)
Trust	-0.0252** (0.0111)	-0.0252*** (0.00564)	-0.0486** (0.0200)	-0.0486*** (0.00887)
Frequency of blood donation	-0.124*** (0.0226)	-0.124*** (0.0292)	-0.227*** (0.0404)	-0.227*** (0.0508)
He/she has received a blood donation	0.120 (0.150)	0.120 (0.101)	0.259 (0.280)	0.259 (0.186)
Knowledge of Donors	0.132 (0.0813)	0.132 (0.128)	0.197 (0.142)	0.197 (0.232)
Knowledge of people who received a blood donation	-0.183*** (0.0421)	-0.183** (0.0808)	-0.348*** (0.0750)	-0.348** (0.153)
Not knowing if he/she can donate	-0.0251 (0.0524)	-0.0251 (0.0492)	-0.0442 (0.0929)	-0.0442 (0.0942)

/				
cut1	-3.124*** (0.276)	-3.124*** (0.305)	-5.626*** (0.500)	-5.626*** (0.575)
cut2	-0.455* (0.270)	-0.455* (0.254)	-0.832* (0.486)	-0.832* (0.460)
Observations	3872	3872	3872	3872
<i>AIC</i>	5115.9	5075.9	5098.4	5058.4
<i>BIC</i>	5272.5	5107.3	5255.0	5089.8

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

*Notes:* When all schools' dummies are equal to zero, we consider students from the Sciences School.

TABLE 2.A.6 – MODELS ON BELIEVED PROPENSITY TO DONATE OF OTHER IF THEY WOULD GET PAID

	(1) Ordered Probit Robust SE	(2) Ordered Probit Cluster SE for schools	(3) Ordered Logit Robust SE	(4) Ordered Logit Cluster SE for schools
Believed propensity to donate of other if they would get paid				
Propensity to donate if he/she would get paid	0.676*** (0.0688)	0.676*** (0.0618)	1.252*** (0.126)	1.252*** (0.119)
Donor	0.148 (0.118)	0.148 (0.141)	0.272 (0.240)	0.272 (0.278)
Male	-0.311*** (0.0723)	-0.311*** (0.104)	-0.641*** (0.144)	-0.641*** (0.202)
Age	-0.0296*** (0.00412)	-0.0296*** (0.00310)	-0.0584*** (0.00802)	-0.0584*** (0.00581)
Health status	-0.0233 (0.0246)	-0.0233 (0.0335)	-0.0615 (0.0493)	-0.0615 (0.0645)
Physical activity	-0.0124 (0.0647)	-0.0124 (0.0488)	-0.00728 (0.131)	-0.00728 (0.110)
Medicine and Surgery School	0.232 (0.141)	0.232*** (0.0436)	0.537* (0.290)	0.537*** (0.0695)
Engineering and Architecture School	0.0749 (0.139)	0.0749*** (0.0123)	0.227 (0.287)	0.227*** (0.0164)
Biology and Pharmacology School	-0.00869 (0.146)	-0.00869 (0.0578)	-0.00532 (0.299)	-0.00532 (0.0945)
Human Sciences School	-0.0821 (0.128)	-0.0821 (0.0537)	-0.127 (0.265)	-0.127 (0.116)

Economics, Law and Political Sciences School	0.0555 (0.132)	0.0555 (0.0498)	0.202 (0.273)	0.202** (0.0852)
Risk propensity	0.0224 (0.0138)	0.0224* (0.0123)	0.0450 (0.0274)	0.0450** (0.0208)
Time preference	-0.0118 (0.0192)	-0.0118 (0.0257)	-0.0109 (0.0385)	-0.0109 (0.0479)
Ambiguity propensity	0.000376 (0.0119)	0.000376 (0.00645)	0.00589 (0.0235)	0.00589 (0.0122)
Altruism	-0.0108 (0.0243)	-0.0108 (0.0168)	-0.00642 (0.0506)	-0.00642 (0.0346)
Positive Reciprocity	0.0121 (0.0182)	0.0121 (0.00936)	0.0273 (0.0365)	0.0273 (0.0172)
Negative Reciprocity	0.0208 (0.0167)	0.0208 (0.0139)	0.0536 (0.0336)	0.0536** (0.0241)
Trust	-0.0566*** (0.0162)	-0.0566*** (0.0134)	-0.119*** (0.0322)	-0.119*** (0.0222)
Frequency of blood donation	-0.0290 (0.0314)	-0.0290 (0.0254)	-0.0596 (0.0636)	-0.0596 (0.0516)
He/she has received a blood donation	-0.275 (0.178)	-0.275** (0.108)	-0.483 (0.354)	-0.483** (0.192)
Knowledge of Donors	-0.0864 (0.116)	-0.0864 (0.115)	-0.152 (0.240)	-0.152 (0.264)
Knowledge of people who received a blood donation	-0.0623 (0.0631)	-0.0623 (0.0717)	-0.104 (0.129)	-0.104 (0.138)
Not knowing if he/she can donate	-0.0754 (0.0827)	-0.0754 (0.0768)	-0.167 (0.169)	-0.167 (0.143)

/				
cut1	-4.162*** (0.398)	-4.162*** (0.400)	-8.155*** (0.829)	-8.155*** (0.806)
cut2	-2.740*** (0.385)	-2.740*** (0.336)	-4.914*** (0.778)	-4.914*** (0.652)
Observations	3872	3872	3872	3872
<i>AIC</i>	2113.9	2073.9	2118.9	2078.9
<i>BIC</i>	2270.4	2105.2	2275.4	2110.2

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

*Notes:* When all schools' dummies are equal to zero, we consider students from the Sciences Schools.

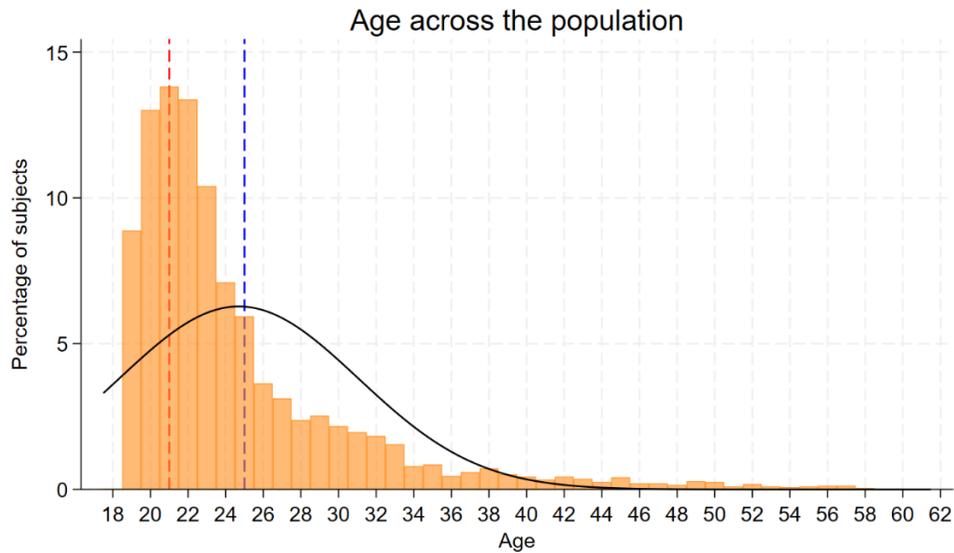


FIGURE 2.A.1. PERCENTAGE OF STUDENT'S AGE ACROSS THE POPULATION

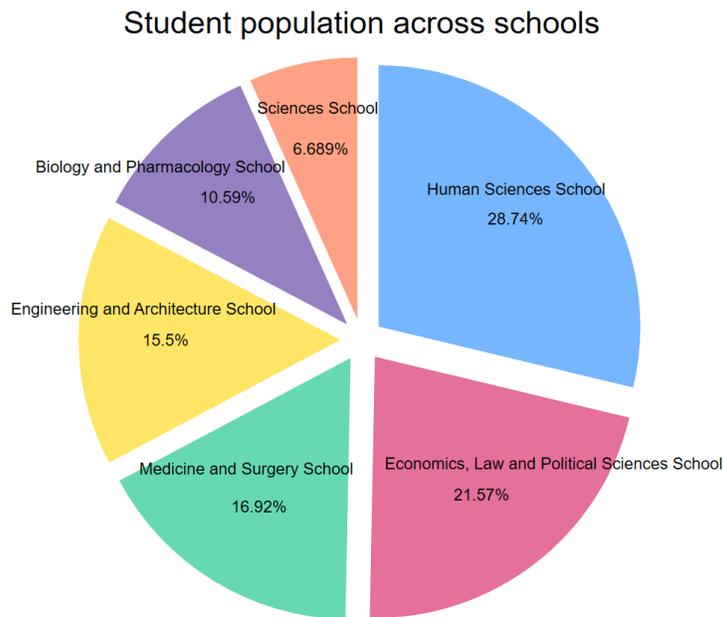


FIGURE 2.A.2. PERCENTAGE OF STUDENT POPULATION ACROSS SCHOOLS

*Notes:* In the whole population of University of Cagliari, the distribution of students in the 2022-2023 academic year is as follows 26.10% in Human Sciences School, 17.09% in Medicine and Biology Schools (combined), 28.33% in Economics, Law and Political Sciences School, 15.16% in Engineering and architecture School, 13.32% in Sciences School. This means that the Schools of Medicine and Biology are slightly overrepresented, while the Schools of Sciences and Economics, Law and Politics are underrepresented. See the whole data here: <https://dati-ustat.mur.gov.it/dataset/iscritti/resource/2020e61d-40d1-4465-bd67-aa748d5b7c76>

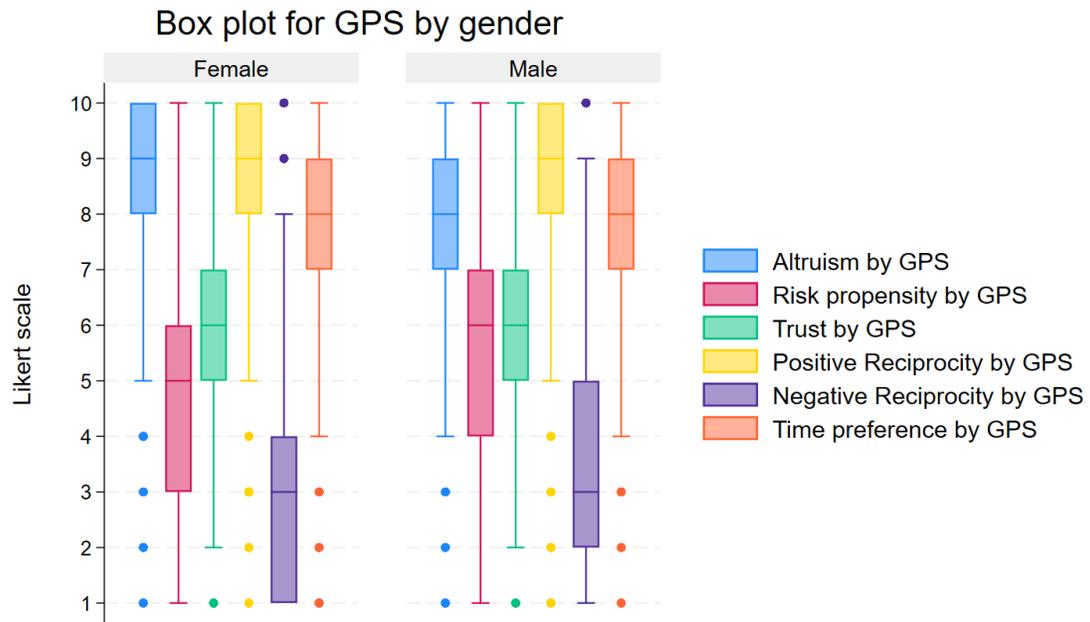


FIGURE 2.A.3. BOX PLOT OF GENERAL PREFERENCES SURVEYS BY GENDER

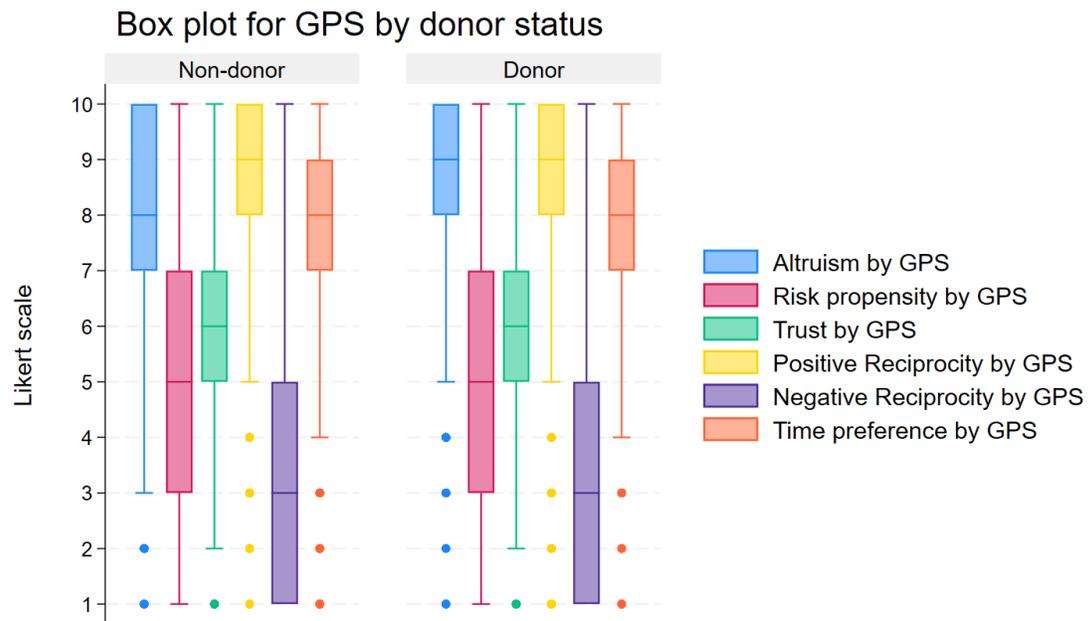


FIGURE 2.A.4. BOX PLOT OF GENERAL PREFERENCES SURVEYS BY DONOR STATUS

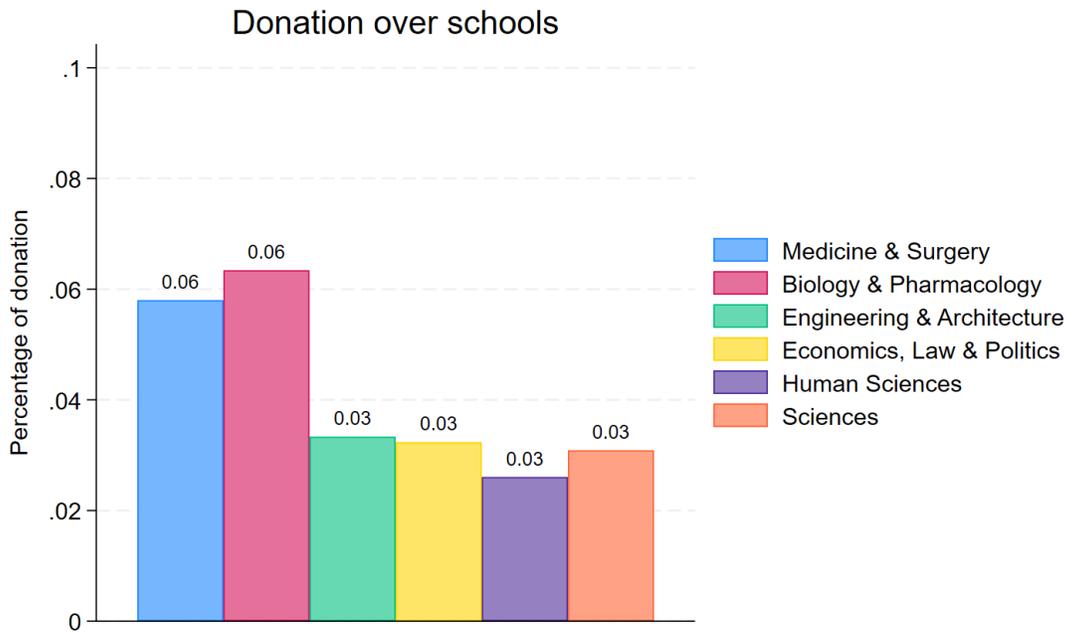


FIGURE 2.A.5. PERCENTAGE OF DONATION OVER SCHOOLS

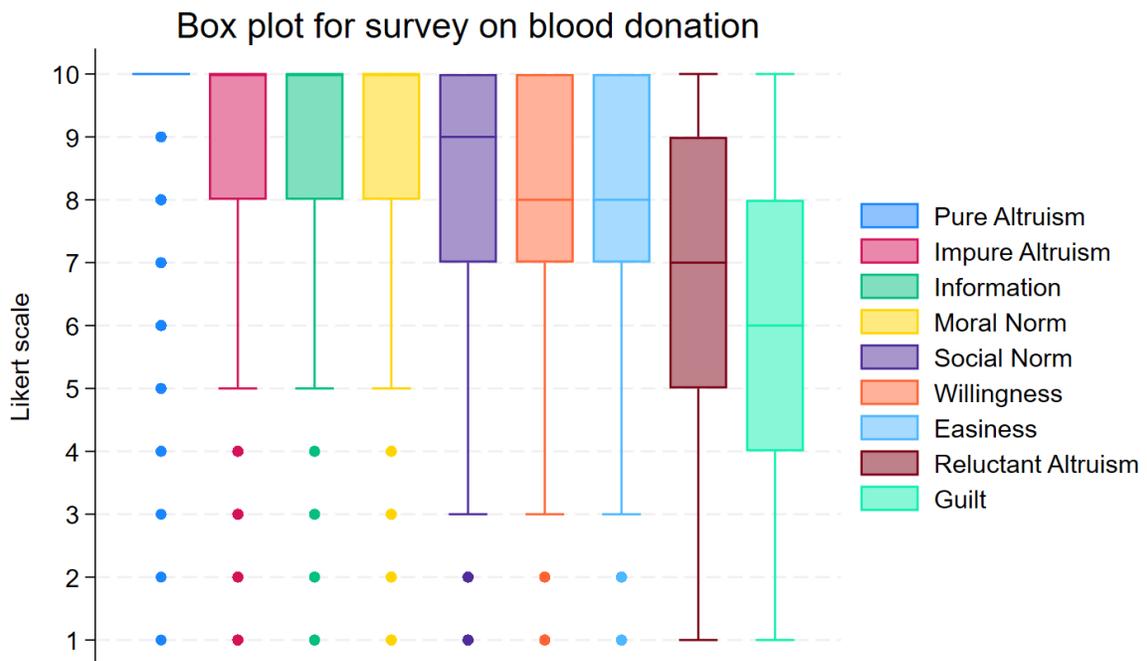


FIGURE 2.A.6. BOX PLOT FOR SURVEY ON ATTITUDE AND MOTIVES ON BLOOD DONATION

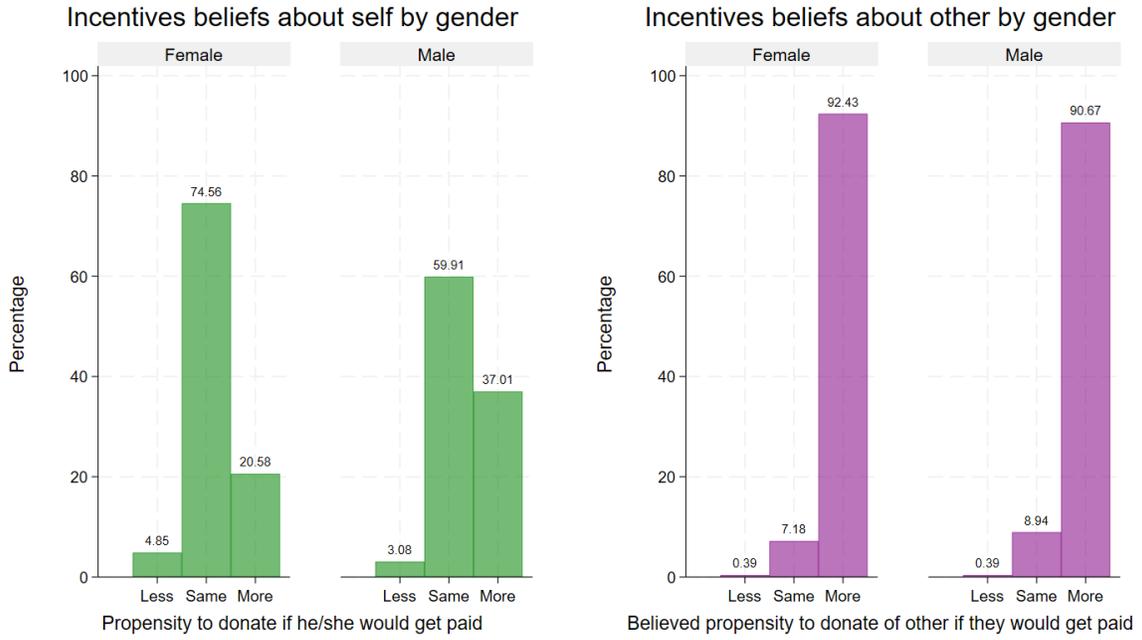


FIGURE 2.A.7. INCENTIVES BELIEFS ON SELF AND OTHER BY GENDER

## **Appendix 2.B. Supplementary information and analysis**

### **2.B.1. The Italian case**

Italy has had approximately 1.7 million voluntary blood and plasma donors in recent years, with nearly 3 million donations in 2020. The Italian blood donation system is similar to those of Portugal, Spain, Greece, Norway, and Denmark (Healy, 2000). Blood donation is organized through a blood bank run by a voluntary donor association, with central headquarters structured in town-level units. Italy's three major blood donation associations are AVIS (Associazione Volontari Italiani del Sangue), FIDAS (Federazione Italiana delle Associazioni Donatori di Sangue), and Frates. Unlike in other countries, these associations do not compete with each other. AVIS is the largest, with 1.3 million donors, responsible for nearly 2 million blood donations annually. Blood donation is typically managed at the local level by the primary association, and to donate, one must become a member of one of these organizations (Lacetera & Macis, 2010). Donors must be between 16 and 65 years old, weigh at least 50 kg, and wait at least 90 and 180 days, respectively, between donations of whole blood for male and female (in fertile age) donors. In Italy, women comprise only 30% of blood donors, while they represent the same fraction in most other countries (Bani & Giussani, 2010). Article 22 of Italian Law 219/2005 mandates that blood donors cannot select the recipient and cannot be paid for their donation, which must be anonymous. Although the Italian blood supply is sufficient to meet the demand for blood, it varies widely from region to region, both in terms of donation rates and the effectiveness of local transfusion services. In fact, several regions have donation rates that fall short of demand. Additionally, demographic changes, such as the exponential growth of the elderly population, will increase the demand for blood in the near future (Alfieri, 2017).

In 1967, Law 584 brought a significant change by granting Italian blood donor workers the right to a paid day off work (equivalent to an additional sick day) on the same day they donated blood or blood components. This economic incentive, which avoids the backfire crowding-out effect, has increased the number of donors. Lacetera and Macis (2013) found that donors eligible for the day off make an average of one extra blood donation per year, resulting in a 40% increase. The observed effect persists even after donors no longer receive the day-off incentive, indicating the formation of a habit. Additionally, it is noteworthy that 70% of employee donors donate on days adjacent to the weekend, such as Fridays or Mondays, to have consecutive days off. This phenomenon is commonly referred to as the "Friday effect". However, if the incentive were more explicit, Italians might exhibit the crowding out phenomenon: a survey of 467 Italian donors found that 13% of them would stop being donors if they received a fee of 10 euros for a donation but only 3.5% for a voucher of the same value (Lacetera & Macis, 2010).

Italian blood donors' motivations are consistent with findings from most other countries, particularly with regard to the altruistic factor. In a representative sample of 895 donors, 56% expressed a desire to help others, while family and friends influenced 22%, and 11.2% considered donation a social and moral obligation (Bani & Strepparava, 2011). The influence of the peer group on young donors (18-35 years) is low, while those familiar with transfusion recipients are significantly more committed to donating. The opportunity for a free health check is also important (6.9%), particularly for men.

### **2.B.2. Donor Status**

Having a dataset with a large number of donors, we can also perform some analysis related to the probability of being donors given the characteristics of the subjects. We use probit and logit models with robust SEs and clusters schools, where the dependent variable is the binary variable on having ever donated blood in one's life. The estimates obtained among the different functional forms are similar, so we report the results of the average marginal effects for the logit with SE by cluster since it minimizes the information criteria (see Table 2.B.1). Being male, knowing other donors, and playing sports increase, on average, the probability of having donated blood at least once in one's life by 19.2, 15.2, and 4.5 percentage points, respectively (with p-values close to zero for the first two and 0.05 for the last).

The probability of being a donor increases, with p-values close to 0, for each year of age (1.5 percentage points) and for each level of health (4 percentage points), altruism (3.55 percentage points), and trust (0.6 percentage points, this latter with a p-value of 0.024). In contrast, as levels of positive reciprocity increase, the probability of having donated in the past decreases on average by 1.1 percentage points (p-value of 0.062). Again, there is heterogeneity among students from different schools.

The results are easily interpreted, showing that variables related to health status and prosocial aspects increase the likelihood of being a donor, to the exclusion of positive reciprocity: this latter could be due to the structure of the non-conditional relationship of donating blood since it is improbable that someone who donates blood to someone could receive it from their donor (either due to anonymity or health factors). The gender variable is consistent with the national data (where female donors are only 33 percent of total donors). The effect of knowing other donors could be due to a "norm effect" (knowing some relative or friend who had already donated), but also because those who decided to donate knew other donors at specific events.

These results are also obtained using a discrete dependent variable at three levels (never donated, occasional donation 1-2 times, regular donor) and estimating the effects using ordered logit and probit models. The signs of the coefficients are confirmed, and only the coefficient of the trust variable becomes nonsignificant (see Table 2.B.2).

TABLE 2.B.1 – AVERAGE MARGINAL EFFECTS FOR PROBABILITY OF BEING A DONOR

	(1) Probit Robust SE	(2) Probit Cluster SE for schools	(3) Logit Robust SE	(4) Logit Cluster SE for schools
Male	0.192*** (0.0176)	0.192*** (0.017)	0.192*** (0.0176)	0.192*** (0.017)
Age	0.015*** (0.00124)	0.015*** (0.00126)	0.015*** (0.00128)	0.015*** (0.00135)
Health status	0.0389*** (0.00594)	0.0389*** (0.00209)	0.04*** (0.0061)	0.04*** (0.002)
Physical activity	0.045*** (0.016)	0.0444* (0.0232)	0.045*** (0.0160)	0.045** (0.0229)
Medicine and Surgery School	0.0304 (0.0344)	0.0304*** (0.0046)	0.031 (0.0337)	0.031*** (0.00450)
Engineering and Architecture School	-0.00715 (0.0338)	-0.00715*** (0.0027)	-0.0069 (0.0333)	-0.0069*** (0.00236)
Biology and Pharmacology School	-0.026 (0.0368)	-0.0261*** (0.0062)	-0.0238 (0.0365)	-0.0238*** (0.0064)
Human Sciences School	-0.0537* (0.0322)	-0.0537*** (0.00905)	-0.0527* (0.0318)	-0.0527*** (0.00964)
Economics, Law and Political Sciences School	-0.0606* (0.0322)	-0.0606*** (0.00309)	-0.059* (0.03)	-0.0589*** (0.00305)
Risk propensity	-0.00225 (0.00352)	-0.00225 (0.00176)	-0.00227 (0.00353)	-0.00227 (0.00171)

Time preference	-0.007 (0.00476)	-0.007 (0.00774)	-0.0074 (0.00476)	-0.0074 (0.00767)
Ambiguity propensity	0.000299 (0.00287)	0.000299 (0.00185)	0.000296 (0.00286)	0.000296 (0.00182)
Altruism	0.0353*** (0.00542)	0.0353*** (0.00440)	0.0355*** (0.00549)	0.0355*** (0.0044)
Positive Reciprocity	-0.0116** (0.00457)	-0.0116* (0.00621)	-0.0116** (0.00459)	-0.0116* (0.00625)
Negative Reciprocity	0.00161 (0.00365)	0.00161 (0.00339)	0.0016 (0.00366)	0.0016 (0.0034)
Trust	0.00624 (0.00402)	0.00624** (0.00278)	0.00621 (0.00401)	0.00621** (0.00275)
He/she has received a blood donation	0.0192 (0.0507)	0.0191 (0.087)	0.0172 (0.051)	0.0172 (0.08787)
Knowledge of Donors	0.152*** (0.0254)	0.152*** (0.018)	0.152*** (0.0252)	0.152*** (0.02)
Knowledge of people who received a blood donation	-0.023 (0.0155)	-0.023 (0.017)	-0.0232 (0.0155)	-0.0233 (0.0168)

---

Observations	3872	3872	3872	3872
<i>AIC (models)</i>	4850.31	4820.31	4849.40	4819.40
<i>BIC (models)</i>	4975.54	4851.62	4974.63	4850.71

---

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

*Notes:* When all schools' dummies are equal to zero, we consider students from Sciences Schools.

TABLE 2.B.2 – MODELS FOR DONOR STATUS (NON-DONOR, OCCASIONAL AND HABITUAL DONOR)

	(1) Ordered Probit Robust SE	(2) Ordered Probit Cluster SE for schools	(3) Ordered Logit Robust SE	(4) Ordered Logit Cluster SE for schools
Donor status				
Male	0.530*** (0.0453)	0.530*** (0.0467)	0.896*** (0.0766)	0.896*** (0.0800)
Age	0.0358*** (0.00298)	0.0358*** (0.00462)	0.0591*** (0.00500)	0.0591*** (0.00788)
Health status	0.119*** (0.0163)	0.119*** (0.00541)	0.202*** (0.0283)	0.202*** (0.00684)
Physical activity	0.120*** (0.0421)	0.120** (0.0479)	0.203*** (0.0711)	0.203** (0.0870)
Medicine and Surgery School	0.137 (0.0872)	0.137*** (0.00998)	0.214 (0.145)	0.214*** (0.0162)
Engineering and Architecture School	0.0297 (0.0865)	0.0297*** (0.00882)	0.0521 (0.143)	0.0521*** (0.0151)
Biology and Pharmacology School	-0.0678 (0.0951)	-0.0678*** (0.0161)	-0.0993 (0.158)	-0.0993*** (0.0280)
Human Sciences School	-0.108 (0.0834)	-0.108*** (0.0242)	-0.184 (0.138)	-0.184*** (0.0439)
Economics, Law and Political Sciences School	-0.156* (0.0841)	-0.156*** (0.00582)	-0.252* (0.139)	-0.252*** (0.00940)
Risk propensity	-0.00356 (0.00934)	-0.00356 (0.00828)	-0.00588 (0.0158)	-0.00588 (0.0134)
Time preference	-0.0183 (0.0124)	-0.0183 (0.0161)	-0.0310 (0.0208)	-0.0310 (0.0278)

Ambiguity propensity	0.00139 (0.00746)	0.00139 (0.00198)	0.00322 (0.0125)	0.00322 (0.00450)
Altruism	0.112*** (0.0148)	0.112*** (0.00933)	0.188*** (0.0251)	0.188*** (0.0162)
Positive Reciprocity	-0.0334*** (0.0118)	-0.0334** (0.0146)	-0.0555*** (0.0199)	-0.0555** (0.0250)
Negative Reciprocity	-0.000328 (0.00940)	-0.000328 (0.00785)	0.00191 (0.0158)	0.00191 (0.0133)
Trust	0.0151 (0.0107)	0.0151 (0.0103)	0.0263 (0.0181)	0.0263 (0.0170)
He/she has received a blood donation	0.0105 (0.127)	0.0105 (0.186)	0.0169 (0.209)	0.0169 (0.340)
Knowledge of Donors	0.500*** (0.0750)	0.500*** (0.0407)	0.828*** (0.127)	0.828*** (0.0822)
Knowledge of people who received a blood donation	-0.0551 (0.0407)	-0.0551 (0.0436)	-0.0997 (0.0688)	-0.0997 (0.0787)
<hr/>				
cut1	3.351*** (0.249)	3.351*** (0.194)	5.615*** (0.428)	5.615*** (0.317)
cut2	4.128*** (0.250)	4.128*** (0.200)	6.928*** (0.431)	6.928*** (0.330)
<hr/>				
Observations	3872	3872	3872	3872
AIC	7004.2	6972.2	7009.7	6977.7
BIC	7135.6	7003.5	7141.2	7009.0

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Notes: When all schools' dummies are equal to zero, we consider students from the Sciences school.

### 2.B.3. Robustness checks

Using the same model and considering only people who declared a positive intention (thus considering only the intention-donation gap), the coefficients' sign, value, and significance are confirmed (see Table 2.B.3). Furthermore, using the models for which we calculated marginal effects for both intention and donation, but considering all the data (including inconsistent responses and people who cannot donate), we still get the same results (see Table 2.B.3). The results are also confirmed using a kernel regression with the main independent variables (see Table 2.B.3). We also report the models for intention and donation for completeness using a simple OLS linear regression model (see Table 2.B.4). Finally, we constructed probit and logit models using choice in donating near one's department as the dependent variable, thus considering only those who donated in the sample. Although many subjects chose to take advantage of this option (54% of those who donated), no factor emerges from the model to explain the specific target for this choice.

Because we have collected data on both donations and intentions and have a high percentage of donors in the samples, we can estimate a multivariate probit that estimates the equations of our dependent variables simultaneously using Simulated Maximum Likelihood. The advantage of using this model is that it allows us to see whether the variables are correlated and solves endogeneity problems. Thus, we consider the following model consisting of three equations that represent the models for previous analysis, which are for the probability of donating, for having a positive intention to donate, and for being a donor, respectively:

$$Pr(Y_i = 1|X) = \phi \left( \alpha_0 + \alpha_1 Z_i + \alpha_2 D_i + \alpha_3 M_i + \sum_{g=0}^G \alpha_4^g T_i^g + \sum_{g=0}^G \alpha_5^g T D_i^g + \sum_{g=0}^G \alpha_6^g T M_i^g + \sum_{n=1}^N \alpha_N x_{iN} \right)$$

$$Pr(Z_i = 1|X) = \phi \left( \beta_0 + \beta_1 D_i + \beta_2 M_i + \sum_{g=0}^G \beta_3^g T_i^g + \sum_{g=0}^G \beta_4^g T D_i^g + \sum_{g=0}^G \beta_5^g T M_i^g + \sum_{n=0}^N \beta_N x_{iN} \right)$$

$$Pr(D_i = 1|X) = \phi \left( \gamma_0 + \gamma_1 M_i + \sum_{n=1}^N \gamma_N x_{iN} \right)$$

Where:

- $Y_i$  is the dependent variable for donation (their respective coefficients are  $\alpha$ ).
- $Z_i$  is the dependent variable intention to donate (their respective coefficients are  $\beta$ ).
- $D_i$  is the dependent and dummy variable being a donor (their respective coefficients are  $\gamma$ ).
- $M_i$  is the dummy variable for the male gender.
- $T_i^g$  are the dummy variables for the different treatments.
- $TD_i^g$  are the interaction variables for treatments (T1 and T3) and donor status.
- $TM_i^g$  are the interaction variables for treatments (T2 and T4) and male gender.
- $x_{iN}$  are the independent variables for individual characteristics.

We then consider the effect of positive intention to donate blood  $Z_i$  on actual donation  $Y_i$  and the effect of being donor  $D_i$  on both variables. We estimated four multivariate probits using robust SEs, SEs by clusters schools, increasing the number of draws, and finally, using only those variables found to be relevant from previous analyses. In order not to make the model too complex, we do not consider in the donation equation the individual preferences and donation-related variables (knowledge of donors, knowledge of people who have received donations, and knowledge of one's status), which were not relevant. We estimated the multivariate probit using both robust SE and cluster SE for schools, using both 50 draws and 100 draws, and finally removing some variables that were not relevant (see Table 2.B.5): the results are similar for the different forms. The estimates of the models converge, and the coefficients of the different equations are in line with the results obtained from the previous models; moreover, with the exclusion of the mild significance of the relationship between intention and donation in the third model (with 100 Draws), there does not appear to be endogeneity. Similar results are also obtained using a general structural equation model (GSEM), again considering the three equations together and using probit and logit as functional forms.

TABLE 2.B.3 – ROBUSTNESS CHECK FOR MODELS

	(1) Probit donation Positive intention (Cluster SE fac.)	(2) Logit intention No data cleaning (Cluster SE fac.)	(3) Probit donation No data cleaning (Cluster SE fac.)	(4) Kernel regression Donation
Intention			1.549*** (0.269)	0.0439*** (0.00427)
T1: Norms	0.169*** (0.0603)	0.0435 (0.131)	0.159*** (0.0569)	0.0119 (0.00958)
T2: Empathy	0.269** (0.113)	0.0865 (0.118)	0.289** (0.126)	0.0258** (0.0102)
T3: Guilt/regret	0.0838 (0.112)	-0.0208 (0.0888)	0.0798 (0.101)	0.0106 (0.00969)
T4: Self-benefits	0.0666 (0.165)	0.332*** (0.0742)	0.0888 (0.149)	0.0114 (0.00988)
Interaction T1 and donor	-0.0180 (0.181)	0.290* (0.164)	-0.0622 (0.176)	
Interaction T2 and male	0.0801 (0.195)	-0.0212 (0.0490)	0.00326 (0.173)	
Interaction T3 and donor	0.135 (0.231)	0.114 (0.178)	0.0806 (0.206)	
Interaction T4 and male	0.282** (0.128)	-0.233*** (0.0646)	0.307** (0.135)	
Time to respond to the last question (seconds)	-0.00161 (0.00143)	-0.0000165 (0.000155)	-0.00245 (0.00169)	
Donor	0.0937 (0.198)	0.732*** (0.117)	0.263 (0.181)	0.0130* (0.00667)
Male	0.0964	0.0607	0.154	0.0107

	(0.178)	(0.120)	(0.173)	(0.00870)
Age	-0.0619*** (0.0167)	-0.00639*** (0.00142)	-0.0597*** (0.0141)	- 0.00392*** (0.000918)
Health status	0.0688*** (0.0195)	0.199*** (0.00969)	0.0688*** (0.0204)	0.00344 (0.00309)
Physical activity	0.115* (0.0639)	0.0411 (0.0376)	0.154*** (0.0562)	0.00961 (0.00670)
Medicine and Surgery School	0.321*** (0.0395)	0.271*** (0.0293)	0.205*** (0.0336)	0.0322** (0.0133)
Engineering and Architecture School	0.0445 (0.0300)	0.0839*** (0.00586)	-0.0879*** (0.0239)	0.00323 (0.0129)
Biology and Pharmacology School	0.376*** (0.0475)	0.472*** (0.0339)	0.246*** (0.0423)	0.0382** (0.0177)
Human Sciences School	0.0939 (0.0634)	0.106*** (0.0359)	0.0115 (0.0527)	0.00951 (0.0119)
Economics, Law and Political Sciences School	0.107*** (0.0304)	0.0728*** (0.0255)	-0.0176 (0.0187)	0.0102 (0.0136)
Risk propensity	-0.0271 (0.0195)	0.0450*** (0.0148)	-0.0196 (0.0163)	
Time preference	0.0372** (0.0157)	0.00594 (0.0284)	0.0315* (0.0172)	
Ambiguity propensity	-0.00736 (0.0152)	0.0290** (0.0129)	-0.00772 (0.0126)	
Altruism	-0.0345 (0.0263)	0.136*** (0.0136)	-0.0440*** (0.0159)	

Positive Reciprocity	-0.0212 (0.0181)	-0.0157 (0.0155)	-0.0145 (0.0122)	
Negative Reciprocity	-0.0182 (0.0154)	-0.0153 (0.0184)	-0.00776 (0.0184)	
Trust	0.0131 (0.0156)	0.0516*** (0.0167)	0.0157 (0.0141)	
Frequency of blood donation	0.00140 (0.0323)	0.108*** (0.0416)	-0.0259 (0.0210)	
He/she has received a blood donation	0 (.)	-0.289* (0.148)	0 (.)	
Knowledge of Donors	-0.0000823 (0.0980)	0.211 (0.168)	0.00840 (0.0759)	
Knowledge of people who received a blood donation	-0.0245 (0.0858)	0.0861 (0.0718)	-0.0198 (0.0866)	
Not knowing if he/she can donate	-0.133 (0.123)	0.542*** (0.0816)	0.0207 (0.0972)	
Constant	-0.877 (0.879)	-3.448*** (0.148)	-2.559*** (0.735)	0.0389*** (0.00367)
Observations	2920	5560	5391	3862
<i>AIC</i>	1092.1	6379.2	1244.5	-
<i>BIC</i>	1122.0	6412.4	1277.5	-

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Notes: When all schools' dummies are equal to zero, we consider students from the Sciences school.

TABLE 2.B.4 – MODELS FOR INTENTION TO DONATE AND DONATION DURING BLOOD DRIVE (OLS)

	(1)	(2)	(3)	(4)
	Intention (robust SE)	Intention (Cluster SE fac.)	Donation (robust SE)	Donation (Cluster SE fac.)
Intention to donate	/	/	0.0434*** (0.00440)	0.0434*** (0.00509)
T1: Norms	0.0166 (0.0272)	0.0166 (0.0339)	0.0102 (0.0106)	0.0102* (0.00479)
T2: Empathy	0.00767 (0.0240)	0.00767 (0.0292)	0.0208* (0.0109)	0.0208 (0.0107)
T3: Guilt/regret	0.000250 (0.0274)	0.000250 (0.0241)	0.00621 (0.00991)	0.00621 (0.00681)
T4: Self-benefits	0.0710*** (0.0233)	0.0710** (0.0265)	0.00325 (0.00968)	0.00325 (0.0101)
Interaction T1 and donor	0.0622** (0.0317)	0.0622 (0.0344)	-0.000403 (0.0167)	-0.000403 (0.0180)
Interaction T2 and male	0.00937 (0.0360)	0.00937 (0.0207)	0.00960 (0.0187)	0.00960 (0.0161)
Interaction T3 and donor	0.0355 (0.0331)	0.0355 (0.0363)	0.00504 (0.0161)	0.00504 (0.0204)
Interaction T4 and male	-0.0486 (0.0357)	-0.0486 (0.0245)	0.0229 (0.0178)	0.0229* (0.0106)
Time to respond to the last question (seconds)	-0.000410* (0.000232)	-0.000410 (0.000332)	-0.0000926 (0.0000646)	-0.0000926 (0.0000777)
Donor	0.0746*** (0.0258)	0.0746*** (0.0177)	0.00177 (0.0133)	0.00177 (0.0156)
Male	-0.0502** (0.0198)	-0.0502* (0.0225)	0.00450 (0.00907)	0.00450 (0.0140)

Age	-0.000998 (0.00105)	-0.000998 (0.000640)	-0.00223*** (0.000325)	-0.00223*** (0.000527)
Health status	0.00936* (0.00536)	0.00936* (0.00427)	0.00309* (0.00183)	0.00309* (0.00124)
Physical activity	0.00114 (0.0140)	0.00114 (0.00806)	0.00888 (0.00614)	0.00888* (0.00414)
Medicine and Surgery School	0.0384 (0.0297)	0.0384*** (0.00930)	0.0257* (0.0139)	0.0257*** (0.00289)
Engineering and Architecture School	-0.00839 (0.0308)	-0.00839** (0.00241)	0.000980 (0.0129)	0.000980 (0.000984)
Biology and Pharmacology School	0.0783** (0.0313)	0.0783*** (0.0117)	0.0323** (0.0164)	0.0323*** (0.00416)
Human Sciences School	-0.00128 (0.0290)	-0.00128 (0.0108)	0.00597 (0.0118)	0.00597 (0.00453)
Economics, Law and Political Sciences School	-0.0109 (0.0295)	-0.0109 (0.00817)	0.00672 (0.0122)	0.00672** (0.00222)
Risk propensity	0.0119*** (0.00306)	0.0119** (0.00305)	-0.00219 (0.00136)	-0.00219 (0.00142)
Time preference	-0.000694 (0.00422)	-0.000694 (0.00314)	0.00262 (0.00166)	0.00262* (0.00120)
Ambiguity propensity	0.00687*** (0.00253)	0.00687* (0.00270)	-0.000679 (0.00105)	-0.000679 (0.000947)
Altruism	0.0312*** (0.00502)	0.0312*** (0.00499)	-0.00203 (0.00212)	-0.00203 (0.00166)
Positive Reciprocity	-0.000632 (0.00369)	-0.000632 (0.00381)	-0.00161 (0.00207)	-0.00161 (0.00136)

Negative Reciprocity	-0.00376 (0.00323)	-0.00376 (0.00200)	-0.00113 (0.00136)	-0.00113 (0.00113)
Trust	0.00968*** (0.00353)	0.00968** (0.00298)	0.00151 (0.00147)	0.00151 (0.00136)
Frequency of blood donation	0.00104 (0.00628)	0.00104 (0.00740)	0.00205 (0.00364)	0.00205 (0.00297)
He/she has received a blood donation	-0.00136 (0.0448)	-0.00136 (0.0194)	-0.0305*** (0.00495)	-0.0305*** (0.00668)
Knowledge of Donors	0.0515* (0.0270)	0.0515 (0.0305)	0.000532 (0.0101)	0.000532 (0.00514)
Knowledge of people who received a blood donation	0.0338** (0.0135)	0.0338*** (0.00549)	-0.00161 (0.00643)	-0.00161 (0.00688)
Not knowing if he/she can donate	-0.0831*** (0.0177)	-0.0831*** (0.0177)	-0.00598 (0.00712) (0.00712)	-0.00598 (0.00794)
Constant	0.254*** (0.0846)	0.254*** (0.0600)	0.0271 (0.0311)	0.0271 (0.0423)
Observations	3872	3872	3872	3872
<i>AIC</i>	3960.2	3906.2	-1851.5	-1907.5
<i>BIC</i>	4160.5	3937.5	-1644.9	-1876.2

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Notes: When all schools' dummies are equal to zero, we consider students from the Sciences school.

TABLE 2.B.5 – MULTIVARIATE PROBIT WITH THREE EQUATIONS: BLOOD DONATION, POSITIVE INTENTION AND DONOR STATUS

	(1) Robust SE Draws 50	(2) Cluster SE for schools Draws 50	(3) Cluster SE for schools Draws 100	(4) Short version Cluster SE for schools Draws 50
Donation (1° equation)				
Intention to donate	1.688*** (0.410)	1.688*** (0.430)	1.779*** (0.345)	1.664*** (0.494)
T1: Norms	0.140 (0.166)	0.140** (0.0563)	0.144*** (0.0547)	0.106** (0.0496)
T2: Empathy	0.270* (0.145)	0.270** (0.117)	0.276** (0.111)	0.235** (0.106)
T3: Guilt/regret	0.0573 (0.169)	0.0573 (0.116)	0.0646 (0.109)	0.0183 (0.111)
T4: Self-benefits	0.0136 (0.156)	0.0136 (0.167)	0.0156 (0.173)	-0.0185 (0.169)
Interaction T1 and donor	-0.0354 (0.203)	-0.0354 (0.218)	-0.0447 (0.214)	0.0460 (0.198)
Interaction T2 and male	0.0627 (0.199)	0.0627 (0.186)	0.0595 (0.187)	0.182 (0.161)
Interaction T3 and donor	0.128 (0.208)	0.128 (0.244)	0.116 (0.243)	0.207 (0.212)
Interaction T4 and male	0.295 (0.211)	0.295** (0.140)	0.292** (0.139)	0.407** (0.162)
Donor	0.421 (0.281)	0.421** (0.201)	-0.0580 (0.0951)	

Male	0.0491 (0.128)	0.0491 (0.155)	0.140 (0.155)	
Age	-0.0642*** (0.0108)	-0.0642*** (0.0145)	-0.0565*** (0.0150)	-0.0573*** (0.0160)
Health status	0.0497 (0.0365)	0.0497** (0.0194)	0.0696*** (0.0155)	0.0693*** (0.0145)
Physical activity	0.110 (0.0895)	0.110* (0.0666)	0.132** (0.0580)	0.136** (0.0680)
Medicine and Surgery School	0.323* (0.182)	0.323*** (0.0499)	0.336*** (0.0449)	0.327*** (0.0382)
Engineering and Architecture School	0.0462 (0.190)	0.0462** (0.0184)	0.0444** (0.0190)	0.0447** (0.0178)
Biology and Pharmacology School	0.350* (0.194)	0.350*** (0.0588)	0.331*** (0.0574)	0.331*** (0.0574)
Human Sciences School	0.110 (0.181)	0.110* (0.0583)	0.0852 (0.0577)	0.0674* (0.0405)
Economics, Law and Political Sciences School	0.116 (0.183)	0.116*** (0.0306)	0.0852*** (0.0315)	0.0815*** (0.0269)
Constant	-2.780*** (0.579)	-2.780*** (0.538)	-3.046*** (0.587)	-2.927*** (0.585)

---

Intention to donate (2° equation)				
T1: Norms	0.0498 (0.0853)	0.0498 (0.116)	0.0468 (0.114)	0.0501 (0.111)
T2: Empathy	0.0138 (0.0837)	0.0138 (0.105)	0.0112 (0.102)	0.0168 (0.101)
T3: Guilt/regret	-0.00563 (0.0850)	-0.00563 (0.0719)	-0.00860 (0.0712)	-0.000276 (0.0686)

T4: Self-benefits	0.237*** (0.0890)	0.237** (0.102)	0.233** (0.107)	0.239** (0.102)
Interaction T1 and donor	0.308** (0.136)	0.308** (0.150)	0.304** (0.150)	0.304** (0.143)
Interaction T2 and male	0.0543 (0.122)	0.0543 (0.0737)	0.0506 (0.0713)	0.0509 (0.0652)
Interaction T3 and donor	0.127 (0.126)	0.127 (0.143)	0.127 (0.143)	0.122 (0.138)
Interaction T4 and male	-0.177 (0.127)	-0.177** (0.0833)	-0.177** (0.0860)	-0.182* (0.0947)
Donor	0.451 (0.308)	0.451* (0.267)	-0.145 (0.345)	0.696*** (0.252)
Male	-0.224** (0.0870)	-0.224*** (0.0701)	-0.108 (0.132)	-0.267*** (0.0680)
Age	-0.00626 (0.00569)	-0.00626 (0.00400)	0.00264 (0.00656)	-0.00968** (0.00449)
Health status	0.0283 (0.0208)	0.0283 (0.0240)	0.0491*** (0.0178)	0.0192 (0.0211)
Physical activity	-0.00176 (0.0514)	-0.00176 (0.0208)	0.0247 (0.0341)	
Medicine and Surgery School	0.127 (0.107)	0.127*** (0.0264)	0.145*** (0.0353)	0.123*** (0.0236)
Engineering and Architecture School	-0.0394 (0.103)	-0.0394*** (0.0120)	-0.0440*** (0.0109)	-0.0331*** (0.0116)
Biology and Pharmacology School	0.317*** (0.116)	0.317*** (0.0312)	0.297*** (0.0243)	0.319*** (0.0288)
Human Sciences School	0.00132 (0.0993)	0.00132 (0.0433)	-0.0298 (0.0273)	0.0117 (0.0395)

Economics, Law and Political Sciences School	-0.0226 (0.101)	-0.0226 (0.0298)	-0.0597*** (0.0166)	-0.00781 (0.0297)
Risk propensity	0.0423*** (0.0114)	0.0423*** (0.0109)	0.0401*** (0.0118)	0.0409*** (0.0119)
Time preference	0.00253 (0.0149)	0.00253 (0.0120)	-0.00115 (0.0126)	
Ambiguity propensity	0.0218** (0.00910)	0.0218** (0.00957)	0.0214** (0.00947)	0.0215** (0.00978)
Altruism	0.0917*** (0.0187)	0.0917*** (0.0194)	0.110*** (0.0122)	0.0847*** (0.0202)
Positive Reciprocity	-0.00216 (0.0145)	-0.00216 (0.0145)	-0.00899 (0.0144)	
Negative Reciprocity	-0.0133 (0.0112)	-0.0133* (0.00744)	-0.0126* (0.00678)	-0.0126* (0.00730)
Trust	0.0335*** (0.0128)	0.0335*** (0.0115)	0.0368*** (0.0115)	0.0324*** (0.0117)
Frequency of blood donation	0.00492 (0.0274)	0.00492 (0.0360)	0.00655 (0.0358)	
He/she has received a blood donation	-0.0228 (0.159)	-0.0228 (0.0733)	-0.0195 (0.0557)	
Knowledge of Donors	0.130 (0.0926)	0.130 (0.0989)	0.215* (0.112)	
Knowledge of people who received a blood donation	0.124** (0.0484)	0.124*** (0.0254)	0.107*** (0.0196)	0.125*** (0.0200)
Not knowing if he/she can donate	-0.270*** (0.0574)	-0.270*** (0.0538)	-0.267*** (0.0528)	-0.270*** (0.0562)

Constant	-0.847** (0.335)	-0.847*** (0.261)	-1.191*** (0.287)	-0.599* (0.321)
----------	---------------------	----------------------	----------------------	--------------------

---

Donor (3<sup>o</sup> equation)

Male	0.526*** (0.0491)	0.526*** (0.0475)	0.526*** (0.0481)	0.525*** (0.0523)
Age	0.0421*** (0.00367)	0.0421*** (0.00368)	0.0422*** (0.00373)	0.0416*** (0.00366)
Health status	0.109*** (0.0170)	0.109*** (0.00562)	0.110*** (0.00547)	0.107*** (0.00383)
Physical activity	0.124*** (0.0452)	0.124* (0.0672)	0.128** (0.0650)	0.116* (0.0634)
Medicine and Surgery School	0.0841 (0.0963)	0.0841*** (0.0133)	0.0855*** (0.0125)	0.0757*** (0.0133)
Engineering and Architecture School	-0.0161 (0.0960)	-0.0161 (0.0103)	-0.0197*** (0.00713)	-0.0224*** (0.00226)
Biology and Pharmacology School	-0.0707 (0.105)	-0.0707*** (0.0177)	-0.0760*** (0.0164)	-0.0772*** (0.0198)
Human Sciences School	-0.149 (0.0921)	-0.149*** (0.0247)	-0.153*** (0.0248)	-0.148*** (0.0228)
Economics, Law and Political Sciences School	-0.167* (0.0934)	-0.167*** (0.00926)	-0.173*** (0.00800)	-0.180*** (0.0101)
Risk propensity	-0.00762 (0.0100)	-0.00762 (0.00533)	-0.00539 (0.00491)	
Time preference	-0.0184 (0.0135)	-0.0184 (0.0213)	-0.0204 (0.0221)	
Ambiguity propensity	0.000749 (0.00806)	0.000749 (0.00544)	0.00129 (0.00503)	

Altruism	0.0987*** (0.0156)	0.0987*** (0.0124)	0.100*** (0.0123)	0.0913*** (0.00730)
Positive Reciprocity	-0.0335*** (0.0128)	-0.0335* (0.0180)	-0.0327* (0.0175)	-0.0348** (0.0178)
Negative Reciprocity	0.00424 (0.0103)	0.00424 (0.0100)	0.00408 (0.00963)	
Trust	0.0185 (0.0113)	0.0185** (0.00783)	0.0173** (0.00851)	0.0155* (0.00908)
He/she has received a blood donation	0.0384 (0.143)	0.0384 (0.235)	0.0655 (0.240)	
Knowledge of people who received a blood donation	-0.0651 (0.0438)	-0.0651 (0.0500)	-0.0657 (0.0476)	
Knowledge of Donors	0.453*** (0.0814)	0.453*** (0.0563)	0.453*** (0.0517)	0.447*** (0.0615)
Constant	-3.244*** (0.265)	-3.244*** (0.178)	-3.261*** (0.179)	-3.296*** (0.167)
<hr/>				
atrho21				
Constant	-0.186 (0.216)	-0.186 (0.188)	-0.231* (0.133)	-0.166 (0.224)
<hr/>				
atrho31				
Constant	-0.191 (0.169)	-0.191 (0.138)	0.104 (0.0645)	0.0339 (0.0857)
<hr/>				
atrho32				
Constant	-0.106 (0.181)	-0.106 (0.162)	0.257 (0.198)	-0.255 (0.164)
<hr/>				
Observations	3872	3872	3872	3872
AIC	9871.5	9733.5	9734.2	9744.4
BIC	10334.9	9764.8	9765.5	9775.7

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Notes: When all schools' dummies are equal to zero, we consider students from the Sciences school.

## Appendix 2.C. Online survey and emails

### (ENGLISH VERSION)

Notes: The black lines divide each step of the online survey. The words in the square bracket are not reported in the real one.

---

#### UnicaDona:

Dear student,

we ask you to take 5 minutes of your time to fill out this questionnaire proposed by the Department of Economic and Business Sciences of the University of Cagliari in collaboration with Avis Provinciale Cagliari. The following survey is part of the "UnicaDona" research project aimed at surveying the propensity, motivations and habits regarding blood donation in the student population of the University of Cagliari in order to improve the involvement and management of AVIS in the area.

The project contact person is Dr. Gabriele Ballicu of the Department of Economics and Business Sciences.

---

#### 1) Gender

Man

Woman

Non binary

\_\_\_\_\_

---

#### 2) Age

\_\_\_\_\_

---

#### 3) School:

Humanities

Science

Medicine and surgery

CTF

Engineering and architecture

Economics, Law and Political studies

---

#### 4) How willing are you to take risks, in general? [*risk aversion*]

Not at all

willing to take risks

Very willing

to take risks

1

2

3

4

5

6

7

8

9

10

---

5) How willing are you to give up something beneficial for you today to benefit more from that in the future? [*time preference*]

Not at all										Very willing
willing to give										to give
1	2	3	4	5	6	7	8	9	10	
<input type="checkbox"/>										

---

6) Do you agree with the following sentence: there is a right way and a wrong way to do almost everything? [*ambiguity preference*]

Strongly disagree										Strongly agree
1	2	3	4	5	6	7	8	9	10	
<input type="checkbox"/>										

---

7) How willing are you to give to good causes without expecting anything in return? [*Altruism, general*]

Not at all										Very willing
willing to give										to give
1	2	3	4	5	6	7	8	9	10	
<input type="checkbox"/>										

---

8) How well the following sentence describes you: when someone does me a favor, I am willing to return it [*Positive reciprocity*]

Strongly disagree										Strongly agree
1	2	3	4	5	6	7	8	9	10	
<input type="checkbox"/>										

---

9) How well the following sentence describes you: if I am treated very unjustly, I will take revenge on the first occasion, even if there is a cost to do so [*Negative reciprocity*]

Strongly disagree										Strongly agree
1	2	3	4	5	6	7	8	9	10	
<input type="checkbox"/>										

---

10) How well the following sentence describes you: I assume that people have only the best intentions [*Trust*]

Strongly disagree										Strongly agree
1	2	3	4	5	6	7	8	9	10	
<input type="checkbox"/>										

---

---

11) Are you in good health?

Strongly disagree

Strongly agree

1      2      3      4      5      6      7      8      9      10  
                          

---

12) Do you practice any sports?

No                       Yes

---

13) Can you donate blood?

No                       Yes                       I don't know

---

14) Have you ever donated blood?

No                       One times / few times                       I am a habitual donor

---

15) How often do you usually donate blood? [if the answer to question 14 is not "No"]

Every 3 months                       Every 6 months                       Every 9 months  
 Every year                       Every 2 year

---

16) When was approximately the last time you donated blood? [if the answer to question 14 is not "No"]

3 months ago                       6 months ago                       9 months ago  
 One year ago                       More than one year ago

---

17) Have you ever received a blood donation? [*reciprocity*]

No                       Yes

---

18) Do you know any blood donors? [*descriptive norm*]

No                       Yes

---

19) Do you know any blood receivers? [*relationship with recipient – familiar altruism*]

No                       Yes

---

20) I am aware and informed about the importance of blood donation [*information*]

Strongly disagree

Strongly agree

1      2      3      4      5      6      7      8      9      10

---

21) I want to donate blood as soon as possible [*intention to donate*]

Strongly disagree										Strongly agree
1	2	3	4	5	6	7	8	9	10	
<input type="checkbox"/>										

---

22) Donate blood, even if it requires sacrifice, is a kind and generous act that could save many lives [*pure altruism*]

Strongly disagree										Strongly agree
1	2	3	4	5	6	7	8	9	10	
<input type="checkbox"/>										

---

23) I want to donate blood because I cannot rely on the possibility that others would do [*reluctant altruism*]

Strongly disagree										Strongly agree
1	2	3	4	5	6	7	8	9	10	
<input type="checkbox"/>										

---

24) I will feel happy after donating blood to help others [*impure altruism – warm glow effect*]

Strongly disagree										Strongly agree
1	2	3	4	5	6	7	8	9	10	
<input type="checkbox"/>										

---

25) If I don't donate, I would feel guilty, and I would regret my choice [*regret and guilty*]

Strongly disagree										Strongly agree
1	2	3	4	5	6	7	8	9	10	
<input type="checkbox"/>										

---

26) Blood donation is fair and a civic duty [*social norm*]

Strongly disagree										Strongly agree
1	2	3	4	5	6	7	8	9	10	
<input type="checkbox"/>										

---

27) Blood donation is coherent with my moral values and principles [*subjective norm*]

Strongly disagree Strongly agree

1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>									

---

28) Donating blood is easy, quick, and accessible [*perceived behavioral control*]

Strongly disagree Strongly agree

1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>									

---

29) Would you be more or less likely to donate blood if you were paid?

More  Same  Less

---

30) Do you think other people would be more or less likely to donate blood if they were paid?

More  Same  Less

---

31) This is a test question. Please answer '3' for this item

1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>									

---

Thank you for completing the questionnaire! After completing this page, you will receive your code for the lottery and the priority to donate blood.

[FRAME MESSAGE]

Next week you will have the possibility to donate your blood in different places at University [*willingness*]

No, I am not interested in donating blood

Yes, I want to donate blood

---

Thank you for completing the questionnaire! This is your personal code to skip the queue for the blood drive: CODE

IMPORTANT: Take a picture of the code! The questionnaire is anonymous, so you must write your email in the following separated Microsoft Forms to join the prize lotteries.

---

## MAIL WITH LINK

Dear student,

The University of Cagliari, in collaboration with the Cagliari Provincial AVIS, is carrying out a research project to analyze opinions, motivations, and attitudes regarding blood donation in the student population of the University of Cagliari in order to improve the involvement and management of AVIS in the area. To contribute to the research, we ask you to fill out a short questionnaire of 31 closed-ended questions (5 minutes) at the following link.

Following completion, you will receive a personal code granting you the right of way for blood donation days between May 29 and June 13. In addition, after completing the questionnaire, you will have a chance to win one of 20 prizes of 100 euros.

The prize raffle will be independent of blood donation. Winners will be contacted by e-mail on June 15.

We ask you to spread the message to as many colleagues as possible to help the scientific research on blood donation.

Attached is the calendar with the days and places to donate after you complete the questionnaire.

[CALENDAR ATTACHMENT].

We thank you for your attention and availability,

University of Cagliari and Cagliari Provincial AVIS.

---

PRIZE ANNOUNCEMENT MAIL [ONLY TO WINNERS]

Dear student,

We want to inform you that you have won one of the 20 prizes of 100 euros offered by the University of Cagliari after completing the questionnaire about the UnicaDona project.

In order to receive the prize, you will have to fill in and sign the statement for collection and send it to the email [segreteria@unica.it](mailto:segreteria@unica.it), enclosing your ID, no later than the 15th day after receiving this email. In the statement, he/she should indicate "UnicaDona award" as the prize amounting to €125 before legal deductions."

Attached is the statement for receiving the prize and the relevant privacy policy.

Thank you again for contributing to blood donation research; we wish you a good day. Kind regards,

University of Cagliari - AVIS Provincial Cagliari

(ITALIAN VERSION)

Notes: The black lines divide each step of the online survey. The words in the square bracket are not reported in the real one.

---

**UnicaDona:**

Gentile studente/essa,

ti chiediamo di dedicare 5 minuti del tuo tempo alla compilazione del presente questionario proposto dal Dipartimento di Scienze Economiche e Aziendali dell'Università degli Studi di Cagliari in collaborazione con Avis Provinciale Cagliari. La seguente indagine fa parte del progetto di ricerca "UnicaDona" volto a censire la propensione, le motivazioni e le abitudini in merito alla donazione di sangue nella popolazione studentesca dell'Università di Cagliari, al fine di migliorare il coinvolgimento e la gestione dell'AVIS sul territorio.

Il referente del progetto è il dott. Gabriele Ballicu del Dipartimento di Scienze Economiche e Aziendali.

---

1) Genere

- Uomo                       Donna  
 Non binario               \_\_\_\_\_

---

2) Età

\_\_\_\_\_

---

3) Facoltà:

- Studi umanistici               Biologia e Farmacia  
 Medicina e chirurgia         Scienze Economiche, Giuridiche e politiche  
 Ingegneria e Architettura    Scienze

---

4) Quanto sei propenso/a a correre rischi in generale?

Per nulla propenso/a  
a correre rischi

Molto propenso/a  
a correre rischi

- |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1                        | 2                        | 3                        | 4                        | 5                        | 6                        | 7                        | 8                        | 9                        | 10                       |
| <input type="checkbox"/> |

---

5) Quanto sei propenso/a a rinunciare a qualcosa di gratificante nell'immediato per avere maggiori

---

benefici in futuro?

Per nulla propenso/a  
a rinunciare

1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>									

Molto propenso/a  
a rinunciare

---

6) Sei d'accordo con l'affermazione che ci sia sempre un modo giusto e un modo sbagliato di fare le cose?

Fortemente in disaccordo

1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>									

Fortemente d'accordo

---

7) Quanto sei disposto/a a dare per una buona causa senza aspettarti nulla in cambio?

Per nulla propenso/a  
a donare

1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>									

Molto propenso/a  
a donare

---

8) Quanto la seguente frase descrive la tua persona: quando qualcuno/a mi fa un favore, voglio ricambiarlo/a

Fortemente in disaccordo

1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>									

Fortemente d'accordo

---

9) Quanto la seguente frase descrive la tua persona: se mi sento trattato/a in modo molto ingiusto, mi vendicherò alla prima occasione, anche se ciò comporta un costo

Fortemente in disaccordo

1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>									

Fortemente d'accordo

---

10) Quanto la seguente frase descrive la tua persona: ritengo che le persone siano mosse da buone intenzioni

Fortemente in disaccordo

1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>									

Fortemente d'accordo

---

---

11) Sei in buona salute?

Fortemente in disaccordo

Fortemente d'accordo

1      2      3      4      5      6      7      8      9      10  
                          

---

12) Pratichi attività fisica?

No             Sì

---

13) Puoi donare il sangue?

No             Sì             Non lo so

---

14) Hai mai donato il sangue precedentemente?

No             Una/qualche volta             Sono un donatore abituale

---

15) Solitamente ogni quanto vai a donare sangue? [solo se si ha già donato sangue]

Ogni 3 mesi                       Ogni 6 mesi                       Ogni 9 mesi  
 Ogni anno                       Ogni due anni

---

16) Quando è stata approssimativamente l'ultima volta che hai donato sangue? [solo se si ha già donato sangue]

3 mesi fa                       circa 6 mesi fa                       circa 9 mesi fa  
 Circa un anno fa                       Più di un anno fa

---

17) Hai mai avuto bisogno di una trasfusione di sangue?

No             Sì

---

18) Conosci dei donatori/donatrici di sangue?

No             Sì

---

19) Conosci persone che hanno ricevuto una trasfusione di sangue?

No             Sì

---

20) Sono consapevole e informato/a riguardo all'importanza della donazione di sangue

Fortemente in disaccordo

Fortemente d'accordo

1      2      3      4      5      6      7      8      9      10  
                          

---

---

21) Voglio donare il sangue il prima possibile

Fortemente in disaccordo

Fortemente d'accordo

1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>									

---

22) Donare il sangue, anche se richiede sacrifici, è un gesto di bontà e generosità che può salvare molte vite

Fortemente in disaccordo

Fortemente d'accordo

1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>									

---

23) Donerei il sangue perché non posso fare affidamento sul fatto che gli altri lo faranno

Fortemente in disaccordo

Fortemente d'accordo

1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>									

---

24) Mi sentirò felice dopo aver donato il sangue sapendo che ho aiutato altre persone

Fortemente in disaccordo

Fortemente d'accordo

1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>									

---

25) Se non donassi il sangue, mi sentirei in colpa e avrei il rimorso per non aver fatto questa scelta

Fortemente in disaccordo

Fortemente d'accordo

1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>									

---

26) Donare sangue è giusto ed è un dovere civico

Fortemente in disaccordo

Fortemente d'accordo

1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>									

---

27) Donare sangue è coerente con i miei valori e principi morali

Fortemente in disaccordo

Fortemente d'accordo

1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>									

---

---

28) Donare sangue è una procedura facile, rapida e accessibile

Fortemente in disaccordo

Fortemente d'accordo

1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>									

---

29) Saresti più o meno propenso a donare il sangue se venissi pagato/a?

Di più                       Lo stesso                       Di meno

---

30) Pensi che le altre persone donerebbero il sangue di più o di meno se venissero pagate?

Di più                       Lo stesso                       Di meno

---

31) Questa domanda è un test per l'attenzione. Le chiediamo di rispondere 3

1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>									

---

Grazie per aver completato il questionario! Dopo aver completato questa pagina, riceverai il tuo codice per la lotteria e per avere la priorità per la donazione di sangue.

[MESSAGGIO FRAME]

Le prossime settimane avrai la possibilità di donare il tuo sangue in una delle sedi dell'Università e in diversi centri dell'Avis

No, non sono interessato/a a donare il sangue                       Sì, voglio donare il sangue

---

Grazie per aver completato il questionario! Questo è il tuo codice personale per avere la priorità alle giornate di donazione: CODE

IMPORTANTE: Fai una foto al codice! Questo questionario è anonimo, dovrai quindi scrivere la tua email nella prossima sezione separata di Microsoft Forms per partecipare alla lotteria.

---

## MAIL WITH LINK

Gentilissimo/a studente/essa

L'Università degli Studi di Cagliari, in collaborazione con l'AVIS Provinciale Cagliari, sta realizzando un progetto di ricerca per analizzare le opinioni, le motivazioni e le attitudini in merito alla donazione di sangue nella popolazione studentesca dell'Università degli Studi di Cagliari, al fine di migliorare il coinvolgimento e la gestione dell'AVIS sul territorio. Per dare un contributo alla ricerca, le chiediamo di compilare un breve questionario di 31 domande a risposta chiusa (5 minuti) al seguente [link](#).

A seguito della compilazione, riceverà un codice personale che le garantirà il diritto di precedenza per le giornate di donazione di sangue fra il 29 Maggio e il 13 Giugno. Inoltre, a seguito della compilazione del questionario, avrà la possibilità di vincere uno dei 20 premi da 100 euro.

La lotteria del premio sarà indipendente dalla donazione del sangue. I vincitori verranno contattati per e-mail il giorno 15 Giugno.

Le chiediamo di diffondere il messaggio al maggior numero possibile di colleghe e colleghi e al fine di aiutare la ricerca scientifica sulla donazione di sangue.

In allegato il calendario con le giornate e i luoghi dover poter donare dopo che avrà completato il questionario. [ALLEGATO DEL CALENDARIO]

La ringraziamo per l'attenzione e per la disponibilità,

Università degli Studi di Cagliari e AVIS Provinciale Cagliari

---

PRIZE ANNOUNCEMENT MAIL [ONLY TO WINNERS]

Gentilissimo/a studente/essa,

Le comunichiamo che è risultato/a vincitore/trice di uno dei 20 premi da 100 euro messi in palio dall'Università di Cagliari in seguito alla compilazione del questionario attinente al progetto UnicaDona.

Per l'erogazione del premio, dovrà compilare e firmare la dichiarazione per il ritiro e inviarla alla mail [segreteria@unica.it](mailto:segreteria@unica.it), allegando un suo documento d'identità, entro e non oltre il quindicesimo giorno dalla ricezione di questa mail. Nella dichiarazione, dovrà indicare come premio la dicitura "premio UnicaDona" pari a € "125 al lordo delle trattenute di legge".

In allegato la dichiarazione per la ricezione del premio e la relativa informativa sulla privacy.

Ringraziandola ancora per aver contribuito alla ricerca sulle donazioni di sangue, le auguriamo una buona giornata. Cordiali saluti,

Università di Cagliari - AVIS Provinciale Cagliari

## **Appendix Chapter 3**

### Appendix 3.A. Additional data information and results

TABLE 3.A.1 – DESCRIPTIVE STATISTICS AND TEST COMPARING NORTHERN AND SOUTHERN

	North	South	Kruskal Wallis test	North		Kruskal Wallis test
				(only Northern parents)	(1 or more Southern Parentes)	
N	1200	1205		874	331	
Risk (GPS)	4.939 (2.437)	5.152 (2.599)	0.03	4.907 (2.424)	5.021 (2.472)	0.408
Time preference (GPS)	6.925 (2.054)	7.058 (2.117)	0.161	6.868 (2.004)	7.076 (2.176)	0.046
Altruism (GPS)	7.281 (2.233)	7.626 (2.181)	< 0.001	7.245 (2.246)	7.378 (2.198)	0.464
Positive reciprocity (GPS)	8.331 (1.791)	8.233 (1.928)	0.49	8.32 (1.788)	8.36 (1.803)	0.578
Negative reciprocity (GPS)	4.952 (2.642)	4.977 (2.753)	0.762	4.924 (2.627)	5.024 (2.683)	0.443
Trust (GPS)	5.837 (2.020)	5.972 (2.116)	0.125	5.88 (2.022)	5.725 (2.015)	0.276
Extraversion	3.74 (1.274)	3.667 (1.248)	0.299	3.751 (1.271)	3.713 (1.282)	0.741
Agreeableness	5.086 (1.046)	5.213 (1.110)	0.006	5.086 (1.034)	5.086 (1.078)	0.936
Conscientiousness	5.197 (1.147)	5.276 (1.197)	0.093	5.212 (1.136)	5.156 (1.178)	0.504
Neuroticism	4.315 (1.298)	4.372 (1.252)	0.649	4.343 (1.274)	4.239 (1.357)	0.095
Openness	3.999 (0.997)	4.002 (0.973)	0.960	4.014 (1.036)	3.961 (0.888)	0.49
Family importance	9.089 (1.691)	9.314 (1.487)	< 0.001	9.024 (1.784)	9.26 (1.405)	0.153

Amoral familism	8.057 (1.944)	8.297 (2.035)	< 0.001	7.961 (1.998)	8.311 (1.769)	0.009
Religiosity	2.6 (1.002)	2.893 (0.910)	< 0.001	2.595 (1.019)	2.613 (0.957)	0.904
Use of dialect	2.093 (0.934)	2.643 (0.784)	< 0.001	2.217 (0.933)	1.764 (0.852)	< 0.001
Bound to tradition	2.939 (0.832)	3.169 (0.763)	< 0.001	2.998 (0.792)	2.782 (0.912)	< 0.001
Willingness to working outside	2.247 (1.162)	2.199 (1.116)	0.392	2.229 (1.173)	2.296 (1.135)	0.3280
Honesty perceived public sector	1.92 (0.821)	1.925 (0.825)	0.829	1.958 (0.810)	1.822 (0.843)	0.016
Honesty perceived public hospital	1.405 (0.844)	1.522 (0.854)	< 0.001	1.422 (0.838)	1.36 (0.860)	0.269
Honesty perceived public school	1.272 (0.849)	1.323 (0.839)	0.138	1.285 (0.844)	1.239 (0.864)	0.386
Honesty perceived police	1.153 (0.926)	1.263 (0.951)	0.005	1.149 (0.917)	1.163 (0.949)	0.919
Honesty perceived private sector	1.565 (0.842)	1.596 (0.870)	0.313	1.564 (0.837)	1.568 (0.859)	0.99
Honesty perceived private hospital	1.497 (0.900)	1.497 (0.941)	0.843	1.482 (0.893)	1.538 (0.918)	0.346
Honesty perceived private school	1.471 (0.885)	1.488 (0.929)	0.657	1.473 (0.886)	1.465 (0.881)	0.916
Honesty perceived local politics	1.866 (0.969)	1.941 (1.005)	0.031	1.888 (0.957)	1.807 (0.999)	0.264
Honesty perceived national politics	2.174 (0.958)	2.053 (1.011)	0.007	2.205 (0.933)	2.094 (1.018)	0.187

Blood donation in the last year	.149 (0.356)	.217 (0.413)	0.003	.143 (0.350)	.163 (0.370)	0.589
Having vote in the last election	.817 (0.386)	.846 (0.361)	0.228	.824 (0.381)	.801 (0.400)	0.534
Member of a religious group	1.335 (0.640)	1.553 (0.767)	< 0.001	1.338 (0.643)	1.329 (0.630)	0.946
Member of a sports club	1.497 (0.773)	1.547 (0.786)	0.135	1.53 (0.792)	1.411 (0.714)	0.06
Member of an artistic/educational group	1.305 (0.634)	1.414 (0.701)	< 0.001	1.324 (0.652)	1.257 (0.580)	0.289
Member of a labor union	1.253 (0.542)	1.365 (0.638)	< 0.001	1.245 (0.528)	1.275 (0.577)	0.709
Member of a political party	1.207 (0.507)	1.338 (0.601)	< 0.001	1.2 (0.493)	1.224 (0.543)	0.851
Member of an environmental group	1.293 (0.596)	1.46 (0.707)	< 0.001	1.299 (0.603)	1.278 (0.578)	0.749
Member of a professional association	1.263 (0.576)	1.387 (0.675)	< 0.001	1.276 (0.593)	1.23 (0.530)	0.5
Member of a humanitarian organization	1.37 (0.678)	1.497 (0.744)	< 0.001	1.378 (0.683)	1.35 (0.664)	0.631
Member of a consumer organization	1.276 (0.584)	1.39 (0.672)	< 0.001	1.272 (0.578)	1.284 (0.601)	0.9125
Member of other types of organization	1.067 (0.348)	1.042 (0.274)	0.551	1.08 (0.381)	1.033 (0.238)	0.938
Trust (binary)	.315 (0.465)	0.314 (0.464)	0.960	.34 (0.474)	.251 (0.434)	0.017
Trust in family	2.651 (0.596)	2.601 (0.580)	0.017	2.658 (0.597)	2.634 (0.595)	0.508
Trust in neighbors	1.597 (0.730)	1.458 (0.728)	< 0.001	1.64 (0.730)	1.483 (0.719)	0.001
Trust in acquaintances	1.68 (0.652)	1.493 (0.706)	< 0.001	1.74 (0.635)	1.52 (0.671)	< 0.001
Trust in strangers	.919 (0.714)	.837 (0.750)	0.003	.986 (0.698)	.74 (0.725)	< 0.001

Trust in people of different religions	1.28 (0.774)	1.252 (0.790)	0.350	1.323 (0.773)	1.166 (0.766)	0.003
Trust in people of different nations	1.361 (0.748)	1.335 (0.788)	0.409	1.402 (0.751)	1.254 (0.732)	0.005
Proverb (sharing)	.817 (0.387)	.788 (0.409)	0.230	.815 (0.389)	.822 (0.383)	0.849
Proverb (cooperation)	.794 (0.404)	.768 (0.422)	0.272	.797 (0.402)	.785 (0.411)	0.748
Proverb (trust)	.797 (0.403)	.767 (0.423)	0.202	.799 (0.401)	.792 (0.407)	0.849
Proverb (home)	.768 (0.422)	.677 (0.468)	< 0.001	.763 (0.425)	.782 (0.413)	0.604
Proverb (change)	.635 (0.482)	.585 (0.493)	0.034	.633 (0.482)	.64 (0.481)	0.835

---

*Notes:* the results are obtained with Kruskal Wallis tests with adjusted p-values

TABLE 3.A.2 – AVERAGE MARGINAL EFFECTS FOR SOCIAL CAPITAL VARIABLES

	(1) Probit model for having voted in the last election	(2) Logit model for having voted in the last election	(3) Probit model for having donated blood this year	(4) Logit model for having donated blood this year
North (live)	-0.0246 (0.0254)	-0.0240 (0.0254)	-0.0267 (0.0268)	-0.0211 (0.0275)
Male	0.00255 (0.0167)	0.00432 (0.0169)	0.0491*** (0.0170)	0.0483*** (0.0173)
Age in years	0.00135** (0.000671)	0.00150** (0.000674)	-0.00417*** (0.000621)	-0.00411*** (0.000614)
Level of education	0.0285*** (0.00915)	0.0312*** (0.00985)	0.0131* (0.00719)	0.0134* (0.00712)
Household income	0.0197** (0.00845)	0.0209** (0.00887)	0.0118 (0.00747)	0.0116 (0.00738)
City size	-0.00721 (0.00788)	-0.00824 (0.00800)	-0.00227 (0.00767)	-0.00177 (0.00774)
From South to North	0.0128 (0.0460)	0.00588 (0.0463)	-0.0307 (0.0483)	-0.0297 (0.0491)
From North to South	-0.0815 (0.0847)	-0.0858 (0.0820)	0.0649 (0.0982)	0.0701 (0.109)
Born Center/Sardinia	-0.0575 (0.0624)	-0.0578 (0.0605)	-0.141 (0.110)	-0.173 (0.136)
Born foreign country	-0.0927** (0.0470)	-0.0904** (0.0441)	-0.0481 (0.0610)	-0.0403 (0.0664)
South parent(s)	0.0130 (0.0248)	0.0161 (0.0247)	0.0307 (0.0270)	0.0345 (0.0278)
Family bound	-0.0000373 (0.00520)	-0.000542 (0.00515)	-0.00632 (0.00545)	-0.00698 (0.00548)
Religiosity	0.0141* (0.00822)	0.0142* (0.00826)	0.0224*** (0.00833)	0.0234*** (0.00847)

Dialect	-0.00558 (0.00942)	-0.00617 (0.00959)	0.0307*** (0.00945)	0.0301*** (0.00949)
Traditions	0.0363*** (0.0104)	0.0362*** (0.0105)	0.0143 (0.0101)	0.0135 (0.0102)
Work outside	-0.00842 (0.00683)	-0.00647 (0.00689)	0.00799 (0.00660)	0.00795 (0.00666)
Dummies for jobs	✓	✓	✓	✓
GPS controls	✓	✓	✓	✓
Big Five controls	✓	✓	✓	✓
Observations	2405	2405	2405	2405

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

TABLE 3.A.3 – ROBUSTNESS CHECKS FOR GAMES AND SCENARIOS

	(1) PGG Contribution	(2) PGG belief in other	(3) Cooperation beliefs (scenario)	(4) Wallet scenario	(5) Taxi scenario trust
North (live)	1.879 (2.685)	3.111 (2.710)	-0.0584 (0.0548)	-0.157 (0.110)	0.0735 (0.0772)
T1 (info same area)	-1.693 (2.116)	0.0418 (1.965)	-0.0676** (0.0316)	-0.0964 (0.0832)	0.00973 (0.0619)
T2 (info different area)	-1.974 (2.768)	0.158 (2.098)	-0.0372 (0.0394)	0.247*** (0.0916)	0.0850 (0.0601)
Interaction T1*North	-1.358 (3.206)	-1.780 (2.682)	0.100** (0.0480)	0.132 (0.121)	-0.0446 (0.0899)
Interaction T2*North	-0.123 (3.502)	0.265 (2.819)	0.0921* (0.0549)	0.0424 (0.120)	-0.121 (0.0760)
Male	2.062* (1.126)	0.846 (1.200)	-0.0265 (0.0245)	0.0108 (0.0474)	0.0470 (0.0456)
Age in years	-0.0581 (0.0560)	-0.0204 (0.0563)	0.00246** (0.000989)	-0.00172 (0.00179)	0.00314** (0.00141)
Education	-0.627 (0.582)	-0.473 (0.616)	-0.0188 (0.0116)	-0.0387 (0.0259)	-0.00734 (0.0158)
Household income	1.537** (0.692)	0.634 (0.595)	-0.000365 (0.0142)	0.0522** (0.0254)	-0.0507** (0.0195)
City size	2.282*** (0.497)	2.036*** (0.639)	-0.0228* (0.0116)	0.0276 (0.0234)	0.000111 (0.0162)
South parent(s)	-1.336 (1.789)	-0.590 (2.051)	-0.0688* (0.0363)	-0.0588 (0.0598)	0.00322 (0.0493)
Family bound	-0.497 (0.468)	-0.134 (0.362)	0.0000497 (0.00678)	-0.0560*** (0.0172)	0.0127 (0.0149)
Religiosity	-1.096 (0.790)	-0.237 (0.599)	0.00455 (0.0105)	0.0622** (0.0243)	-0.0162 (0.0167)
Dialect	0.277 (0.746)	0.608 (0.624)	-0.0202 (0.0131)	0.0844** (0.0359)	-0.0356 (0.0235)

Traditions	1.609* (0.917)	0.785 (0.780)	0.0593*** (0.0166)	0.0295 (0.0304)	-0.0242 (0.0251)
Work outside	1.166* (0.697)	0.558 (0.456)	0.0416*** (0.0122)	0.00207 (0.0184)	0.0225 (0.0155)
Constant	-5.898 (6.872)	-0.982 (6.562)	2.047*** (0.184)	2.246*** (0.378)	2.015*** (0.263)
Dummies for jobs	✓	✓	✓	✓	✓
Social capital proxies	✓	✓	✓	✓	✓
GPS controls	✓	✓	✓	✓	✓
Big Five controls	✓	✓	✓	✓	✓
Observations	2165	2165	2165	2165	2165
$R^2$	0.135	0.092	0.257	0.197	0.031
Adjusted $R^2$	0.120	0.076	0.243	0.183	0.014
<i>AIC</i>	20394.3	19830.9	3343.6	6296.8	5053.3
<i>BIC</i>	20615.9	20052.4	3565.1	6518.4	5274.8

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Notes: SE for clusters based on province of birth. Ligurians, those who moved from the South to the North and vice versa, and those born in the center or outside Italy were removed from the sample.

TABLE 3.A.4 – ROBUSTNESS CHECKS FOR THE INVESTMENT GAME (DIFFERENT ROLES)

	(1) Investment game (subject as the trustor)	(2) Investment game (subject as the trustee)	(3) Investment game (belief in the other as the trustor)	(4) Investment game (belief in the other as the trustee)
North (live)	0.0749 (0.0876)	0.00206 (0.101)	-0.0934 (0.121)	-0.200 (0.152)
T1 (info same area)	0.000611 (0.0603)	-0.169* (0.0947)	-0.0820 (0.0833)	-0.162* (0.0938)
T2 (info different area)	-0.0176 (0.0958)	-0.0212 (0.0916)	-0.00170 (0.0811)	0.0973 (0.114)
Interaction T1*North	-0.0808 (0.102)	0.0635 (0.132)	0.00238 (0.120)	0.232 (0.145)
Interaction T2*North	-0.0580 (0.105)	-0.0483 (0.120)	0.262** (0.112)	0.276* (0.158)
Male	0.0132 (0.0531)	-0.0313 (0.0650)	0.0329 (0.0745)	0.0422 (0.0824)
Age in years	-0.00196 (0.00238)	-0.00111 (0.00312)	-0.00307 (0.00264)	0.000348 (0.00218)
Education	0.00446 (0.0212)	0.0449* (0.0246)	-0.0243 (0.0253)	-0.0149 (0.0292)
Household income	0.0190 (0.0259)	0.00674 (0.0339)	0.0182 (0.0218)	-0.000551 (0.0275)
City size	0.0151 (0.0211)	0.00946 (0.0311)	-0.000372 (0.0263)	0.0165 (0.0353)
South parent(s)	0.0707 (0.0897)	-0.118 (0.0776)	-0.0573 (0.0715)	-0.118 (0.0909)
Family bound levels	-0.0319* (0.0168)	-0.0738*** (0.0215)	-0.0230 (0.0166)	-0.0322* (0.0183)
Religiosity	-0.0199 (0.0210)	-0.0274 (0.0340)	0.0129 (0.0326)	-0.0126 (0.0316)

Dialect	0.0857*** (0.0282)	-0.0176 (0.0310)	0.0539* (0.0313)	0.0236 (0.0383)
Traditions	0.0538** (0.0258)	0.102** (0.0401)	0.0361 (0.0283)	0.0625* (0.0327)
Work outside	0.00621 (0.0213)	0.0548** (0.0265)	-0.0241 (0.0236)	-0.00472 (0.0287)
Constant	1.476*** (0.315)	2.890*** (0.319)	2.296*** (0.397)	2.316*** (0.460)
Dummies for jobs	✓	✓	✓	✓
Social capital proxies	✓	✓	✓	✓
GPS controls	✓	✓	✓	✓
Big Five controls	✓	✓	✓	✓
Observations	2165	2165	2165	2165
$R^2$	0.112	0.095	0.104	0.071
Adjusted $R^2$	0.096	0.079	0.088	0.054
<i>AIC</i>	6109.7	6941.9	6504.0	7409.3
<i>BIC</i>	6331.2	7163.4	6725.5	7630.8

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Notes: SE for clusters based on province of birth. Ligurians, those who moved from the South to the North and vice versa, and those born in the center or outside Italy were removed from the sample.

TABLE 3.A.5 – TESTS FOR COOPERATION SCENARIO

	T0 (no info)	T1 (same area)	T2 (different area)
South	3.413	3.364	3.39
	T0 vs T1 $p = 0.2961$	T0 vs T2 $p = 0.4268$	T1 vs T2 $p = 0.3456$
North	3.397	3.44	3.45
	T0 vs T1 $p = 0.3273$	T0 vs T2 $p = 0.1926$	T1 vs T2 $p = 0.3439$
South vs North	$p = 0.4088$	$p = 0.1315$	$p = 0.1669$

Notes: Dunn’s Pairwise Comparison test (adjusted with Benjamini-Hochberg).

TABLE 3.A.6 – TESTS FOR WALLET SCENARIO

	T0 (no info)	T1 (same area)	T2 (different area)
South	2.43	2.295	2.675
	T0 vs T1 $p = 0.0457$	T0 vs T2 $p = 0.0028$	T1 vs T2 $p = 0$
North	2.2225	2.265	2.525
	T0 vs T1 $p = 0.3784$	T0 vs T2 $p = 0.0006$	T1 vs T2 $p = 0.0018$
South vs North	$p = 0.0115$	$p = 0.3828$	$p = 0.0372$

Notes: Dunn’s Pairwise Comparison test (adjusted with Benjamini-Hochberg).

TABLE 3.A.7 – TESTS FOR INVESTMENT GAME (SUBJECT AS THE TRUSTEE)

	T0 (no info)	T1 (same area)	T2 (different area)
South	3.8	3.625	3.785
	T0 vs T1 $p = 0.0545$	T0 vs T2 $p = 0.4382$	T1 vs T2 $p = 0.0763$
North	3.937	3.824	3.843
	T0 vs T1 $p = 0.2856$	T0 vs T2 $p = 0.2644$	T1 vs T2 $p = 0.4491$
South vs North	$p = 0.1261$	$p = 0.0188$	$p = 0.3210$

Notes: Dunn's Pairwise Comparison test (adjusted with Benjamini-Hochberg).

TABLE 3.A.8 – TESTS FOR INVESTMENT GAME (BELIEF IN THE OTHER AS THE TRUSTOR)

	T0 (no info)	T1 (same area)	T2 (different area)
South	2.5475	2.445	2.545
	T0 vs T1 $p = 0.1437$	T0 vs T2 $p = 0.4971$	T1 vs T2 $p = 0.1334$
North	2.4175	2.335	2.7
	T0 vs T1 $p = 0.1291$	T0 vs T2 $p = 0.0016$	T1 vs T2 $p = 0$
South vs North	$p = 0.1290$	$p = 0.1103$	$p = 0.0519$

Notes: Dunn's Pairwise Comparison test (adjusted with Benjamini-Hochberg).

TABLE 3.A.9 – TESTS FOR INVESTMENT GAME (BELIEF IN THE OTHER AS THE TRUSTEE)

	T0 (no info)	T1 (same area)	T2 (different area)
South	3	2.81	3.065
	T0 vs T1 <i>p</i> = 0.0603	T0 vs T2 <i>p</i> = 0.2787	T1 vs T2 <i>p</i> = 0.0169
North	2.835	2.86	3.2
	T0 vs T1 <i>p</i> = 0.4158	T0 vs T2 <i>p</i> = 0.0006	T1 vs T2 <i>p</i> = 0.0011
South vs North	<i>p</i> = 0.0911	<i>p</i> = 0.3425	<i>p</i> = 0.1176

Notes: Dunn’s Pairwise Comparison test (adjusted with Benjamini-Hochberg).

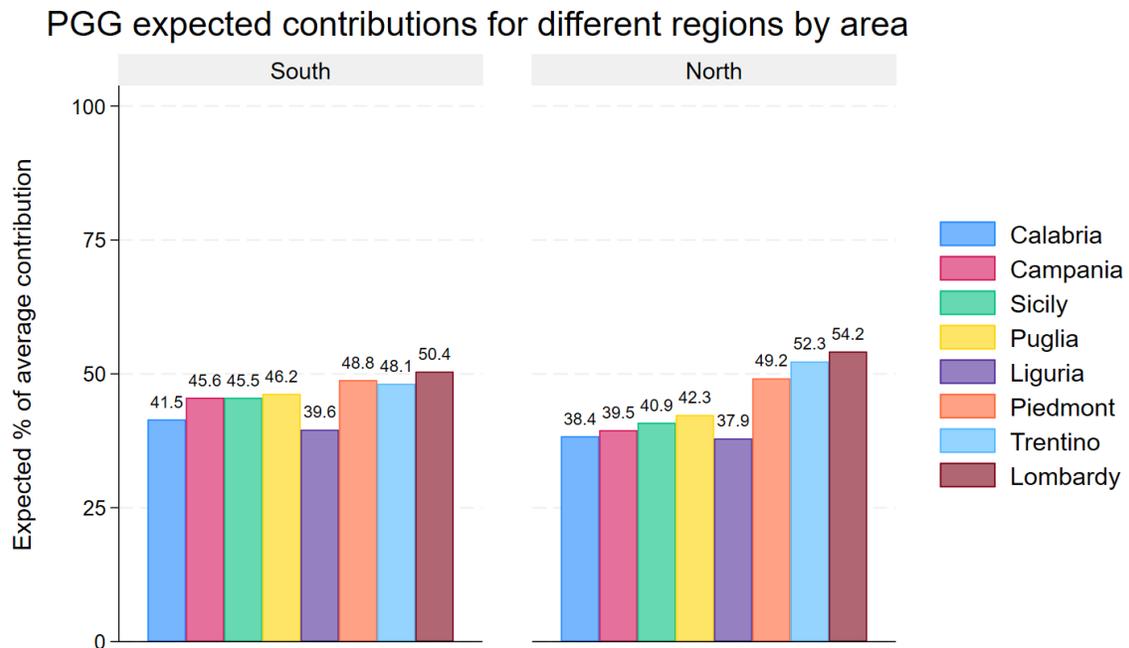


FIGURE 3.A.1. GRAPHS OF EXPECTED CONTRIBUTION OVER REGIONS

## Appendix 3.B. Online survey

### Survey without information (Italian version)

1) Genere

- Uomo     Donna     Non binario     Altro

2) Età \_\_\_\_\_

3) Provincia di nascita \_\_\_\_\_

4) Provincia di residenza \_\_\_\_\_

5) Livello di istruzione

- Licenza elementare  
 Licenza media  
 Diploma  
 Laurea triennale  
 Laurea a ciclo unico/Laurea Magistrale/Master di primo livello  
 Specializzazione / Master di secondo livello  
 Dottorato di ricerca

6) Occupazione

- Lavoratore dipendente                       Casalinga  
 Lavoratore autonomo                       In attesa di prima occupazione  
 Disoccupato                                       Pensionato  
 Studente     Altro \_\_\_\_\_

7) Fascia di reddito familiare

Fino a 15.000

da 45.001 a 70.000

da 15.001 a 30.000

da 70.001 a 100.000

da 30.001 a 45.000

oltre 100.001

8) Provincia di nascita di tuo padre \_\_\_\_\_

9) Provincia di nascita di tua madre \_\_\_\_\_

10) Quanto è importante la famiglia nella tua vita?

Per niente importante

Molto importante

1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>									

11) Quanto la seguente frase descrive il tuo pensiero: metto sempre al primo posto il benessere e gli interessi della mia famiglia, a volte anche a discapito degli interessi del resto della comunità

Fortemente in disaccordo

Fortemente d'accordo

1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>									

12) Per ciascuna delle seguenti organizzazioni volontarie indica se sei un membro attivo, un membro non attivo, o se non ne fai parte<sup>24</sup>

	Membro attivo	Membro non attivo	Non ne fai parte
- Organizzazioni o gruppi religiosi o ecclesiali	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Associazioni o gruppi sportivi o di attività ricreativa	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Associazioni o gruppi per attività artistiche, musicali o educative	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Sindacati	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Partiti politici	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Organizzazioni ambientali	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Associazioni professionali	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Organizzazioni umanitarie o caritative	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Organizzazioni di consumatori	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Altro _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13) Hai donato il sangue nell'ultimo anno?

Si    No

14) Hai votato alle ultime elezioni?

Si    No

---

<sup>24</sup> WVS Questionnaire Italy 2005 (V24-V33) <https://www.worldvaluessurvey.org/WVSDocumentationWV5.jsp>

15) In generale, diresti che ci si può avere fiducia nella maggior parte delle persone o non si è mai troppo attenti e prudenti quando si tratta con gli altri?<sup>25</sup>

Della maggior parte delle persone ci si può fidare

Non si è mai troppo attenti e prudenti

16) Quanto ti fidi delle persone appartenenti ai seguenti gruppi?<sup>26</sup>

	Completamente	Abbastanza	Poco	Nulla
La tua famiglia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tuoi vicini di casa	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tuoi conoscenti	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Persone che incontri per la prima volta	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Persone di altra religione	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Persone di altra nazionalità	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

17) Come consideri il livello di disonestà nei seguenti contesti?<sup>27</sup>

	Alto	Medio Alto	Medio Basso	Basso
Settore pubblico	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ospedali pubblici	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Scuole pubbliche	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Forze dell'ordine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

---

<sup>25</sup> WVS Questionnaire Italy 2005 (V23) <https://www.worldvaluessurvey.org/WVSDocumentationWV5.jsp>

<sup>26</sup> WVS Questionnaire Italy 2005 (V125-V130) <https://www.worldvaluessurvey.org/WVSDocumentationWV5.jsp>

<sup>27</sup> Taken from Attanasi and colleagues (2017).

Settore privato	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ospedali privati	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Scuole private	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Politici locali	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Politici nazionali	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

18) Quanto sei propenso/a a rinunciare a qualcosa di gratificante nell'immediato per avere maggiori benefici in futuro?

Per nulla propenso/a a rinunciare					Molto propenso/a a rinunciare				
1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

19) Quanto sei propenso/a a correre rischi in generale?

Per nulla propenso/a a correre rischi					Molto propenso/a a correre rischi				
1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

20) Quanto la seguente frase descrive la tua persona: quando qualcuno/a mi fa un favore, voglio ricambiarlo/a

Fortemente in disaccordo					Fortemente d'accordo				
1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>									

21) Quanto sei disposto/a a donare per una buona causa senza aspettarti nulla in cambio?

Per nulla propenso/a  
a donare

Molto propenso/a  
a donare

1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>									

22) Quanto la seguente frase descrive la tua persona: se mi sento trattato/a in modo ingiusto, cercherò di vendicarmi alla prima occasione, anche se ciò comporta un costo

Fortemente in disaccordo

Fortemente d'accordo

1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>									

23) Quanto la seguente frase descrive la tua persona: ritengo che le persone siano mosse da buone intenzioni

Fortemente in disaccordo

Fortemente d'accordo

1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>									

24) Qualcuno pensa di poter decidere e scegliere liberalmente come dovranno andare le cose nella propria vita. Altri ritengono invece che ciò che fanno non abbia, in realtà, un grande effetto su come andranno le cose in futuro per loro. Indica quanta possibilità di decisione e scelta senti di avere su come andrà la tua vita futura<sup>28</sup>

Nessuna possibilità					Molte possibilità				
1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>									

25) Indica quanto le seguenti caratteristiche descrivono la tua personalità utilizzando la seguente scala<sup>29</sup> (da 1 “Completamente in disaccordo” a 7 “Completamente d’accordo”)

Sono una persona....

	1	2	3	4	5	6	7
... estroversa, esuberante	<input type="checkbox"/>						
... polemica, litigiosa	<input type="checkbox"/>						
... affidabile, auto-disciplinata	<input type="checkbox"/>						
... ansiosa, che si agita facilmente	<input type="checkbox"/>						
... aperta alle nuove esperienze, con molti interessi	<input type="checkbox"/>						
... riservata, silenziosa	<input type="checkbox"/>						
... comprensiva, affettuosa	<input type="checkbox"/>						
... disorganizzata, distratta	<input type="checkbox"/>						
... tranquilla, emotivamente stabile	<input type="checkbox"/>						
... tradizionalista, abitudinaria	<input type="checkbox"/>						

<sup>28</sup> WVS Questionnaire Italy 2005 (V46) <https://www.worldvaluessurvey.org/WVSDocumentationWV5.jsp>

<sup>29</sup> The Italian version of Big Five are taken from Chiorri and colleagues (2015).

26) Tu e un'altra persona che non conosci e con la quale non puoi interagire siete chiamati a partecipare ad un esperimento che offre la possibilità di guadagnare una somma di denaro. Entrambi avete a disposizione una dotazione iniziale di 100 euro. Il primo giocatore (A) può decidere se mandare parte della propria dotazione al secondo giocatore (B). Nel caso in cui A scelga di non mandare niente nessuno guadagnerà nulla ed entrambi i giocatori rimarranno con la loro dotazione iniziale di 100 euro. Nel caso in cui il giocatore A decida di inviare una somma positiva al giocatore B, questa somma verrà triplicata e consegnata a B. A questo punto il giocatore B deve decidere se tenere per sé l'intera somma o se restituirne una parte al giocatore A. Per esempio, se il giocatore A decidesse di inviare metà della sua dotazione (50 euro) il giocatore B riceverà 150 euro che sommati ai suoi 100 euro fanno 250. Se decidesse di restituirne 75 al giocatore A, alla fine A guadagnerebbe 125 euro e B 175. Entrambi avrebbero ottenuto di più di quanto avevano all'inizio.

Se tu fossi il giocatore A quanto denaro invieresti al giocatore B?

- Invio l'intera dotazione
- Invio una buona parte della dotazione
- Invio metà dotazione
- Invio solo una piccola parte della dotazione
- Tengo per me l'intera dotazione

Se tu fossi il giocatore B quanto denaro restituiresti al giocatore A?

- Restituisco al giocatore A la somma inviata e divido equamente il guadagno ottenuto
- Restituisco al giocatore A la somma inviata e una parte del guadagno ottenuto
- Restituisco al giocatore A la somma inviata, tenendo per me l'intero guadagno
- Restituisco al giocatore A una parte della somma inviata
- Tengo per me l'intera somma

Come pensi agirebbero le persone chiamate a partecipare nel ruolo del giocatore A?

- Inviano l'intera dotazione
- Inviano una buona parte della dotazione
- Inviano metà dotazione
- Inviano solo una piccola parte della dotazione
- tengono per sé l'intera dotazione

Come pensi agirebbero le persone chiamate a partecipare nel ruolo del giocatore B?

- Restituiscono al giocatore A la somma inviata e dividono equamente il guadagno ottenuto
- Restituiscono al giocatore A la somma inviata e una parte del guadagno ottenuto
- Restituiscono al giocatore A la somma inviata, tenendo per sé l'intero guadagno
- Restituiscono al giocatore A una parte della somma inviata
- Tengono per sé l'intera somma

27) Immagina di dover contribuire a un progetto per migliorare la tua comunità con un gruppo di 4 persone che non conosci e con le quali non puoi interagire. Tutti i membri del gruppo hanno nazionalità italiana. Ogni partecipante ha una dotazione di 100 euro e deve decidere quanto investire nel progetto. Il budget ottenuto con i contributi di tutti i partecipanti verrà incrementato del 50% e il beneficio dell'investimento sarà diviso equamente tra i membri del gruppo. I guadagni di ogni partecipante saranno pari alla dotazione iniziale meno la quota investita più il beneficio ottenuto dall'investimento. Se, per esempio, tutti e quattro i membri del gruppo investono l'intera dotazione (100) si avrà un fondo comune pari a 400. Questo verrà incrementato del 50% diventando alla fine pari 600. Questo fondo comune verrà poi ripartito tra tutti i giocatori che guadagneranno, quindi, 150 euro. Se però un giocatore non dovesse investire, il fondo sarebbe pari a 300 che incrementato del 50% diventerebbe 450. A ciascun giocatore spetterebbero quindi 112,5 euro. Chi non ha investito però ha ancora da parte la sua dotazione quindi egli guadagnerebbe complessivamente 212,5 euro. Tieni presente, infatti, che tutti i giocatori, anche quelli che decidono di non investire la propria dotazione, godranno del beneficio derivante dall'investimento.

Tra le seguenti opzioni quanto saresti disposto a investire nel progetto?

- 0
- 25
- 50
- 75
- 100

Secondo te qual è l'investimento medio degli altri partecipanti?

- 0
- 25
- 50
- 75
- 100

Un gruppo di ricerca ha effettuato il precedente esperimento su un campione rappresentativo delle diverse regioni italiane. Alla fine dell'esperimento i partecipanti hanno ottenuto una ricompensa monetaria sulla base delle loro scelte strategiche. Tenendo conto dell'impatto economico delle scelte qual è secondo te l'investimento medio dei partecipanti provenienti dalle seguenti regioni?

	0	25	50	75	100
Trentino-Alto Adige	<input type="checkbox"/>				
Sicilia	<input type="checkbox"/>				
Campania	<input type="checkbox"/>				
Lombardia	<input type="checkbox"/>				
Liguria	<input type="checkbox"/>				
Calabria	<input type="checkbox"/>				
Piemonte	<input type="checkbox"/>				
Puglia	<input type="checkbox"/>				

28) Immagina di dover collaborare per organizzare un evento con persone sconosciute provenienti da tutta Italia. Durante i preparativi non hai la possibilità di verificare l'effettivo impegno degli altri partecipanti e la ricompensa per la buona riuscita dell'evento verrà divisa equamente tra tutti i partecipanti a prescindere dal loro effettivo impegno. Indica utilizzando la seguente scala il tuo grado di accordo o disaccordo con le seguenti affermazioni.

1 Completamente in disaccordo

2 Molto in disaccordo

3 Né d'accordo né in disaccordo

4 Molto d'accordo

5 Completamente d'accordo

	1	2	3	4	5
- Mi aspetto che i membri del gruppo si impegnino il meno possibile	<input type="checkbox"/>				
- Mi aspetto che i membri del gruppo agiscano in modo sleale	<input type="checkbox"/>				
- Mi impegno al massimo delle mie capacità per la buona riuscita dell'evento	<input type="checkbox"/>				
- Credo che gli altri non siano disposti a condividere informazioni e risorse preziose	<input type="checkbox"/>				
- Credo che gli altri rispettino i ruoli e le responsabilità assegnate	<input type="checkbox"/>				
- Mi aspetto che i membri del gruppo lavorino efficacemente insieme	<input type="checkbox"/>				
- I membri del gruppo cercheranno di trarre vantaggi personali	<input type="checkbox"/>				
- Ho piena fiducia nei membri del gruppo	<input type="checkbox"/>				

29) Supponi di aver smarrito il portafoglio con all'interno i documenti e 100 euro in una qualsiasi grande città d'Italia. Qual è la probabilità di riavere indietro il portafoglio con tutto il suo contenuto?<sup>30</sup>

- Molto alta, credo che la maggior parte delle persone restituirebbe il portafoglio con i soldi
- Alta, credo che molte persone restituirebbero il portafoglio con i soldi
- Media, credo che circa la metà delle persone restituirebbero il portafoglio con i soldi
- Bassa, credo che poche persone restituirebbero il portafoglio con i soldi
- Molto bassa, penso che quasi nessuno restituirebbe il portafoglio con i soldi

30) Per motivi personali, ti sei dovuto recare in una grande città e ora devi rientrare a casa. Per arrivare all'aeroporto della città puoi scegliere tra due compagnie di taxi. La compagnia A ti fa pagare un prezzo fisso di 32 euro, mentre la compagnia B ti fa pagare in base al tassametro. Se l'autista fa il percorso diretto, il costo è di 25 euro, tuttavia, l'autista 1 volta su 5 fa delle deviazioni per guadagnare di più e la tariffa è di 40 euro. Quale compagnia sceglieresti?<sup>31</sup>

- Compagnia A
- Compagnia B

31) Per motivi personali, ti sei dovuto recare in una grande città e ora devi rientrare a casa. Per arrivare all'aeroporto della città puoi scegliere tra due compagnie di taxi. La compagnia C ti fa pagare un prezzo fisso di 32 euro, mentre la compagnia D ti fa pagare in base al tassametro. Dalle previsioni meteorologiche, risulta stimata una probabilità di avere precipitazioni del 20%. Se il tempo è bello, il costo è di 25 euro, ma 1 volta su 5, a causa delle cattive condizioni meteorologiche, la corsa dura di più e la tariffa è di 40 euro. Quale compagnia sceglieresti?

- Compagnia C
- Compagnia D

---

<sup>30</sup> Taken from Attanasi and colleagues (2017).

<sup>31</sup> Taken from Aassve and colleagues (2021).

32) Quale tra le seguenti coppie di affermazioni rispecchia maggiormente il tuo pensiero?

- Fare del bene può portare a conseguenze negative<sup>32</sup>
- La condivisione può portare a benefici più ampi<sup>33</sup>
  
- Le persone che lavorano insieme possono affrontare meglio le sfide della vita<sup>34</sup>
- In situazioni di difficoltà, meglio pensare prima a sé che agli altri<sup>35</sup>
  
- Chi si fida di un'altra persona attrae a sé solo problemi<sup>36</sup>
- La fiducia è il fondamento su cui si costruisce un futuro sicuro e prospero<sup>37</sup>
  
- La felicità più grande la si trova nel proprio luogo d'origine<sup>38</sup>
- Se ci si sente a proprio agio, ovunque si è, vuol dire che si è a casa<sup>39</sup>
  
- Chi cambia il certo per l'incerto spesso si trova in una situazione peggiore<sup>40</sup>
- La conclusione di un periodo felice può essere l'inizio di uno ancora più bello<sup>41</sup>

33) Quanto spesso parli in dialetto durante le tue interazioni sociali?

- Il dialetto è la mia principale lingua di comunicazione
- Utilizzo regolarmente sia il dialetto che l'italiano
- Lo parlo solo occasionalmente o con alcune persone specifiche
- Non parlo mai in dialetto

---

<sup>32</sup> *“Non fare prestiti, non fare regali, non fare del bene che te ne verrà del male”.*

<sup>33</sup> *“Condividere è moltiplicare”.*

<sup>34</sup> *“Unire le forze, dividere i pesi”.*

<sup>35</sup> *“Quando va a fuoco la casa del vicino porta l'acqua a casa tua”.*

<sup>36</sup> *“Maledetto quell'uomo che si fida di un altro uomo”.*

<sup>37</sup> *“La fiducia è il primo passo per costruire un futuro solido”.*

<sup>38</sup> *“Beato quell'uccello che fa il nido al suo paesello”.*

<sup>39</sup> *“La patria è dove si sta bene”.*

<sup>40</sup> *“Chi cambia la vecchia per la nuova peggio trova”.*

<sup>41</sup> *“E Dio non turba mai la gioia dei suoi figli, se non per prepararne loro una più certa e grande”.*

34) Quanto ti senti legato alla cultura e alle tradizioni locali?

- Mi sento molto legato alla cultura e alle tradizioni locali
- Mi sento abbastanza legato alla cultura e alle tradizioni locali
- Non mi sento particolarmente legato alla cultura e alle tradizioni locali
- Non ho familiarità con la cultura e le tradizioni locali

35) Quanto è grande la città da cui provieni?

- Zona rurale
- Paese con meno di 50.000 abitanti
- Città con una popolazione tra 50.000 e 200.000 abitanti
- Area metropolitana

36) Quando si tratta della tua identità culturale ti senti più appartenente alla tua regione, all'Italia o all'Europa? Ordina le seguenti opzioni indicando con 1 la più vicina alla tua identità, con 2 quella intermedia e con 3 la più lontana.

	1	2	3
Regione	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Italia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Europa	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

37) Saresti disposto a trasferirti al di fuori del tuo attuale luogo di residenza?

- No, vorrei rimanere nella mia città attuale
- Sì, sarei disposto a trasferirmi in un'altra città della mia regione o nelle regioni limitrofe
- Sì, sarei disposto a trasferirmi in un'altra città italiana lontana dalla mia regione
- Sì, sarei disposto a trasferirmi all'estero

38) Qual è il tuo rapporto con la religione?

- Sono credente e praticante
- Sono credente, ma non praticante
- Credo in un'entità superiore, ma non mi identifico in alcuna religione
- Non sono credente

## Survey with information of the same Region (Italian version)

26) Tu e un'altra persona che non conosci e con la quale non puoi interagire siete chiamati a partecipare ad un esperimento che offre la possibilità di guadagnare una somma di denaro. Entrambi avete a disposizione una dotazione iniziale di 100 euro. Il primo giocatore (A) può decidere se mandare parte della propria dotazione al secondo giocatore (B). Nel caso in cui A scelga di non mandare niente nessuno guadagnerà nulla ed entrambi i giocatori rimarranno con la loro dotazione iniziale di 100 euro. Nel caso in cui il giocatore A decida di inviare una somma positiva al giocatore B, questa somma verrà triplicata e consegnata a B. A questo punto il giocatore B deve decidere se tenere per sé l'intera somma o se restituirne una parte al giocatore A. Per esempio, se il giocatore A decidesse di inviare metà della sua dotazione (50 euro) il giocatore B riceverà 150 euro che sommati ai suoi 100 euro fanno 250. Se decidesse di restituirne 75 al giocatore A, alla fine A guadagnerebbe 125 euro e B 175. Entrambi avrebbero ottenuto di più di quanto avevano all'inizio.

Se tu fossi il giocatore A quanto denaro invieresti al giocatore B? Tieni conto che l'unica informazione a tua disposizione sul giocatore B è che proviene dalla tua stessa regione.

- Invio l'intera dotazione
- Invio una buona parte della dotazione
- Invio metà dotazione
- Invio solo una piccola parte della dotazione
- Tengo per me l'intera dotazione

Se tu fossi il giocatore B quanto denaro restituiresti al giocatore A?

- Restituisco al giocatore A la somma inviata e divido equamente il guadagno ottenuto
- Restituisco al giocatore A la somma inviata e una parte del guadagno ottenuto
- Restituisco al giocatore A la somma inviata, tenendo per me l'intero guadagno
- Restituisco al giocatore A una parte della somma inviata
- Tengo per me l'intera somma

Come pensi agirebbero le persone della tua regione chiamate a partecipare nel ruolo del giocatore A?

- Inviano l'intera dotazione
- Inviano una buona parte della dotazione
- Inviano metà dotazione
- Inviano solo una piccola parte della dotazione
- tengono per sé l'intera dotazione

Come pensi agirebbero le persone della tua regione chiamate a partecipare nel ruolo del giocatore B?

- Restituiscono al giocatore A la somma inviata e dividono equamente il guadagno ottenuto
- Restituiscono al giocatore A la somma inviata e una parte del guadagno ottenuto
- Restituiscono al giocatore A la somma inviata, tenendo per sé l'intero guadagno
- Restituiscono al giocatore A una parte della somma inviata
- Tengono per sé l'intera somma

27) Immagina di dover contribuire a un progetto per migliorare la tua comunità con un gruppo di 4 persone che non conosci e con le quali non puoi interagire. Tutti i membri del gruppo provengono dalla tua stessa regione. Ogni partecipante ha una dotazione di 100 euro e deve decidere quanto investire nel progetto. Il budget ottenuto con i contributi di tutti i partecipanti verrà incrementato del 50% e il beneficio dell'investimento sarà diviso equamente tra i membri del gruppo. I guadagni di ogni partecipante saranno pari alla dotazione iniziale meno la quota investita più il beneficio ottenuto dall'investimento.

Se, per esempio, tutti e quattro i membri del gruppo investono l'intera dotazione (100) si avrà un fondo comune pari a 400. Questo verrà incrementato del 50% diventando alla fine pari 600. Questo fondo comune verrà poi ripartito tra tutti i giocatori che guadagneranno, quindi, 150 euro. Se però un giocatore non dovesse investire, il fondo sarebbe pari a 300 che incrementato del 50% diventerebbe 450. A ciascun giocatore spetterebbero quindi 112,5 euro. Chi non ha investito però ha ancora da parte la sua dotazione quindi egli guadagnerebbe complessivamente 212,5 euro.

Tieni presente, infatti, che tutti i giocatori, anche quelli che decidono di non investire la propria dotazione, godranno del beneficio derivante dall'investimento.

Tra le seguenti opzioni quanto saresti disposto a investire nel progetto?

- 0
- 25
- 50
- 75
- 100

Secondo te qual è l'investimento medio degli altri partecipanti?

- 0
- 25
- 50
- 75
- 100

Un gruppo di ricerca ha effettuato il precedente esperimento su un campione rappresentativo delle diverse regioni italiane. Alla fine dell'esperimento i partecipanti hanno ottenuto una ricompensa monetaria sulla base delle loro scelte strategiche. Tenendo conto dell'impatto economico delle scelte qual è, secondo te, l'investimento medio dei partecipanti provenienti dalle seguenti regioni?

	0	25	50	75	100
Trentino-Alto Adige	<input type="checkbox"/>				
Sicilia	<input type="checkbox"/>				
Campania	<input type="checkbox"/>				
Lombardia	<input type="checkbox"/>				
Liguria	<input type="checkbox"/>				
Calabria	<input type="checkbox"/>				
Piemonte	<input type="checkbox"/>				
Puglia	<input type="checkbox"/>				

28) Immagina di dover collaborare per organizzare un evento con persone sconosciute provenienti dalla tua stessa regione. Durante i preparativi non hai la possibilità di verificare l'effettivo impegno degli altri partecipanti e la ricompensa per la buona riuscita dell'evento verrà divisa equamente tra tutti i partecipanti a prescindere dal loro effettivo impegno. Indica utilizzando la seguente scala il tuo grado di accordo o disaccordo con le seguenti affermazioni.

1 Completamente in disaccordo

2 Molto in disaccordo

3 Né d'accordo né in disaccordo

4 Molto d'accordo

5 Completamente d'accordo

	1	2	3	4	5
- Mi aspetto che i membri del gruppo si impegnino il meno possibile	<input type="checkbox"/>				
- Mi aspetto che i membri del gruppo agiscano in modo sleale	<input type="checkbox"/>				
- Mi impegno al massimo delle mie capacità per la buona riuscita dell'evento	<input type="checkbox"/>				
- Credo che gli altri non siano disposti a condividere informazioni e risorse preziose	<input type="checkbox"/>				
- Credo che gli altri rispettino i ruoli e le responsabilità assegnate	<input type="checkbox"/>				

- Mi aspetto che i membri del gruppo lavorino efficacemente insieme
- I membri del gruppo cercheranno di trarre vantaggi personali
- Ho piena fiducia nei membri del gruppo

29) Supponi di aver smarrito il portafoglio con all'interno i documenti e 100 euro in una grande città del Nord Italia (per il campione del Nord Italia) / del Sud Italia (per il campione del Sud Italia). Qual è la probabilità di riavere indietro il portafoglio con tutto il suo contenuto?

- Molto alta, credo che la maggior parte delle persone restituirebbe il portafoglio con i soldi
- Alta, credo che molte persone restituirebbero il portafoglio con i soldi
- Media, credo che circa la metà delle persone restituirebbero il portafoglio con i soldi
- Bassa, credo che poche persone restituirebbero il portafoglio con i soldi
- Molto bassa, penso che quasi nessuno restituirebbe il portafoglio con i soldi

30) Per motivi personali, ti sei dovuto recare in una grande città del Nord Italia (per il campione del Nord Italia) / del Sud Italia (per il campione del Sud Italia) e ora devi rientrare a casa. Per arrivare all'aeroporto della città puoi scegliere tra due compagnie di taxi. La compagnia A ti fa pagare un prezzo fisso di 32 euro, mentre la compagnia B ti fa pagare in base al tassametro. Se l'autista fa il percorso diretto, il costo è di 25 euro, tuttavia, l'autista 1 volta su 5 fa delle deviazioni per guadagnare di più e la tariffa è di 40 euro. Quale compagnia sceglieresti?

- Compagnia A
- Compagnia B

31) Per motivi personali, ti sei dovuto recare in una grande città in una grande città del Nord Italia (per il campione del Nord Italia) / del Sud Italia (per il campione del Sud Italia) e ora devi rientrare a casa. Per arrivare all'aeroporto della città puoi scegliere tra due compagnie di taxi. La compagnia C ti fa pagare un prezzo fisso di 32 euro, mentre la compagnia D ti fa pagare in base al tassametro. Dalle previsioni metereologiche, risulta stimata una probabilità di avere precipitazioni del 20%. Se il tempo è bello, il costo è di 25 euro, ma 1 volta su 5, a causa delle cattive condizioni meteorologiche, la corsa dura di più e la tariffa è di 40 euro. Quale compagnia sceglieresti?

- Compagnia C
- Compagnia D

## Survey with information of different macro area (Italian version)

26) Tu e un'altra persona che non conosci e con la quale non puoi interagire siete chiamati a partecipare ad un esperimento che offre la possibilità di guadagnare una somma di denaro. Entrambi avete a disposizione una dotazione iniziale di 100 euro. Il primo giocatore (A) può decidere se mandare parte della propria dotazione al secondo giocatore (B). Nel caso in cui A scelga di non mandare niente nessuno guadagnerà nulla ed entrambi i giocatori rimarranno con la loro dotazione iniziale di 100 euro. Nel caso in cui il giocatore A decida di inviare una somma positiva al giocatore B, questa somma verrà triplicata e consegnata a B. A questo punto il giocatore B deve decidere se tenere per sé l'intera somma o se restituirne una parte al giocatore A. Per esempio, se il giocatore A decidesse di inviare metà della sua dotazione (50 euro) il giocatore B riceverà 150 euro che sommati ai suoi 100 euro fanno 250. Se decidesse di restituirne 75 al giocatore A, alla fine A guadagnerebbe 125 euro e B 175. Entrambi avrebbero ottenuto di più di quanto avevano all'inizio.

Se tu fossi il giocatore A quanto denaro invieresti al giocatore B? Tieni conto che l'unica informazione a tua disposizione sul giocatore B è che proviene da una regione del Nord (per il campione del Sud Italia) /da una regione del Sud (per il campione del Nord Italia).

- Invio l'intera dotazione
- Invio una buona parte della dotazione
- Invio metà dotazione
- Invio solo una piccola parte della dotazione
- Tengo per me l'intera dotazione

Se tu fossi il giocatore B quanto denaro restituiresti al giocatore A?

- Restituisco al giocatore A la somma inviata e divido equamente il guadagno ottenuto
- Restituisco al giocatore A la somma inviata e una parte del guadagno ottenuto
- Restituisco al giocatore A la somma inviata, tenendo per me l'intero guadagno
- Restituisco al giocatore A una parte della somma inviata
- Tengo per me l'intera somma

Come pensi agirebbero le persone del Nord Italia (per il campione del Sud Italia) / del Sud Italia (per il campione del Nord Italia) chiamate a partecipare nel ruolo del giocatore A?

- Inviacono l'intera dotazione
- Inviacono una buona parte della dotazione
- Inviacono metà dotazione
- Inviacono solo una piccola parte della dotazione
- tengono per sé l'intera dotazione

Come pensi agirebbero le persone del Nord Italia (per il campione del Sud Italia) / del Sud Italia (per il campione del Nord Italia) chiamate a partecipare nel ruolo del giocatore B?

- Restituiscono al giocatore A la somma inviata e dividono equamente il guadagno ottenuto
- Restituiscono al giocatore A la somma inviata e una parte del guadagno ottenuto
- Restituiscono al giocatore A la somma inviata, tenendo per sé l'intero guadagno
- Restituiscono al giocatore A una parte della somma inviata
- Tengono per sé l'intera somma

27) Immagina di dover contribuire a un progetto per migliorare la tua comunità con un gruppo di 4 persone che non conosci e con le quali non puoi interagire. Tutti i membri del gruppo provengono da una regione del Nord Italia (per il campione del Sud Italia) / da una regione del Sud Italia (per il campione del Nord Italia). Ogni partecipante ha una dotazione di 100 euro e deve decidere quanto investire nel progetto. Il budget ottenuto con i contributi di tutti i partecipanti verrà incrementato del 50% e il beneficio dell'investimento sarà diviso equamente tra i membri del gruppo. I guadagni di ogni partecipante saranno pari alla dotazione iniziale meno la quota investita più il beneficio ottenuto dall'investimento.

Se, per esempio, tutti e quattro i membri del gruppo investono l'intera dotazione (100) si avrà un fondo comune pari a 400. Questo verrà incrementato del 50% diventando alla fine pari 600. Questo fondo comune verrà poi ripartito tra tutti i giocatori che guadagneranno, quindi,

150 euro. Se però un giocatore non dovesse investire, il fondo sarebbe pari a 300 che incrementato del 50% diventerebbe 450. A ciascun giocatore spetterebbero quindi 112,5 euro. Chi non ha investito però ha ancora da parte la sua dotazione quindi egli guadagnerebbe complessivamente

212,5 euro. Tieni presente, infatti, che tutti i giocatori, anche quelli che decidono di non investire la propria dotazione, godranno del beneficio derivante dall'investimento.

Tra le seguenti opzioni quanto saresti disposto a investire nel progetto?

- 0
- 25
- 50
- 75
- 100

Secondo te qual è l'investimento medio degli altri partecipanti?

- 0
- 25
- 50
- 75
- 100

Un gruppo di ricerca ha effettuato il precedente esperimento su un campione rappresentativo delle diverse regioni italiane. Alla fine dell'esperimento i partecipanti hanno ottenuto una ricompensa monetaria sulla base delle loro scelte strategiche. Tenendo conto dell'impatto economico delle scelte qual è, secondo te, l'investimento medio dei partecipanti provenienti dalle seguenti regioni?

	0	25	50	75	100
Trentino-Alto Adige	<input type="checkbox"/>				
Sicilia	<input type="checkbox"/>				

Campania	<input type="checkbox"/>				
Lombardia	<input type="checkbox"/>				
Liguria	<input type="checkbox"/>				
Calabria	<input type="checkbox"/>				
Piemonte	<input type="checkbox"/>				
Puglia	<input type="checkbox"/>				

28) Immagina di dover collaborare per organizzare un evento con persone sconosciute provenienti da una regione del Nord Italia (per il campione del Sud Italia) / da una regione del Sud Italia (per il campione del Nord Italia). Durante i preparativi non hai la possibilità di verificare l'effettivo impegno degli altri partecipanti e la ricompensa per la buona riuscita dell'evento verrà divisa equamente tra tutti i partecipanti a prescindere dal loro effettivo impegno. Indica utilizzando la seguente scala il tuo grado di accordo o disaccordo con le seguenti affermazioni.

1 Completamente in disaccordo

2 Molto in disaccordo

3 Né d'accordo né in disaccordo

4 Molto d'accordo

5 Completamente d'accordo

	1	2	3	4	5
- Mi aspetto che i membri del gruppo si impegnino il meno possibile	<input type="checkbox"/>				
- Mi aspetto che i membri del gruppo agiscano in modo sleale	<input type="checkbox"/>				
- Mi impegno al massimo delle mie capacità per la buona riuscita dell'evento	<input type="checkbox"/>				
- Credo che gli altri non siano disposti a condividere informazioni e risorse preziose	<input type="checkbox"/>				
- Credo che gli altri rispettino i ruoli e le responsabilità assegnate	<input type="checkbox"/>				
- Mi aspetto che i membri del gruppo lavorino efficacemente insieme	<input type="checkbox"/>				
- I membri del gruppo cercheranno di trarre vantaggi personali	<input type="checkbox"/>				
- Ho piena fiducia nei membri del gruppo	<input type="checkbox"/>				

29) Supponi di aver smarrito il portafoglio con all'interno i documenti e 100 euro in una grande città del Nord Italia (per il campione del Sud Italia) / del Sud Italia (per il campione del Nord Italia). Qual è la probabilità di riavere indietro il portafoglio con tutto il suo contenuto?

- Molto alta, credo che la maggior parte delle persone restituirebbe il portafoglio con i soldi
- Alta, credo che molte persone restituirebbero il portafoglio con i soldi
- Media, credo che circa la metà delle persone restituirebbero il portafoglio con i soldi
- Bassa, credo che poche persone restituirebbero il portafoglio con i soldi
- Molto bassa, penso che quasi nessuno restituirebbe il portafoglio con i soldi

30) Per motivi personali, ti sei dovuto recare in una grande città del Nord Italia (per il campione del Sud Italia) / del Sud Italia (per il campione del Nord Italia) e ora devi rientrare a casa. Per arrivare all'aeroporto della città puoi scegliere tra due compagnie di taxi. La compagnia A ti fa pagare un prezzo fisso di 32 euro, mentre la compagnia B ti fa pagare in base al tassametro. Se l'autista fa il percorso diretto, il costo è di 25 euro, tuttavia, l'autista 1 volta su 5 fa delle deviazioni per guadagnare di più e la tariffa è di 40 euro. Quale compagnia sceglieresti?

- Compagnia A
- Compagnia B

31) Per motivi personali, ti sei dovuto recare in una grande città in una grande città del Nord Italia (per il campione del Sud Italia) / del Sud Italia (per il campione del Nord Italia) e ora devi rientrare a casa. Per arrivare all'aeroporto della città puoi scegliere tra due compagnie di taxi. La compagnia C ti fa pagare un prezzo fisso di 32 euro, mentre la compagnia D ti fa pagare in base al tassametro. Dalle previsioni metereologiche, risulta stimata una probabilità di avere precipitazioni del 20%. Se il tempo è bello, il costo è di 25 euro, ma 1 volta su 5, a causa delle cattive condizioni meteorologiche, la corsa dura di più e la tariffa è di 40 euro. Quale compagnia sceglieresti?

- Compagnia C
- Compagnia D

## Survey without information (English version)

1) Genus

Men       Woman       Non-binary       Other\_\_\_\_

2) Age \_\_\_\_\_

3) Province of birth \_\_\_\_\_

4) Province of residence \_\_\_\_\_

5) Education level

- Elementary school degree
- Middle school degree
- High school degree
- Bachelor's degree
- Master's degree, or 1° level Master, or single-cycle degree
- 2° level Master or Specialization
- Ph.D.

6) Employment

- Employee
- Self-employed
- Unemployed
- Student
- Housewife
- Waiting for first employment
- Retired
- Other\_\_\_\_\_

7) Family income bracket

- Up to 15,000
- 15,001 to 30,000
- 30,001 to 45,000
- 45,001 to 70,000
- 70,001 to 100,000
- Over 100,001

8) Province of your father's birth \_\_\_\_\_

9) Province of your mother's birth \_\_\_\_\_

10) How important is family in your life?

Not important										Very important
	1	2	3	4	5	6	7	8	9	10
	<input type="checkbox"/>									

11) How much does the following sentence describe your thinking: I always put my family's welfare and interests first, sometimes even at the expense of the interests of the rest of the community

Strongly disagree										Strongly agree
	1	2	3	4	5	6	7	8	9	10
	<input type="checkbox"/>									

12) For each of the following voluntary organizations, indicate whether you are an active member, a nonactive member, or not a member

- Active member
- Inactive member
- You are not part of it

- Religious organizations or groups or ecclesial
- Sports associations or groups or recreational activity
- Associations or groups for activities artistic, musical, or educational
- Unions
- Political parties
- Environmental organizations
- Professional associations
- Humanitarian or charitable organizations
- Consumer organizations
- Other \_\_\_\_\_

13) Have you donated blood in the past year?

- Yes  No

14) Did you vote in the last election?

- Yes  No

15) Generally, would you say that one can be trusted by most people or never be too careful and cautious when dealing with others?

- Most people can be trusted  
 One can never be too careful and cautious

16) How much do you trust people from the following groups?

	Completely	Somewhat	Slightly	Nothing
Your family	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your neighbors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your acquaintances	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
People you meet for the first time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
People of other religions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Persons of other nationality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

17) How do you consider the level of dishonesty in the following contexts?

	High	Medium High	Medium Low	Low
Public sector	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Public hospitals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Public schools	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Law enforcement.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Private sector	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Private hospitals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Private schools	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Local politicians	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
National politicians	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

18) How willing are you to give up something beneficial for you today to benefit more from that in the future?

Not at all										Very willing
willing to give										to give
1	2	3	4	5	6	7	8	9	10	
<input type="checkbox"/>										

19) How willing are you to take risks, in general?

Not at all										Very willing
willing to take risks										to take risks
1	2	3	4	5	6	7	8	9	10	
<input type="checkbox"/>										

20) How well does the following sentence describe you: when someone does me a favor, I am willing to return it

Strongly disagree										Strongly agree
1	2	3	4	5	6	7	8	9	10	
<input type="checkbox"/>										

21) How willing are you to give to good causes without expecting anything in return?

Not at all										Very willing
willing to give										to give
1	2	3	4	5	6	7	8	9	10	
<input type="checkbox"/>										

22) How well the following sentence describes you: if I am treated very unjustly, I will take revenge on the first occasion, even if there is a cost to do so [*Negative reciprocity*]

Strongly disagree									Strongly agree
1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>									

23) How well does the following sentence describe you: I assume that people have only the best intentions [*Trust*]

Strongly disagree									Strongly agree
1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>									

24) Some people think that they can liberally decide and choose how things should go in their lives. Others, however, feel that what they do does not, in fact, have much effect on how things will go in the future for them. Indicate how much decision-making and choice you feel you have about how your future life will go

No choice									Complete choice
1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>									

25) Indicate how well the following characteristics describe your personality using the following scale (from 1 "Completely disagree" to 7 "Completely agree")

I am a person....

	1	2	3	4	5	6	7
... outgoing, exuberant	<input type="checkbox"/>						
... argumentative, contentious	<input type="checkbox"/>						
... reliable, self-disciplined	<input type="checkbox"/>						

- ... anxious, easily agitated
- ... open to new experiences,  
with many interests
- ... private, quiet
- ... understanding, affectionate
- ... disorganized, distracted
- ... quiet, emotionally stable
- ... traditionalist, habitual

26) You and another person you do not know and with whom you cannot interact are called upon to participate in an experiment that offers a chance to earn money. You both have an initial endowment of 100 euros at your disposal. The first player (A) can decide whether to send part of his endowment to the second player (B). If A chooses not to send anything, no one will earn anything, and both players will be left with their initial endowment of 100 euros. In case of player A decides to send a positive amount to player B, this amount will be tripled and delivered to B. At this point, player B must decide whether to keep the entire sum for himself or return a portion to player A. For example, if player A decides to send half of his endowment (50 euros), player B will receive 150 euros, which, added to his 100 euros, makes 250. If he decides to return 75 euros to player A, in the end, A would earn 125 euros and B 175. Both would have gained more than they had at the beginning.

If you were player A, how much money would you send to player B?

- I send the entire endowment
- I send a good portion of the endowment
- I send half of the endowment
- I send only a small part of the endowment
- I keep the entire endowment for myself

How much money would you return to player A if you were player B?

- I return the amount sent to player A and divide the gain obtained equally
- I return to player A the amount sent and a part of the gain obtained
- I return to player A the amount sent, keeping the entire gain for myself

- I return to player A a portion of the amount sent
- I keep the total amount for myself

How do you think people called to participate in the role of player A would act?

- They send the entire endowment
- They send a good portion of the endowment
- They send half an endowment
- They send only a small part of the endowment
- They keep the entire endowment for themselves

How do you think people called to participate in the role of player B would act?

- They return the amount sent to player A and divide the gain obtained equally
- They return to player A the amount sent and a portion of the profit earned
- They return the amount sent to player A, keeping the entire profit for themselves
- They return to player A a portion of the amount sent
- They keep the entire sum for themselves

27) Imagine you have to contribute to a project to improve your community with a group of 4 people you do not know and cannot interact with. All members of the group have Italian nationality. Each participant has a budget of 100 euros and has to decide how much to invest in the project. The budget obtained from the contributions of all participants will be increased by 50%, and the benefit of the investment will be divided equally among the group members. The earnings of each participant will be equal to the initial allocation minus the share invested plus the benefit obtained from the investment. If, for example, all four group members invest the entire endowment (100), there will be a common fund equal to 400. This will be increased by 50%, eventually becoming equal to 600. This common fund will then be divided among all players who will earn, therefore, 150. If, however, one player does not invest, the fund would be equal to 300, which increased by 50%, would become 450. Each player would then be entitled to 112.5 euros. However, those who did not invest still have their allocation set aside so that they would earn 212.5 euros. Keep in mind that all players, even those who decide not to invest their endowment, will enjoy the benefit of the investment.

Of the following options, how much would you be willing to invest in the project?

- 0
- 25
- 50
- 75
- 100

What do you think is the average investment of other participants?

- 0
- 25
- 50
- 75
- 100

A research team conducted the previous experiment on a representative sample of different Italian regions. At the end of the experiment, participants received a monetary reward based on their strategic choices. Considering the economic impact of the choices, what do you think is the average investment of participants from the following regions?

	0	25	50	75	100
Trentino-Alto Adige	<input type="checkbox"/>				
Sicily	<input type="checkbox"/>				
Campania	<input type="checkbox"/>				
Lombardy	<input type="checkbox"/>				
Liguria	<input type="checkbox"/>				
Calabria	<input type="checkbox"/>				
Piedmont	<input type="checkbox"/>				
Puglia	<input type="checkbox"/>				

28) Imagine collaborating to organize an event with unknown people from all over Italy. During the preparations, you do not have the opportunity to check the actual efforts of the other participants and the reward for the event's success will be divided equally among all participants regardless of their actual efforts. Indicate your degree of agreement or disagreement with the following statements using the following scale.

1 Completely disagree

2 Very much disagree

3 Neither agree nor disagree

4 Very much agree

5 Completely agree

- |  | 1                        | 2                        | 3                        | 4                        | 5                        |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| - I expect that the members of the group engage as little as possible        | <input type="checkbox"/> |
| - I expect that the members of the group act unfairly                        | <input type="checkbox"/> |
| - I strive to the best of my ability For the success of the event            | <input type="checkbox"/> |
| - I think others are not willing to share valuable information and resources | <input type="checkbox"/> |
| - I believe that others respect the roles and assigned responsibilities      | <input type="checkbox"/> |
| - I expect group members to work effectively together                        | <input type="checkbox"/> |
| - Group members will try to draw personal benefits                           | <input type="checkbox"/> |
| - I have complete confidence in the members of the group                     | <input type="checkbox"/> |

29) Suppose you misplaced your wallet with documents and 100 euros inside in any major city in Italy. What is the probability of getting the wallet back with all its contents?

- Very high, I think most people would return the wallet with the money
- High, I think many people would return the wallet with the money
- Medium, I think about half of the people would return the wallet with the money
- Low, I think few people would return the wallet with the money
- Very low, I think almost no one would return the wallet with the money

30) For personal reasons, you had to travel to a big city and now you have to return home. You can choose between two cab companies to get to the city airport. Company A charges you a fixed price of 32 euros, while Company B charges you according to the meter. If the driver goes the direct route, the cost is 25 euros. However, the driver, one time out of 5, makes detours to earn more money, and the fare is 40 euros. Which company would you choose?

- Company A
- Company B

31) For personal reasons, you had to travel to a big city and now you have to return home. You can choose between two cab companies to get to the city airport. Company C charges you a fixed price of 32 euros, while Company D charges you by the meter. The weather forecast shows an estimated 20% chance of precipitation. If the weather is good, the cost is 25 euros, but one time out of 5, the ride takes longer due to bad weather conditions, and the fare is 40 euros. Which company would you choose?

- Company C
- Company D

32) Which of the following pairs of statements most closely reflects your thinking?

- Doing good can lead to negative consequences
- Sharing can lead to broader benefits

- People who work together can cope better with life's challenges
- In difficult situations, it is better to think of yourself first than of others
- Those who trust another person attract only problems to themselves
- Trust is the foundation on which a secure and prosperous future is built
  
- The greatest happiness is found in one's place of origin
- If you feel comfortable wherever you are, it means you are at home
  
- Those who change the certain for the uncertain often find themselves in a worse situation
- The conclusion of a happy period can be the beginning of an even better one

33) How often do you speak in dialect during your social interactions?

- Dialect is my primary language of communication
- I regularly use both dialect and Italian
- I speak it only occasionally or with some specific people
- I never speak in dialect

34) How connected do you feel to local culture and traditions?

- I feel very connected to local culture and traditions
- I feel quite connected to local culture and traditions
- I do not feel particularly connected to local culture and traditions
- I am not familiar with local culture and traditions

35) How big is the city you come from?

- Rural area
- Country with a population of less than 50,000

Cities with a population between 50,000 and 200,000

Metropolitan area

36) Regarding your cultural identity, do you feel more belonging to your region, Italy, or Europe?  
Sort the following options by indicating with one the one closest to your identity, two the one in between, and three the one furthest away.

	1	2	3
Region	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Italy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Europe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

37) Would you be willing to move outside your residence?

No, I would like to stay in my current city

Yes, I would be willing to move to another city in my region or neighboring regions

Yes, I would be willing to move to another Italian city away from my region

Yes, I would be willing to move abroad

38) What is your relationship with religion?

I am a believer and a practitioner

I am a believer but not a practitioner

I believe in a higher entity, but I do not identify with any religion

I am not a believer

## Survey with information of the same Region (English version)

- 26) You and another person you do not know and with whom you cannot interact are called upon to participate in an experiment that offers a chance to earn money. You both have an initial endowment of 100 euros at your disposal. The first player (A) can decide whether to send part of his endowment to the second player (B). If A chooses not to send anything, no one will earn anything, and both players will be left with their initial endowment of 100 euros. In case of player A decides to send a positive amount to player B, this amount will be tripled and delivered to B. At this point, player B must decide whether to keep the entire sum for himself or return a portion to player A. For example, if player A decides to send half of his endowment (50 euros), player B will receive 150 euros, which, added to his 100 euros, makes 250. If he decides to return 75 euros to player A, in the end, A would earn 125 euros and B 175. Both would have gained more than they had at the beginning.

If you were player A, how much money would you send to player B? Keep in mind that the only information you have about player B is that he is from your region.

- I send the entire endowment
- I send a good portion of the endowment
- I send half of the endowment
- I send only a small part of the endowment
- I keep the entire endowment for myself

How much money would you return to player A if you were player B?

- I return the amount sent to player A and divide the gain obtained equally
- I return to player A the amount sent and a part of the gain obtained
- I return to player A the amount sent, keeping the entire gain for myself
- I return to player A a portion of the amount sent
- I keep the total amount for myself

How do you think people from your region called to participate in the role of Player A would act?

- They send the entire endowment
- They send a good portion of the endowment
- They send half an endowment
- They send only a small part of the endowment
- They keep the entire endowment for themselves

How do you think people from your region called to participate in the role of Player B would act?

- They return the amount sent to player A and divide the gain obtained equally
- They return to player A the amount sent and a portion of the profit earned
- They return the amount sent to player A, keeping the entire profit for themselves
- They return to the player A portion of the amount sent
- They keep the entire sum for themselves

27) Imagine you have to contribute to a project to improve your community with a group of 4 people you do not know and cannot interact with. All the group members are from the same region as you. Each participant has a budget of 100 euros and has to decide how much to invest in the project. The budget obtained from the contributions of all participants will be increased by 50%, and the benefit of the investment will be divided equally among the group members. The earnings of each participant will be equal to the initial endowment minus the amount invested plus the benefit obtained from the investment.

If, for example, all four group members invest the entire endowment (100), there will be a common fund equal to 400. This will be increased by 50%, eventually becoming equal to 600. This common fund will then be divided among all players who will earn, therefore, 150. If, however, one player does not invest, the fund would be equal to 300, which increased by 50%, would become 450. Each player would then be entitled to 112.5 euros. However, those who did not invest still have their allocation set aside so that they would earn 212.5 euros. Keep in mind that all players, even those who decide not to invest their endowment, will enjoy the benefit of the investment.

Of the following options, how much would you be willing to invest in the project?

- 0
- 25
- 50
- 75
- 100

What do you think is the average investment of other participants?

- 0
- 25
- 50
- 75
- 100

A research team conducted the previous experiment on a representative sample of different Italian regions. At the end of the experiment, participants received a monetary reward based on their strategic choices. Considering the economic impact of the choices, what do you think is the average investment of participants from the following regions?

	0	25	50	75	100
Trentino-Alto Adige	<input type="checkbox"/>				
Sicily	<input type="checkbox"/>				
Campania	<input type="checkbox"/>				
Lombardy	<input type="checkbox"/>				
Liguria	<input type="checkbox"/>				
Calabria	<input type="checkbox"/>				

Piedmont	<input type="checkbox"/>				
Puglia	<input type="checkbox"/>				

28) Imagine that you have to collaborate to organize an event with unknown people from your region. During the preparations, you do not have the opportunity to check the actual efforts of the other participants and the reward for the event's success will be divided equally among all participants regardless of their actual efforts. Indicate your degree of agreement or disagreement with the following statements using the following scale.

1 Completely disagree

2 Very much disagree

3 Neither agree nor disagree

4 Very much agree

5 Completely agree

	1	2	3	4	5
- I expect that the members of the group engage as little as possible	<input type="checkbox"/>				
- I expect that the members of the group act unfairly	<input type="checkbox"/>				
- I strive to the best of my ability For the success of the event	<input type="checkbox"/>				
- I think others are not willing to share valuable information and resources	<input type="checkbox"/>				
- I believe that others respect the roles and assigned responsibilities	<input type="checkbox"/>				
- I expect group members to work effectively together	<input type="checkbox"/>				
- Group members will try to draw personal benefits	<input type="checkbox"/>				
- I have complete confidence in the members of the group	<input type="checkbox"/>				

29) Suppose you misplaced your wallet with documents and 100 euros inside in a large city in northern Italy (for the sample from northern Italy)/southern Italy (for the sample from southern Italy). What is the probability of getting the wallet back with all its contents?

- Very high, I think most people would return the wallet with the money
- High, I think many people would return the wallet with the money
- Medium, I think about half of the people would return the wallet with the money
- Low, I think few people would return the wallet with the money
- Very low, I think almost no one would return the wallet with the money

30) For personal reasons, you had to travel to a large city in Northern Italy (for the Northern Italy sample) / Southern Italy (for the Southern Italy sample), and now you have to return home. You can choose between two cab companies to get to the city's airport. Company A charges you a fixed price of 32 euros, while Company B charges you by the meter. If the driver goes the direct route, the cost is 25 euros. However, the driver, one time out of 5, makes detours to earn more money, and the fare is 40 euros. Which company would you choose?

- Company A
- Company B

31) For personal reasons, you had to travel to a large city in northern Italy (for the northern Italian sample)/southern Italy (for the southern Italian sample), and now you have to return home. You can choose between two cab companies to get to the city airport. Company C charges you a fixed price of 32 euros, while Company D charges you by the meter. The weather forecast shows an estimated 20% chance of precipitation. If the weather is good, the cost is 25 euros, but one time out of 5, the ride takes longer due to bad weather conditions, and the fare is 40 euros. Which company would you choose?

- Company C
- Company D

## Survey with information of different macro area (English version)

- 26) You and another person you do not know and with whom you cannot interact are called upon to participate in an experiment that offers a chance to earn money. You both have an initial endowment of 100 euros at your disposal. The first player (A) can decide whether to send part of his endowment to the second player (B). If A chooses not to send anything, no one will earn anything, and both players will be left with their initial endowment of 100 euros. In case of player A decides to send a positive amount to player B, this amount will be tripled and delivered to B. At this point, player B must decide whether to keep the entire sum for himself or return a portion to player A. For example, if player A decides to send half of his endowment (50 euros), player B will receive 150 euros, which, added to his 100 euros, makes 250. If he decides to return 75 euros to player A, in the end, A would earn 125 euros and B 175. Both would have gained more than they had at the beginning.

If you were player A, how much money would you send to player B? Keep in mind that the only information available to you about player B is that it comes from a northern region (for the southern Italian sample)/or from a southern region (for the northern Italian sample).

- I send the entire endowment
- I send a good portion of the endowment
- I send half of the endowment
- I send only a small part of the endowment
- I keep the entire endowment for myself

How much money would you return to player A if you were player B?

- I return the amount sent to player A and divide the gain obtained equally
- I return to player A the amount sent and a part of the gain obtained
- I return to player A the amount sent, keeping the entire gain for myself
- I return to player A a portion of the amount sent
- I keep the total amount for myself

How do you think people from northern Italy (for the southern Italian sample)/southern Italy (for the northern Italian sample) called upon to participate in the role of player A would act?

- They send the entire endowment
- They send a good portion of the endowment
- They send half an endowment
- They send only a small part of the endowment
- They keep the entire endowment for themselves

How do you think the people from northern Italy (for the southern Italian sample)/southern Italy (for the northern Italian sample) would act called upon to participate in the role of player B?

- They return the amount sent to player A and divide the gain obtained equally
- They return to player A the amount sent and a portion of the profit earned
- They return the amount sent to player A, keeping the entire profit for themselves
- They return to player A a portion of the amount sent
- They keep the entire sum for themselves

27) Imagine you have to contribute to a project to improve your community with a group of 4 people you do not know and cannot interact with. All group members are from a region in Northern Italy (for the Southern Italy sample) / or from a region in Southern Italy (for the Northern Italy sample). Each participant has a budget of 100 euros and has to decide how much to invest in the project. The budget obtained from the contributions of all participants will be increased by 50 percent, and the benefit of the investment will be divided equally among the group members. The earnings of each participant will be equal to the initial endowment minus the amount invested plus the benefit obtained from the investment.

If, for example, all four group members invest the entire endowment (100), there will be a common fund equal to 400. This will be increased by 50%, eventually becoming equal to 600. This common fund will then be divided among all the players who earn, thus,

150 euros. However, if a player did not invest, the fund would be 300, which increased by 50% and would become 450. Each player would then be entitled to 112.5 euros. However, those who did not invest still have their allocation set aside so that they would earn 212.5 euros. Keep in mind that all players, even those who decide not to invest their endowment, will enjoy the benefit of the investment.

Of the following options, how much would you be willing to invest in the project?

- 0
- 25
- 50
- 75
- 100

What do you think is the average investment of other participants?

- 0
- 25
- 50
- 75
- 100

A research team conducted the previous experiment on a representative sample of different Italian regions. At the end of the experiment, participants received a monetary reward based on their strategic choices. Considering the economic impact of the choices, what do you think is the average investment of participants from the following regions?

	0	25	50	75	100
Trentino-Alto Adige	<input type="checkbox"/>				
Sicily	<input type="checkbox"/>				
Campania	<input type="checkbox"/>				
Lombardy	<input type="checkbox"/>				
Liguria	<input type="checkbox"/>				
Calabria	<input type="checkbox"/>				
Piedmont	<input type="checkbox"/>				
Puglia	<input type="checkbox"/>				

28) Imagine that you have to collaborate to organize an event with unknown people from a region in northern Italy (for the sample from southern Italy)/or from a region in southern Italy (for the sample from northern Italy). During the preparations, you do not have the opportunity to check the actual commitment of the other participants, and the reward for the event's success will be divided equally among all participants regardless of their actual commitment. Indicate your degree of agreement or disagreement with the following statements using the following scale.

1 Completely disagree

2 Very much disagree

3 Neither agree nor disagree

4 Very much agree

5 Completely agree

- |  | 1                        | 2                        | 3                        | 4                        | 5                        |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| - I expect that the members of the group engage as little as possible        | <input type="checkbox"/> |
| - I expect that the members of the group act unfairly                        | <input type="checkbox"/> |
| - I strive to the best of my ability For the success of the event            | <input type="checkbox"/> |
| - I think others are not willing to share valuable information and resources | <input type="checkbox"/> |
| - I believe that others respect the roles and assigned responsibilities      | <input type="checkbox"/> |
| - I expect group members to work effectively together                        | <input type="checkbox"/> |
| - Group members will try to draw personal benefits                           | <input type="checkbox"/> |
| - I have complete confidence in the members of the group                     | <input type="checkbox"/> |

29) Suppose you misplaced your wallet with documents and 100 euros inside a large city in northern Italy (for the southern Italian sample)/southern Italy (for the northern Italian sample). What is the probability of getting the wallet back with all its contents?

- Very high, I think most people would return the wallet with the money
- High, I think many people would return the wallet with the money
- Medium, I think about half of the people would return the wallet with the money
- Low, I think few people would return the wallet with the money
- Very low, I think almost no one would return the wallet with the money

30) For personal reasons, you had to travel to a large city in northern Italy (for the southern Italian sample)/southern Italy (for the northern Italian sample), and now you have to return home. You can choose between two cab companies to get to the city's airport. Company A charges you a fixed price of 32 euros, while Company B charges you according to the meter. If the driver goes the direct route, the cost is 25 euros. However, the driver, one time out of 5, makes detours to earn more money, and the fare is 40 euros. Which company would you choose?

- Company A
- Company B

31) For personal reasons, you had to travel to a large city in northern Italy (for the southern Italian sample) / southern Italy (for the northern Italian sample), and now you have to return home. You can choose between two cab companies to get to the city airport. Company C charges you a fixed price of 32 euros, while Company D charges you by the meter. The weather forecast shows an estimated 20% chance of precipitation. If the weather is good, the cost is 25 euros, but one time out of 5, the ride takes longer due to bad weather conditions, and the fare is 40 euros. Which company would you choose?

- Company C
- Company D

## Appendix Chapter 4

## Appendix 4.A. Additional data information and results

TABLE 4.A.1 ROBUSTNESS CHECK FOR RISK AVERSION MODELS FOR FEMALES

	(1) Ordered Logit (inconsistent subjects and those who skipped effort task included)	(2) Ordered Probit	(3) OLS Linear Regression	(4) Interval regression for CRRRA risk parameter (no optimism)
T1 (Karma group)	0.473 (0.475)	0.387 (0.254)	0.504 (0.388)	0.209 (0.161)
T2 (Prosocial group)	0.918** (0.402)	0.596*** (0.224)	0.741** (0.336)	-0.0153 (0.129)
Risk aversion (EG)	0.178** (0.0752)	0.0997** (0.0395)	0.127** (0.0595)	0.0547** (0.0239)
Altruism (DG)	0.0389 (0.0787)	0.0257 (0.0437)	0.0358 (0.0653)	0.0644** (0.0285)
Optimism (Card Game)	-1.257* (0.740)	-0.426 (0.412)	-0.462 (0.610)	-0.0920 (0.257)
Age	-0.0577 (0.0741)	-0.0437 (0.0378)	-0.0549 (0.0559)	-0.0136 (0.0222)
Religious	-0.854* (0.437)	-0.566** (0.237)	-0.721** (0.347)	-0.324** (0.137)
Religion importance	-0.00435 (0.185)	0.0435 (0.0948)	0.0599 (0.143)	0.0208 (0.0552)
All controls (B5 + GPS + other)	✓	✓	✓	✓
Constant			4.650 (3.235)	0.261 (1.308)
Insigma Constant				-0.492*** (0.0730)
Observations	167	145	145	145
AIC	668.2	572.5	566.4	594.5
BIC	805.3	703.7	673.6	704.6

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

*Notes:* cuts for each dependent variable value (in the Ordered Probit and Logit) are not reported.

TABLE 4.A.2 ROBUSTNESS CHECK FOR RISK AVERSION MODELS FOR MALES

	(1) Ordered Logit (inconsistent subjects and those who skipped effort task included)	(2) Ordered Probit	(3) OLS Linear Regression	(4) Interval regression for CRRA risk parameter (no optimism)
T1 (Karma group)	0.0151 (0.409)	0.0213 (0.233)	0.0394 (0.294)	0.0485 (0.113)
T2 (Prosocial group)	0.520 (0.429)	0.118 (0.244)	0.0468 (0.315)	-0.389*** (0.130)
Risk aversion (EG)	0.118 (0.112)	0.0232 (0.0698)	0.00473 (0.0965)	0.00585 (0.0396)
Altruism (DG)	-0.0991 (0.113)	-0.157*** (0.0566)	-0.166** (0.0724)	-0.0361 (0.0387)
Optimism (Card Game)	-3.172*** (0.965)	-2.443*** (0.534)	-2.593*** (0.611)	-1.120*** (0.282)
Age	-0.0155 (0.0808)	0.0121 (0.0452)	0.0171 (0.0564)	0.00857 (.)
Religious	0.882** (0.427)	0.784*** (0.249)	0.777*** (0.275)	0.381*** (0.110)
Religion importance	0.253 (0.185)	0.197* (0.103)	0.236* (0.136)	0.1000* (0.0588)
All controls (B5 + GPS + other)	✓	✓	✓	✓
Constant			4.558** (2.107)	-0.0137 (0.825)
Insigma Constant				-0.628*** (0.111)
Observations	149	126	126	126
AIC	551.7	455.3	462.4	496.3
BIC	680.8	577.3	564.5	601.2

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Notes: Cuts for the value of each dependent variable (in the Ordered Probit and Logit) are not reported.

TABLE 4.A.3 REGRESSION COMPARING CONTROL AND T2 (PROSOCIAL RISK GROUP), USING AN INTERACTION BETWEEN T2 AND MALE

	(1)	(2)	(3)	(4)
	Ordered Logit	Ordered Probit	OLS Linear Regression	Interval regression for CRRRA risk parameter
T2 (Prosocial group)	1.236*** (0.463)	0.703*** (0.228)	0.832*** (0.315)	0.0873 (0.143)
Interaction T2*Male	-1.285* (0.681)	-0.757** (0.321)	-0.987** (0.444)	-0.535*** (0.196)
Altruism (DG)	-0.118 (0.0944)	-0.0608 (0.0429)	-0.0796 (0.0604)	0.0343 (0.0368)
Optimism (Card Game)	-1.842** (0.736)	-0.975*** (0.357)	-1.098** (0.526)	0.954*** (0.287)
Male gender	0.408 (0.612)	0.151 (0.298)	0.152 (0.405)	0.0864 (0.176)
Age in years	-0.228** (0.0904)	-0.121*** (0.0456)	-0.143** (0.0639)	-0.0651 (.)
Religious	-1.025*** (0.372)	-0.640*** (0.192)	-0.805*** (0.278)	-0.327** (0.141)
Religion importance	-0.0588 (0.142)	-0.0216 (0.0715)	-0.00434 (0.103)	-0.0102 (0.0456)
All controls (B5 + GPS + other)	✓	✓	✓	✓
Constant			2.846 (2.503)	-2.203* (1.301)
Insigma Constant				-0.411*** (0.0899)
Observations	179	179	179	179
AIC	661.9	665.3	677.8	747.9
BIC	802.1	805.5	792.6	865.8

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Notes: cuts for each dependent variable value (in the Ordered Probit and Logit) are not reported.

## Appendix 4.B. Supplementary information and analysis

### 4.B.1. Risk attitudes and prosocial behavior

Risk attitudes do not necessarily predict prosocial behavior or decisions to trust someone in situations of uncertainty (Eckel & Wilson, 2004; Kocher et al., 2015). In fact, experiments have shown that subjects who are less ambiguity averse are more likely to engage in costly prosocial behaviors (Vives & Feldman-Hall, 2018), but also, contrary to expected utility theory, those who are more risk averse (Wang et al., 2023). Do and colleagues (2017) developed a theoretical model that describes the possible intersections between risk-taking and prosociality. The model identifies four potential groups based on altruism and risk aversion parameters, as represented by the quadrants in Figure B.1:

- 1) Antisocial Risk Takers may engage in high levels of risk-taking but have a low prosocial propensity
- 2) Prosocial Risk Takers may engage in high levels of both risk-taking and prosociality,
- 3) Indifferent Bystanders may have low levels of both risk-taking and prosocial propensity,
- 4) Empathetic Bystanders may be less likely to engage in risk-taking but have strong prosocial intents.

Individuals in the darker-colored regions of each quadrant may show those behaviors more strongly, yet individuals near the middle circle may be more sensitive to social and neurological cues for establishing which group they most belong to.

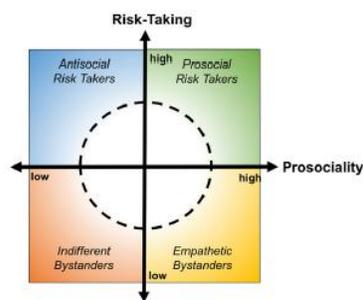


FIGURE 4.B.1. MODEL OF POSSIBLE INTERSECTIONS BETWEEN RISK-TAKING AND PROSOCIALITY  
(DO ET AL., 2017)

Some studies classify police officers and firefighters as prosocial risk-takers (also defined as “heroes”). Similarly to other studies, they found that prosocial risk-taking behavior is primarily motivated by altruistic motives, rather than sensation seeking (Levenson, 1990). This can be explained also because prosocial risk-taking behaviors may increase if the person in need is in an urgent situation and in the presence of peers (Liu et al., 2023). In relation to the classification of subjects according to the model of Do and colleagues (2017), we classified:

- as risk seekers if they chose the two riskiest lotteries in the Eckel-Grossman;
- as risk-averse if they chose the safest two;
- as altruistic if they decided to donate half or more of the budget in the Dictator Game;
- as selfish if they did not donate anything.

Given these assumptions, approximately 80.8% of the sample falls into the middle grey area, 7.7% are antisocial risk-takers, 5.5% are indifferent bystanders, and 3% are both empathetic bystanders and prosocial risk-takers.

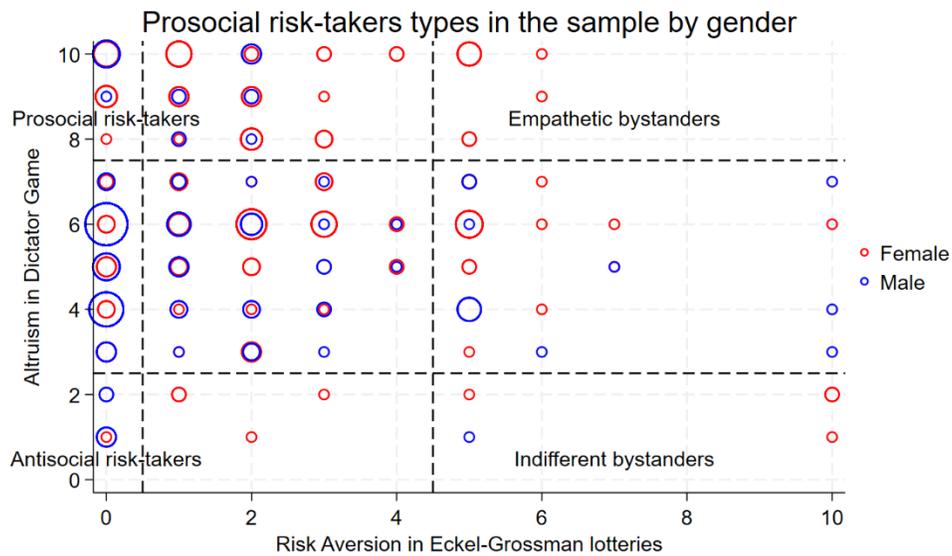


FIGURE 4.B.2. PROSOCIAL-RISK TAKERS TYPES IN THE SAMPLE

## Appendix 4.C. Mathematical Appendix of Section 4.3

### 4.C.1. Properties of the Utility Functions

For our study, we assume a CRRA power form (Brurhin et al., 2010; Dohmen et al., 2023; Lattimore et al., 1992) for the utility function of the subjects  $i \in \{1, \dots, N\}$ , because it required only one parameter for the curvature:

$$U(X_g) = \begin{cases} \frac{X_g^{1-r_i}}{(1-r_i)}, & \infty < r_i < \infty, r_i \neq 1 \\ \ln(X_g), & r_i = 1 \end{cases} \quad X_g \geq 0$$

The utility function is continuous for  $X_g > 0$ . It is composed of power functions and linear combinations, which are continuous for positive arguments.  $r_i$  is the curvature of the utility function. In the following part, we will refer to this parameter as the risk aversion parameter for simplicity, as it will be the only risk aversion parameter considered

The marginal utility of the monetary payoff from lotteries ( $X_g$ ) with the risk parameter ( $r_i$ ) is given by the first partial derivative (with  $r_i \neq 1$ ):

$$\frac{\partial U}{\partial X_g} = U'(X_g) = X_g^{-r_i} = \frac{1}{X_g^{r_i}}$$

When employed to depict risk attitudes, the instantaneous utility function offers an alternative interpretation. The coefficient of relative risk aversion is determined by the ratio (with a sign change) between the second derivative and the function's first derivative multiplied by the independent variable.

$$R_R = -X_g \frac{U''(X_g)}{U'(X_g)} = -X_{Mg} \frac{-r X_g^{-(r_i-1)}}{X_g^{-r_i}} = r_i$$

Given this basic model, which remains the reference one in case there is no altruistic behavior involved (as in our first and second groups), we extend it integrating with altruism. In the modified Holt & Laury lottery that we use in the third treatment of our experiment, the monetary payoff  $X_g$  is composed by a part that direct benefit the subject  $i$  ( $X_{Mg}$ ) and another part that is donated to charity ( $X_{Dg}$ ). We assume that subjects have social preferences (Margolis, 1984), so the utility also depends on charity donations, introducing the altruism parameter  $\alpha_i$  that weighs the utility obtained from and the amount donated. We

assume it can take a value between  $0 \leq \alpha_i \leq 1$ . We can measure the individual altruism parameter with the Dictator Game ( $\alpha_i = \text{donation} / \text{budget}$ ): because the payoff for others goes to charity, we can avoid considering other factors, such as inequality aversion. Because in the lotteries for prosocial risk behavior the risky choice guarantees a payoff for others, the utility given by the possible outcomes is therefore now

$$U(X_g) = \begin{cases} \frac{[(1 - \alpha_i) X_{Mg} + \alpha_i X_{Dg}]^{1-r_i}}{(1 - r_i)}, & \infty < r_i < \infty, r_i \neq 1 \\ \ln((1 - \alpha_i) X_{Mg} + \alpha_i X_{Dg}), & r_i = 1 \end{cases} \quad X_{Mg} \geq 0; X_{Dg} \geq 0; 0 \leq \alpha_i \leq 1$$

The utility function is continuous for  $X_{Mg} > 0, X_{Dg} > 0$ , and  $0 \leq \alpha \leq 1$ .

As in the basic model and with the same interpretation, we can derive the first derivate (with  $r_i \neq 1$ ):

$$\begin{aligned} \frac{\partial U}{\partial X_{Mg}} &= U'(X_{Mg}) = \\ &= \frac{1}{1 - r_i} \cdot \frac{\partial}{\partial X_{Mg}} [(1 - \alpha_i) X_{Mg} + \alpha_i X_{Dg}]^{1-r_i} = \\ &= \frac{(1 - r_i) [(1 - \alpha_i) X_{Mg} + \alpha_i X_{Dg}]^{1-r_i} \cdot \frac{\partial}{\partial X_{Mg}} [(1 - \alpha_i) X_{Mg} + \alpha_i X_{Dg}]}{1 - r_i} = \\ &= \frac{(1 - \alpha_i) \cdot -\frac{\partial}{\partial X_{Mg}} (X_{Mg}) + \frac{\partial}{\partial X_{Mg}} (\alpha_i X_{Dg})^{r_i}}{[(1 - \alpha_i) X_{Mg} + \alpha_i X_{Dg}]^{r_i}} = \\ &= \frac{(1 - \alpha_i)}{[(1 - \alpha_i) X_{Mg} + \alpha_i X_{Dg}]^{r_i}} \end{aligned}$$

The second derivative:

$$\begin{aligned} \frac{\partial U'}{\partial X_{Mg}} &= U''(X_{Mg}) = \\ &= \frac{\partial}{\partial X_{Mg}} \frac{(1 - \alpha_i)}{[(1 - \alpha_i) X_{Mg} + \alpha_i X_{Dg}]^{r_i}} = \end{aligned}$$

$$\begin{aligned}
&= (1 - \alpha_i) \frac{\partial}{\partial X_{Mg}} \frac{1}{[(1 - \alpha_i)X_{Mg} + \alpha_i X_{Dg}]^{r_i}} = \\
&= r_i (1 - \alpha_i)^2 \cdot [(1 - \alpha_i)X_{Mg} + \alpha_i X_{Dg}]^{-(r_i+1)}
\end{aligned}$$

And the coefficient of relative risk aversion:

$$R_R = -X_{Mg} \frac{U''(X_{Mg})}{U'(X_{Mg})} = -X_{Mg} \frac{r_i (1 - \alpha_i)^2 \cdot [(1 - \alpha_i)X_{Mg} + \alpha_i X_{Dg}]^{-(r_i+1)}}{\frac{(1 - \alpha_i)}{[(1 - \alpha_i)X_{Mg} + \alpha_i X_{Dg}]^{r_i}}} = r_i$$

When subjects are totally self-interested ( $\alpha_i = 0$ ), the model coincides with the previous one without altruism. If, on the other hand, subjects are extremely altruistic by donating everything to charity ( $\alpha_i = 1$ ), the model predicts that they will always choose the risky lottery (as the only one with a payoff to a charity).

#### 4.C.2. Properties of the Weighted functions

The choice of the lotteries depends on every condition's respective payoff and weighted probability  $w(p_{1g})$ , given by a linear-in-log-odds function (Dohmen et al., 2023; Lattimore et al., 1992):

$$w(p_{1g}) = \frac{\delta_i p_{1g}}{\delta_i p_{1g} + (1 - p_{1g})}, \quad \text{with } \delta_i \geq 0$$

Where  $p_{1g}$  is the probability that the desired monetary payoff  $X_{1g}$  will occur and  $\delta_i$  is the curve elevation parameter of the weighted probability function. In contrast with the previous studies, we assume, for simplicity, that the curvature parameter of the probability weighting function is equal to 1. This is because we use a single lottery (the use of more could have undermined the effect of prosocial risk taking in the task). Consequently, to derive the individual parameters to risk (in this case only of the curvature of utility function, without the weighted probability function), we did not use an estimation method based on the Maximum Likelihood Estimator, but we used an iterative solution and substituted into the mathematical formulas the values obtained from the different tasks, namely altruism (from the Dictator Game), optimism (from the Optimism Game), and switching point (from the Holt and Laury lotteries, which tells us the whether a utility of one lottery is greater than another).

The curve elevation is instead mainly regulated by the parameter  $\delta_i$ , which also measures the relative levels of optimism. The larger the value of  $\delta_i$  for gains, the more elevated is the curve, and so more weight is given to each likelihood consequently *ceteris paribus*, the more optimistically the forecast is valued for the desired outcome (in this case, we have assumed be  $X_{1g}$ ). We can get this parameter from an Optimism game (Corazzini et al., 2015): subjects with  $\delta_i < 1$  are pessimists, those with  $\delta_i = 1$  are realists, and those with  $\delta_i > 1$  are optimists. The function.

The function  $w(p_{1g})$  is continuous and differentiable for  $p_{1g} \in (0,1)$  and  $\delta_i \geq 0$ . The function  $w(p_{1g})$  is increasing in  $p_{1g}$ , so it holds the monotonicity property. If  $w(p_{1g})$  is increasing in  $p_{1g}$ , then for any two probabilities  $p_{1g1}$  and  $p_{1g2}$  such that  $p_{1g1} < p_{1g2}$  we have  $w(p_{1g1}) < w(p_{1g2})$ . Considering its limits, if  $p_{1g} \rightarrow 0$ ,  $w(p_{1g}) \rightarrow 0$ , as if  $p_{1g} \rightarrow 1$ ,  $w(p_{1g}) \rightarrow 1$ .

## Appendix 4.D. Questions and tasks

### General Instructions

**Please carefully read these instructions**, as you will be required to answer three questions on the next screen in order to access the experiment.

Thank you for your willingness to take part in this research on individual decision-making. Throughout the study, we kindly request your full and undivided attention. Consequently, we ask that you carefully adhere to the following guidelines.

**Please note that in economic experiments, we strictly prohibit the use of deception.**

At the conclusion of the experiment, you will receive compensation. The amount you receive will be determined by the decisions you make during the course of the experiment.

Should you have any question while participating, please raise your hand, and a member of our team will be available to assist you.

*It is imperative that you refrain from using other applications on your computer, engaging in conversations with fellow participants, or partaking in any distracting activities, such as using smartphones or headphones. Deliberate violations of these guidelines may result in your removal from the experiment and could impact your compensation.*

The entire experiment and all communication will be conducted exclusively through computer terminals.

### Tasks descriptions

In this experiment, you will engage in five consecutive tasks, followed by a final questionnaire. Each task will require you to make economic decisions. At the outset of every task, you will receive instructions pertaining to the specific decision-making task.

### Payment

Although you will participate in five consecutive tasks, your final earnings will be solely determined by the outcome of a single task randomly selected from one of the activities you complete.

Given that each phase has an equal likelihood of being chosen, it is imperative that you approach each choice as if it could be the one that ultimately determines your earnings. All results of the tasks will be shown at the end of the experiment.

A show-up fee of 5€ will be paid for your participation. You may also be eligible for additional money based on your decisions. Everyone will be paid privately through bank transfer, and you do not need to inform others of your earnings.

If you have no questions, we can proceed with the experiment.

### Control Question

This experiment consists of five tasks

- Yes
- No

Your final earnings uniquely depend on the outcome of one single task

- Yes
- No

Choices in one task affect the results and payoffs of the other tasks

- Yes
- No

When you are done click on the next button.

### Allocation Task (Dictator Game)

The task involves a total of 10€ that you have to allocate between yourself and the charity.

If this task is selected for final payment, you will get the amount you decided to keep for yourself while the experimenters will donate the remaining part to the charity of your choice.

First, choose the charity (the choice will also be used in subsequent tasks)

- Médecins sans frontières
- Red Cross
- UNICEF
- WWF
- Greenpeace
- Otherwise enter the name of a charity of your choice \_\_\_\_\_

Select how much do you want to keep for yourself and how much do you want to donate

- Keep 10€ and Give 0€
- Keep 9€ and Give 1€
- Keep 8€ and Give 2€
- Keep 7€ and Give 3€
- Keep 6€ and Give 4€
- Keep 5€ and Give 5€
- Keep 4€ and Give 6€
- Keep 3€ and Give 7€
- Keep 2€ and Give 8€
- Keep 1€ and Give 9€
- Keep 0€ and Give 10€

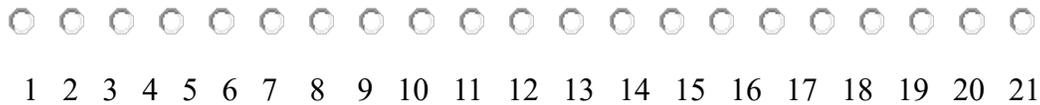
You keep \_\_\_ € for yourself and donate \_\_\_ € to \_\_\_

### Card Task (Optimism Game)

In this task, we randomize a set of 21 undisclosed cards selected from a deck of 52 standard playing cards. Suppose these 21 cards are placed in order on a table (like the dots below). You must choose which of these you want to draw by selecting one of the dots indicating the relative number of where the card is placed in the order.

If this task is chosen as your final payment at the end of the experiment, you will receive 0.70€ for each card in your subset that matches the same color (either black or red) as the card you have chosen.

Choose the card you want to draw from the deck:



Your next task involves making an estimation about the quantity of cards within your subset that match the same color (black or red) as the card you've just chosen. If your estimate is correct, you will be awarded an additional 5€.

Now, try to guess the number of cards in your sample reporting the same color

### Decision Task (Eckel and Grossman lotteries)

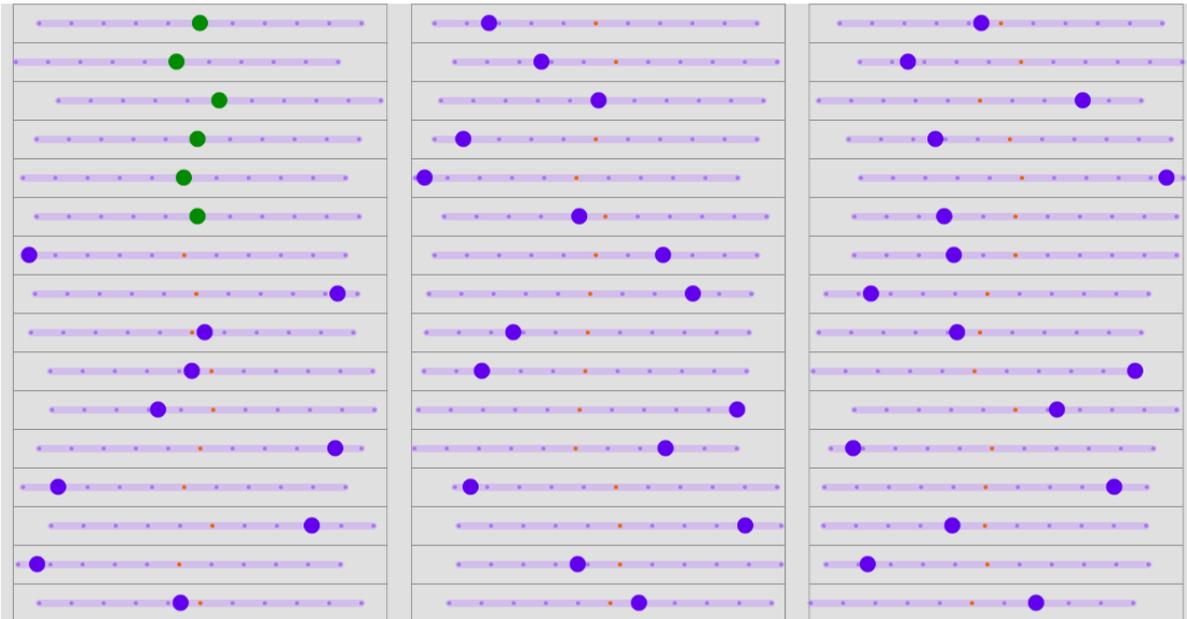
In this task, you have to choose one gamble out of ten different options provided. You must pick only one gamble from the list. Each of these ten gambles presents two possible outcomes, each with specified probabilities of happening. *It's essential to note that for each gamble, both columns have an equal 50% chance of occurring.* Your compensation for this task will depend on both your selection among the ten gambles and which of the two potential payoffs materializes.

Lotteries (50/50 Chance)	High payoff	Low Payoff	Expected value	Risk parameter CRRA
1	7 €	7 €	7 €	(+ ∞; +3)
2	8 €	6.3 €	7.15 €	(+3; + 2.05)
3	9 €	5.8 €	7.4 €	(+2.05; +1.735)
4	10 €	5.4 €	7.7 €	(+1.735; +1.305)
5	11 €	5 €	8 €	(+1.305; +0.785)
6	12 €	4.5 €	8.25 €	(+0.785; +0.325)
7	13 €	3.8 €	8.4 €	(+0.325; -0.065)
8	14 €	2.7 €	8.35 €	(-0.065; -0.455)
9	14.5 €	1.5 €	8 €	(-0.455; -0.905)
10	14.6 €	0 €	7.3 €	(-0.905 - ∞)

### Independent Task (Effort task with sliders)

Now you have the option to undertake a task involving a slider. Your objective is to adjust the slider to the middle position and keep it there until it changes color to green. If you decide to complete this task, the experimenters have committed to donating 1€ to [the charity you have chosen], the charity you chose. It's important to note that this task is entirely voluntary, and the decision to participate is entirely up to you. This particular task operates independently of the others and will not impact the payments you receive at the end. When you are ready, click on the "next" button, and you can choose to either engage in or skip this activity.

If you want to skip the activity, click on the next button otherwise if you complete the task the experiment will go on automatically. If you complete the activity the experimenters will donate 1€ to [the charity you have chosen] regardless of the outcome of other activities. *Remember that the slider is positioned correctly in the center if it turns green.*



You have correctly moved 32 sliders.

Thanks to you, we will donate 1€ to [the charity you have chosen].

### Switch Task (Holt and Laury lotteries)

[The standard one has Option B1 for control and karma belief groups, while a modified version with Option B2 for prosocial risk-taking group]

In this task you have to choose at **each row** whether you want to play option A or B. To do this, simply place a checkmark in the designated boxes. Keep in mind that each option consists of a fixed component and a probabilistic component represented by fractions. The value of the payoffs of the two options remains constant for each row, but the probability of occurrence of the probabilistic component increases going down each row. One of the rows will be randomly chosen and the option you selected will be played.

[Only B2] If this activity is chosen for final payment and option B is selected, in addition to the amount you get, the experimenters will donate 1€ to \_\_\_\_\_, the charity you chose in the first activity. [Only with inconsistent choices] In making your choices at some point you switch from column B back to column A. Verify if it is not a mistake, otherwise go ahead.

<b>Choice number</b>	<b>Option A</b> Safe choice	<b>Option B1</b> Risky choice <i>Control / Karma</i>	<b>Option B2</b> Risky choice <i>Prosocial Risk</i>	<b>Expected payoff difference</b> <i>Control / Karma</i>	<b>Risk parameter</b> CRRA
1	5 € for sure + 1/10 of 1.50€	2 € for sure + 1/10 of 10€	1 € charity + 1 € for sure + 1/10 of 10€	+ 2.15 €	( $-\infty$ ; - 1.65)
2	5 € for sure + 2/10 of 1.50€	2 € for sure + 2/10 of 10€	1 € charity + 1 € for sure + 2/10 of 10€	+ 1.30 €	(-1.65; -0.8)
3	5 € for sure + 3/10 of 1.50€	2 € for sure + 3/10 of 10€	1 € charity + 1 € for sure + 3/10 of 10€	+ 0.45 €	(-0.8; -0.24)
4	5 € for sure + 4/10 of 1.50€	2 € for sure + 4/10 of 10€	1 € charity + 1 € for sure + 4/10 of 10€	- 0.40 €	(- 0.24; +0.2)
5	5 € for sure + 5/10 of 1.50€	2 € for sure + 5/10 of 10€	1 € charity + 1 € for sure + 5/10 of 10€	- 1.25 €	(+0.2; +0.6)
6	5 € for sure + 6/10 of 1.50€	2 € for sure + 6/10 of 10€	1 € charity + 1 € for sure + 6/10 of 10€	- 2.10 €	(+0.6; +1)
7	5 € for sure + 7/10 of 1.50€	2 € for sure + 7/10 of 10€	1 € charity + 1 € for sure + 7/10 of 10€	- 2.95 €	(+1; +1.43)
8	5 € for sure + 8/10 of 1.50€	2 € for sure + 8/10 of 10€	1 € charity + 1 € for sure + 8/10 of 10€	- 3.80 €	(+1.43; +1.94)
9	5 € for sure + 9/10 of 1.50€	2 € for sure + 9/10 of 10€	1 € charity + 1 € for sure + 9/10 of 10€	- 4.65 €	(+1.94; +2.7)
10	5 € for sure + 10/10 of 1.50€	2 € for sure + 10/10 of 10€	1 € charity + 1 € for sure + 10/10 of 10€	- 5.50 €	(+2.7; + $\infty$ )

## Questionnaire

The black lines divide each step of the online survey. The words in the square bracket are not reported in the real one.

---

### Questionnaire:

---

Please, indicate your gender

- Male       Female       Non binary       \_\_\_\_\_
- 

Please, indicate your age

\_\_\_\_\_

---

Select you School or Institute

- School of Economics and Management       Law School  
 School of Social and Behavioral Sciences       School of Humanities and Digital Sciences  
 School of Catholic Theology       Other
- 

What is your current educational level?

- Bachelor       Master       Ph.D.       Other \_\_\_\_\_
- 

Are you in good health?

Strongly disagree

Strongly agree

- |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1                        | 2                        | 3                        | 4                        | 5                        | 6                        | 7                        | 8                        | 9                        | 10                       |
| <input type="checkbox"/> |
- 

Are you a smoker?

- Yes       No       Used to be



---

There is a right way and a wrong way to do almost everything [*ambiguity preference*, Cavatorta & Schröder, 2019]

Strongly disagree

Strongly agree

1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>									

---

Practically every problem has a solution. [*ambiguity preference*, Cavatorta & Schröder, 2019]

Strongly disagree

Strongly agree

1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>									

---

I feel relieved when an ambiguous situation suddenly becomes clear. [*ambiguity preference*, Cavatorta & Schröder, 2019]

Strongly disagree

Strongly agree

1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>									

---

I find it hard to make a choice when the outcome is uncertain. [*ambiguity preference*, Cavatorta & Schröder, 2019]

Strongly disagree

Strongly agree

1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>									

---

How willing are you to give up something beneficial for you today to benefit more from that in the future? [*time preference*]

Not at all

Very willing

willing to give

to give

1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>									

---

How willing are you to give to good causes without expecting anything in return?

[*Altruism, general*]

Not at all

Very willing

willing to give

to give

1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>									

---

When someone does me a favor, I am willing to return it [*Positive reciprocity*]

Strongly disagree

Strongly agree

1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>									

---

If I am treated very unjustly, I will take revenge on the first occasion, even if there is a cost to do so

[*Negative reciprocity*]

Strongly disagree

Strongly agree

1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>									

---

I assume that people have only the best intentions [*Trust*]

Strongly disagree

Strongly agree

1	2	3	4	5	6	7	8	9	10
<input type="checkbox"/>									

---

[*Prosocial Risk Taking Scale* for adults, based on Armstrong-Carter et al. (2021)]

You will read about scenarios that someone can face and how they might act at that moment. Try to imagine what it would be like to be in their shoes. Please indicate how likely you are to act in the same way for each scenario.

1 = *Very unlikely*. 2 = *Unlikely*. 3 = *Somewhat likely*. 4 = *Likely*. 5 = *Very Likely*.

---

- 
- You and your colleagues have the chance to form groups for a project. A weird workmate asks to work with you. You say yes, even though you risk your colleagues judging you negatively.
  - You notice some people in the street picking on and harassing one person. You decide to step in and help the victim, even though you risk getting picked on yourself.
  - People at your university or workplace are talking behind another colleague. You say that another colleague might not like that and ask them to change the topic, even though they might start talking about you behind your back later.
  - You notice that a colleague always eats lunch by themselves. You decide to sit with this colleague instead of your friends so he/she won't feel so lonely, even though your friends might judge you.
  - Your notice that your friend is becoming addicted to gambling. It seems serious, but no one else knows. You told him/her that you will advise his/her family if he/she won't begin a detoxification process, even though you may lose your friend's trust.
  - While in a conference, other colleagues start talking loudly while the speaker is presenting. You stick up for the speaker and tell the others to quiet down, even if it makes you look unfriendly.
- 

[*Life-Orientation/Optimism Scale*, Mukherjee. (2022)]

On a scale from strongly disagree (1) to strongly agree (7), please indicate the extent to which you agree with each of the following statements:

- In uncertain times, I usually expect the best.
  - If something can go wrong for me, it will. [*Reverse*]
  - I'm always optimistic about my future.
  - I hardly ever expect things to go my way. [*Reverse*]
  - I rarely count on good things happening to me. [*Reverse*]
  - Overall, I expect more good things to happen to me than bad.
- 

[*Belief in karma*, Mukherjee. (2022)]

On a scale from strongly disagree (1) to strongly agree (7), please indicate the extent to which you agree with each of the following statements:

- Performing good deeds in the present lead to good outcomes in the future.
  - Bad actions in the present lead to bad outcomes in the future.
  - When someone does the right thing, they will eventually be rewarded.
  - Being moral or immoral in the present does not affect what happens later in life [*Reverse*].
  - Give and you shall receive.
  - I don't believe in karma [*Reverse*]
- 

Big Five Inventory-10 (Rammstedt & John, 2007)

Instruction: How well do the following statements describe your personality? Indicate on a Likert scale from Disagree strongly (1) to (5) Agree strongly

---

---

I see myself as someone who:

- ... is reserved
- ... is generally trusting
- ... tends to be lazy
- ... is relaxed, handles stress well
- ... has few artistic interests
- ... is outgoing, sociable
- ... tends to find fault with others
- ... does a thorough job
- ... gets nervous easily
- ... has an active imagination

---

We now are going to ask you to assess the social appropriateness of each of the 11 different possible decisions for the first task. Suppose that another participant of this study completes this task. Reports how socially appropriate you think it is to perform the following behaviors [*for exploratory analysis*]:

*1 = Very Socially Inappropriate. 2 = Somewhat Socially Inappropriate. 3 = Somewhat Socially Appropriate. 4 = Very Socially Appropriate*

- Participants keeps 10 € and donate 0 €
  - Participants keeps 9 € and donate 1 €
  - Participants keeps 8 € and donate 2 €
  - Participants keeps 7 € and donate 3 €
  - Participants keeps 6 € and donate 4 €
  - Participants keeps 5 € and donate 5 €
  - Participants keeps 4 € and donate 6 €
  - Participants keeps 3 € and donate 7 €
  - Participants keeps 2 € and donate 8 €
  - Participants keeps 1 € and donate 9 €
  - Participants keeps 0 € and donate 10 €
-



## References

- Aassve, A., Conzo, P., & Mattioli, F. (2021). Was Banfield right? New insights from a nationwide laboratory experiment. *Journal of Regional Science*, 61(5), 1029-1064.  
<https://doi.org/10.1111/jors.12538>
- Abolghasemi, H., Hosseini-Divkalayi, N. S., & Seighali, (2010). Blood donor incentives: A step forward or backward, *Asian Journal of Transfusion Science*, 4(1), p. 9.  
<https://doi.org/10.4103/0973-6247.59385>
- Accetturo, A., Albanese, G., Ballatore, R. M., Ropele, T., & Sestito, P. (2022). I divari territoriali in Italia tra crisi economiche, ripresa ed emergenza sanitaria [Regional inequality in Italy in the face of economic crises, recovery, and the health emergency]. *Bank of Italy Occasional Paper*, (685).  
<http://dx.doi.org/10.2139/ssrn.4109479>
- Ai, C. & Norton, E.C. (2003). Interaction terms in logit and probit models, *Economics Letters*, 80(1), pp. 123–129. [https://doi.org/10.1016/S0165-1765\(03\)00032-6](https://doi.org/10.1016/S0165-1765(03)00032-6)
- Ajzen, I. (1985). From intentions to actions: A theory of planned behavior, *Action Control*, pp. 11–39.  
[https://doi.org/10.1007/978-3-642-69746-3\\_2](https://doi.org/10.1007/978-3-642-69746-3_2)
- Ajzen, I. (1991). The theory of planned behavior. *Organizational behavior and human decision processes*, 50(2), 179-211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Akerlof, G. A., & Kranton, R. E. (2000). Economics and Identity. *The Quarterly Journal of Economics*, 115(3), 715–753. <https://doi.org/10.1162/003355300554881>
- Alempaki, D., Isoni, A., & Read, D. (2023). Deception aversion, communal norm violation and consumer responses to prosocial initiatives. *Behavioural Public Policy*, 1-18.  
<https://doi.org/10.1017/bpp.2023.32>
- Alesina, A., & Giuliano, P. (2010). The power of the family. *Journal of Economic Growth*, 15, 93-125.  
<https://doi.org/10.1007/s10887-010-9052-z>

- Alfieri, S. (2017). Representations and motivations of blood donation in adolescence through a mixed method approach, *Transfusion and Apheresis Science*, 56(5), pp. 723–731.  
<https://doi.org/10.1016/j.transci.2017.08.023>
- Alfieri, S., Saturni, V., & Marta, E. (2013). Looking to the future, working on the present. Intention to donate blood and risk behavior: A study on adolescents. *Asian Journal of Transfusion Science*, 7(2), 130. <https://doi.org/10.4103/0973-6247.115573>
- Algan, Y., & Cahuc, P. (2014). Trust, growth, and well-being: New evidence and policy implications. In *Handbook of economic growth* (Vol. 2, pp. 49-120). Elsevier. <https://doi.org/10.1016/B978-0-444-53538-2.00002-2>
- Allport G. W., Kenneth C., Thomas P. (1954). *The nature of prejudice*. Unabridged. Addison-Wesley Publishing Company.
- Alves de Amorim, D., Rodrigues Sampaio, L., & Ribeiro Eulálio Cabral, G. (2018). Altruism and empathy in situations involving unpredictable personal cost. *Ciencias Psicológicas*, 12(1), 7-15.  
<https://doi.org/10.22235/cp.v12i1.1589>
- Ames, D. R., Flynn, F. J., & Weber, E. U. (2004). It's the thought that counts: On perceiving how helpers decide to lend a hand. *Personality and Social Psychology Bulletin*, 30(4), 461-474.  
<https://doi.org/10.1177/0146167203261890>
- Andreoni, J. (1990). Impure altruism and donations to public goods: A theory of warm-glow giving. *The Economic Journal*, 100(401), 464-477. <https://doi.org/10.2307/2234133>
- Ariely, D., Bracha, A., & Meier, S. (2009). Doing good or doing well? Image motivation and monetary incentives in behaving prosocially. *American Economic Review*, 99(1), 544-55.  
<https://doi.org/10.1257/aer.99.1.544>
- Armitage, C. J., & Conner, M. (2001). Social cognitive determinants of blood donation. *Journal of Applied Social Psychology*, 31(7), 1431-1457. <https://doi.org/10.1111/j.1559-1816.2001.tb02681.x>
- Armstrong-Carter, E., Bibby, E. S., Burroughs, M., Flannery, J. E., Nelson, B. W., Duell, N., ... & Telzer, E. H. (2022). Adolescents are more likely to help others on days they take risks and crave

social connections. *Journal of research on adolescence*, 32(4), 1421-1432.

<https://doi.org/10.1111/jora.12705>

Armstrong-Carter, E., Do, K. T., Duell, N., Kwon, S. J., Lindquist, K. A., Prinstein, M. J., & Telzer, E. H. (2023). Adolescents' perceptions of social risk and prosocial tendencies: Developmental change and individual differences. *Social Development*, 32(1), 188-203.

<https://doi.org/10.1111/sode.12630>

Armstrong-Carter, E., Do, K. T., Moreira, J. F. G., Prinstein, M. J., & Telzer, E. H. (2021). Examining a new prosocial risk-taking scale in a longitudinal sample of ethnically diverse adolescents. *Journal of adolescence*, 93, 222-233. <https://doi.org/10.1016/j.adolescence.2021.11.002>

Asioli, D., Mignani, A., & Alfnes, F. (2021). Quick and easy? Respondent evaluations of the Becker–DeGroot–Marschak and multiple price list valuation mechanisms. *Agribusiness*, 37(2), 215-234.

<https://doi.org/10.1002/agr.21668>

Attanasi, G., Buccioli, A., Cicognani, S., & Montinari, N. (2017). The Italian North-South Divide in Perceived Dishonesty: A Matter of Trust? (No. 2017-32). *Bureau d'Economie Théorique et Appliquée*, UDS, Strasbourg.

Axelrod, R., & Hamilton, W. D. (1981). The evolution of cooperation. *Science*, 211(4489), 1390-1396.

<https://doi.org/10.1126/science.7466396>

Baltrunaite, A., Formai, S., Linarello, A., & Mocetti, S. (2023). Ownership, governance, management and firm performance: evidence from Italian firms. *Italian Economic Journal*, 1-35.

<https://doi.org/10.1007/s40797-023-00237-3>

Banaji, M. R., & Greenwald, A. G. (2014). Blindspot: hidden biases of good people. *Choice Reviews Online*, 51(10), 51–5867. <https://doi.org/10.5860/choice.51-5867>

Banerjee, K., & Bloom, P. (2013). Would Tarzan believe in God? Conditions for the emergence of religious belief. *Trends in Cognitive Sciences*, 17 (1), 7–8.

<https://doi.org/10.1016/j.tics.2012.11.005>

- Banerjee, K., & Bloom, P. (2014). Why did this happen to me? Religious believers' and non-believers' teleological reasoning about life events. *Cognition*, *133*, 277–303.  
<https://doi.org/10.1016/j.cognition.2014.06.017>
- Banerjee, K., & Bloom, P. (2015). 'Everything happens for a reason': children's beliefs about purpose in life events. *Child Development*, *86*, 503–518. <https://doi.org/10.1111/cdev.12312>
- Banerjee, K., & Bloom, P. (2017). You get what you give: children's karmic bargaining. *Developmental Science*, *20*(5), e12442. <https://doi.org/10.1111/desc.12442>
- Banerjee, S. (2021). Rethinking the origin of the behavioural policy cube with nudge plus. In *Behavioral-Based Interventions for Improving Public Policies*, IGI Global, 1-16.  
<https://doi.org/10.4018/978-1-7998-2731-3.ch001>
- Banerjee, S., & John, P. (2021). Nudge plus: incorporating reflection into behavioral public policy. *Behavioural Public Policy*, *5717*(332), 1-16. <https://doi.org/10.1017/bpp.2021.6>
- Banfield Edward, C. (1958). The moral basis of a backward society. *New York/London*.  
<https://doi.org/10.2307/2550413>
- Bani, M., & Giussani, B. (2010). Gender differences in giving blood: a review of the literature. *Blood Transfusion*, *8*(4), 278. <https://doi.org/10.2450/2010.0156-09>
- Bani, M., & Strepparava, M. G. (2011). Motivation in Italian whole blood donors and the role of commitment. *Psychology, health & medicine*, *16*(6), 641-649.  
<https://doi.org/10.1080/13548506.2011.569731>
- Bar-El, R., Hatsor, L., & Snir, A. (2023). An experiment on donations, personal stories, and bad luck. *European Journal of Political Economy*, 102381.  
<https://doi.org/10.1016/j.ejpoleco.2023.102381>
- Barr, A. (2003). Trust and expected trustworthiness: experimental evidence from Zimbabwean villages. *The Economic Journal*, *113* (489), 614-630. <https://doi.org/10.1111/1468-0297.t01-1-00150>

- Battiston, P., & Gamba, S. (2016). When the two ends meet: An experiment on cooperation across the Italian North-South divide (No. 2016/41). *LEM Working Paper Series*.  
<http://hdl.handle.net/10419/174550>
- Becker, A., Deckers, T., Dohmen, T., Falk, A., & Kosse, F. (2012). The relationship between economic preferences and psychological personality measures. *Annual Review of Economic.*, 4(1), 453-478.  
<https://doi.org/10.1146/annurev-economics-080511-110922>
- Bednall, T. C., & Bove, L. L. (2011). Donating blood: a meta-analytic review of self-reported motivators and deterrents. *Transfusion Medicine Reviews*, 25(4), 317-334.  
<https://doi.org/10.1016/j.tmr.2011.04.005>
- Bednall, T. C., Bove, L. L., Cheetham, A., & Murray, A. L. (2013). A systematic review and meta-analysis of antecedents of blood donation behavior and intentions. *Social Science & Medicine*, 96, 86-94. <https://doi.org/10.1016/j.socscimed.2013.07.022>
- Behavioural Insight Team. (2010). *Applying behavioural insight to health*. London: Cabinet Office.
- Behavioural Insight Team. (2014). *East: Four Simple Ways to Apply Behavioural Insights*. London: Cabinet Office.
- Behavioural Insight Team. (2015). *The Behavioral Insights Team Update 2013–2015*. London: Cabinet Office.
- Berreby, D. (2008). *Us and them: The science of identity*. University of Chicago Press.  
<http://ci.nii.ac.jp/ncid/BA89815438>
- Bhati, A., & Hansen, R. (2020). A literature review of experimental studies in fundraising. *Journal of Behavioral Public Administration*, 3(1). <https://doi.org/10.30636/jbpa.31.129>
- Bianchi L. (2022). Rapporto SVIMEZ sull’Economia nel Mezzogiorno  
[https://lnx.svimez.info/svimez/wp-content/uploads/2022/11/2022\\_11\\_28\\_rapporto\\_2022\\_linee.pdf](https://lnx.svimez.info/svimez/wp-content/uploads/2022/11/2022_11_28_rapporto_2022_linee.pdf)
- Bicchieri, C. (2005). *The grammar of society: The nature and dynamics of social norms*. Cambridge University Press. <https://doi.org/10.1017/CBO9780511616037>

- Bigoni, M., Bortolotti, S., & Rattini, V. (2022). A tale of two cities: An experiment on inequality and preferences. *Theory and Decision*, 1-34. <https://doi.org/10.1007/s11238-021-09803-6>
- Bigoni, M., Bortolotti, S., Casari, M., & Gambetta, D. (2019). At the root of the North–South cooperation gap in Italy: Preferences or beliefs? *The Economic Journal*, 129(619), 1139-1152. <https://doi.org/10.1111/eoj.12608>
- Bigoni, M., Bortolotti, S., Casari, M., Gambetta, D., & Pancotto, F. (2016). Amoral familism, social capital, or trust? The behavioural foundations of the Italian North–South divide. *The Economic Journal*, 126(594), 1318-1341. <https://doi.org/10.1111/eoj.12292>
- Blanco, M., & Guerra, J. A. (2020). To segregate, or to discriminate—that is the question: experiment on identity and social preferences. *Documento CEDE*, (31). <https://doi.org/10.2139/ssrn.3680056>
- Blankenstein, N. E., Telzer, E. H., Do, K. T., Van Duijvenvoorde, A. C., & Crone, E. A. (2020). Behavioral and neural pathways supporting the development of prosocial and risk-taking behavior across adolescence. *Child Development*, 91(3), e665-e681. <https://doi.org/10.1111/cdev.13292>
- Blumenthal-Barby, J. S., & Burroughs, H. (2012). Seeking better health care outcomes: the ethics of using the “nudge”. *The American Journal of Bioethics*, 12(2), 1-10. <https://doi.org/10.1080/15265161.2011.634481>
- Bogliacino, F., Jiménez Lozano, L., & Reyes, D. (2018). Socioeconomic stratification and stereotyping: lab-in-the-field evidence from Colombia. *International Review of Economics*, 65, 77-118. <https://doi.org/10.1007/s12232-017-0285-4>
- Bourdieu, P. (1980). Le capital social. *Actes de la recherche en sciences sociales*, 31(1), 2-3. <https://doi.org/10.3406/arss.1980.2077>
- Bove, L., Chmielewski, D., Neville, B. A., Lei, J., & Nagpal, A. (2021). What kind of donor are you? Uncovering complexity in donor identity. *Psychology & marketing*, 38(1), 70-85. <https://doi.org/10.1002/mar.21410>
- Bradler, C. (2009). Social preferences under risk-an experimental analysis. *ZEW-Centre for European Economic Research Discussion Paper*, (09-077). <https://doi.org/10.2139/ssrn.1547045>

- Breckler, S. J. (1984). Empirical validation of affect, behavior, and cognition as distinct components of attitude. *Journal of personality and social psychology*, 47(6), 1191. <https://doi.org/10.1037/0022-3514.47.6.1191>
- Brennan, G., García-González, L., Güth, W., & Levati, M. V. (2008). Attitudes toward private and collective risk in individual and strategic choice situations. *Journal of Economic Behavior and Organization*, 67(1), 253–262. <https://doi.org/10.1016/j.jebo.2007.02.001>
- Brock, J. M., Lange, A., & Ozbay, E. Y. (2013). Dictating the risk: Experimental evidence on giving in risky environments. *The American Economic Review*, 103(1), 415-437. <https://doi.org/10.1257/aer.103.1.415>
- Bruers, S. (2021). Blood Donation and Monetary Incentives: A Meta-Analysis of Cost-Effectiveness. *Transfusion Medicine Reviews*. <https://doi.org/10.1016/j.tmr.2021.08.007>
- Bruhin, A., Fehr-Duda, H., & Epper, T. (2010). Risk and rationality: Uncovering heterogeneity in probability distortion. *Econometrica*, 78(4), 1375-1412. <https://doi.org/10.3982/ECTA7139>
- Bruhin, A., Goette, L., Haenni, S., & Jiang, L. (2020). Spillovers of prosocial motivation: Evidence from an intervention study on blood donors. *Journal of health economics*, 70, 102244. <https://doi.org/10.1016/j.jhealeco.2019.102244>
- Bruns, H., Kantorowicz-Reznichenko, E., Klement, K., Jonsson, M. L., & Rahali, B. (2018). Can nudges be transparent and yet effective? *Journal of Economic Psychology*, 65, 41–59. <https://doi.org/10.1016/j.joep.2018.02.002>
- Buonanno, P., Montolio, D., & Vanin, P. (2009). Does social capital reduce crime?. *The Journal of Law and Economics*, 52(1), 145-170. <https://doi.org/10.1086/595698>
- Buonanno, P., Puca, M., & Sbriglia, P. (2020). Corruption and Within-Country stereotypes. *Social Science Research Network*. <https://doi.org/10.2139/ssrn.3617590>
- Buonanno, P., & Vanin, P. (2017). Social closure, surnames and crime. *Journal of Economic Behavior & Organization*, 137, 160–175. <https://doi.org/10.1016/j.jebo.2017.03.002>

- Butler, J. V., Giuliano, P., & Guiso, L. (2015). Trust, values, and false consensus. *International Economic Review*, 56(3), 889-915. <https://doi.org/10.1111/iere.12125>
- Byrnes, J. P., Miller, D. C., & Schafer, W. D. (1999). Gender differences in risk taking: A meta-analysis. *Psychological bulletin*, 125(3), 367. <https://doi.org/10.1037/0033-2909.125.3.367>
- Cadario, R., & Chandon, P. (2020). Which healthy eating nudges work best? A meta-analysis of field experiments. *Marketing Science*, 39(3), 465-486. <https://doi.org/10.1287/mksc.2018.1128>
- Cain, D. M., Dana, J., & Newman, G. E. (2014). Giving versus giving in. *The Academy of Management Annals*, 8(1), 505-533. <https://doi.org/10.5465/19416520.2014.911576>
- Callero, P. L., & Piliavin, J. A. (1983). Developing a Commitment to Blood Donation: The Impact of One's First Experience. *Journal of Applied Social Psychology*, 13(1), 1-16. <https://doi.org/10.1111/j.1559-1816.1983.tb00883.x>
- Cao, L., Zhao, J., Ren, L., & Zhao, R. (2015). Do in-group and out-group forms of trust matter in predicting confidence in the order institutions? A study of three culturally distinct countries. *International Sociology*, 30(6), 674–693. <https://doi.org/10.1177/0268580915605651>
- Capraro, V., & Kuilder, J. (2016). To know or not to know? Looking at payoffs signals selfish behavior, but it does not actually mean so. *Journal of Behavioral and Experimental Economics*, 65, 79-84. <https://doi.org/10.1016/j.socec.2016.08.005>
- Caraban, A., & Karapanos, E. (2020). The '23 ways to nudge' framework: designing technologies that influence behavior subtly. *Interactions*, 27(5), 54-58. <https://doi.org/10.1145/3414464>
- Caraban, A., Karapanos, E., Gonçalves, D., & Campos, P. (2019). 23 ways to nudge: A review of technology-mediated nudging in human-computer interaction. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*, 1-15. <https://doi.org/10.1145/3290605.3300733>
- Caraban, A., Konstantinou, L., & Karapanos, E. (2020). The Nudge Deck: A design support tool for technology-mediated nudging. In *Proceedings of the 2020 ACM Designing Interactive Systems Conference*, 395-406. <https://doi.org/10.1145/3357236.3395485>

- Caravella S., Petraglia C., Prezioso S. (2022). Lo shock energetico colpisce più duramente l'industria meridionale, *SVIMEZ*. <https://hdl.handle.net/11563/169855>
- Carpenter, J., & Matthews, P. H. (2017). Using raffles to fund public goods: Lessons from a field experiment. *Journal of Public Economics*, 150, 30–38. <https://doi.org/10.1016/j.jpubeco.2017.04.005>
- Carter, M. C., Wilson, J., Redpath, G. S., Hayes, P., & Mitchell, C. (2011). Donor recruitment in the 21st century: challenges and lessons learned in the first decade. *Transfusion and Apheresis Science*, 45(1), 31-43. <https://doi.org/10.1016/j.transci.2011.06.001>
- Cartocci, R. (2007). *Mappe del tesoro. Atlante del capitale sociale in Italia*. Il mulino.
- Cartwright, E., & Thompson, A. (2023). Using dictator game experiments to learn about charitable giving. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations*, 34(1), 185-191. <https://doi.org/10.1007/s11266-022-00490-7>
- Carver, A., Chell, K., Davison, T. E., & Masser, B. M. (2018). What motivates men to donate blood? A systematic review of the evidence. *Vox sanguinis*, 113(3), 205-219. <https://doi.org/10.1111/vox.12625>
- Cavalcanti, C., & Leibbrandt, A. (2024). *Do Positive Externalities Affect Risk Taking? Experimental Evidence on Gender and Group Membership* (No. 2024-05). Monash University, Department of Economics.
- Cavatorta, E., & Schröder, D. (2019). Measuring ambiguity preferences: A new ambiguity preference survey module. *Journal of Risk and Uncertainty*, 58(1), 71-100. <https://doi.org/10.1007/s11166-019-09299-0>
- Cesarini, D., Dawes, C. T., Johannesson, M., Lichtenstein, P., & Wallace, B. (2009). Genetic variation in preferences for giving and risk taking. *The Quarterly Journal of Economics*, 124(2), 809-842. <https://doi.org/10.1162/qjec.2009.124.2.809>
- Cettolin, E., Riedl, A., & Tran, G. (2017). Giving in the face of risk. *Journal of Risk and Uncertainty*, 55, 95-118. <https://doi.org/10.1007/s11166-017-9270-2>

- Charness, G., & Chemaya, N. (2023). Repeated Experience and Consistent Risk Preferences. *Economics Letters*, 111375. <https://doi.org/10.1016/j.econlet.2023.111375>
- Charness, G., Chemaya, N., & Trujano-Ochoa, D. (2023). Learning your own risk preferences. *Journal of Risk and Uncertainty*, 1-19. <https://doi.org/10.1007/s11166-023-09413-3>
- Charness, G., & Gneezy, U. (2012). Strong evidence for gender differences in risk taking. *Journal of economic behavior & organization*, 83(1), 50-58. <https://doi.org/10.1016/j.jebo.2011.06.007>
- Chell, K., Davison, T. E., Masser, B., & Jensen, K. (2018). A systematic review of incentives in blood donation. *Transfusion*, 58(1), 242-254. <https://doi.org/10.1111/trf.14387>
- Chen, D. L., Schonger, M., & Wickens, C. (2016). oTree—An open-source platform for laboratory, online, and field experiments. *Journal of Behavioral and Experimental Finance*, 9, 88-97. <https://doi.org/10.1016/j.jbef.2015.12.001>
- Chen, Y., & Li, S. X. (2009). Group identity and social preferences. *The American Economic Review*, 99(1), 431–457. <https://doi.org/10.1257/aer.99.1.431>
- Chiorri, C., Bracco, F., Piccinno, T., Modafferi, C., & Battini, V. (2015). Psychometric properties of a revised version of the Ten Item Personality Inventory. *European Journal of Psychological Assessment*. <https://doi.org/10.1027/1015-5759/a000215>
- Chou, E. Y., & Murnighan, J. K. (2013). Life or death decisions: Framing the call for help. *PloS one*, 8(3), e57351. <https://doi.org/10.1371/journal.pone.0057351>
- Coleman, J. S. (1988). Social capital in the creation of human capital. *American journal of sociology*, 94, S95-S120. <https://doi.org/10.1086/228943>
- Condie, S. J., Warner, W. K., & Gillman, D. C. (1976). Getting blood from collective turnips: volunteer donation in mass blood drives. *Journal of Applied Psychology*, 61(3), 290. <https://doi.org/10.1037/0021-9010.61.3.290>
- Congiu, L., & Moscati, I. (2020). Message and Environment: a framework for nudges and choice architecture. *Behavioural Public Policy*, 4(1), 71-87. <https://doi.org/10.1017/bpp.2018.29>

- Congiu, L., & Moscati, I. (2022). A review of nudges: Definitions, justifications, effectiveness. *Journal of Economic Surveys*, 36(1), 188-213. <https://doi.org/10.1111/joes.12453>
- Converse, B.A., Risen, J.L., & Carter, T.J. (2012). Investing in karma when wanting promotes helping. *Psychological Science*, 23, 923–930. <https://doi.org/10.1177/0956797612437248>
- Cooper, David J. and Kagel, John H. (2017). Other-Regarding Preferences: A Selective Survey of Experimental Results. *The Handbook of Experimental Economics, Volume 2: The Handbook of Experimental Economics*, edited by John H. Kagel and Alvin E. Roth, Princeton: Princeton University Press, pp. 217-289. <https://doi.org/10.1515/9781400883172-005>
- Corazzini, L., A. Filippin, and P. Vanin. (2015). Economic behavior under the influence of alcohol: An experiment on time preferences, risk-taking, and altruism. *PLoS One* 10(4):e0121530. <https://doi.org/10.1371/journal.pone.0121530>
- Correia, I., Batista, M. T., & Lima, M. L. (2009). Does the belief in a just world bring happiness? Causal relationships among belief in a just world, life satisfaction and mood. *Australian Journal of Psychology*, 61(4), 220-227. <https://doi.org/10.1080/00049530802579515>
- Coventry, L., Briggs, P., Jeske, D., & Van Moorsel, A. (2014). SCENE: A structured means for creating and evaluating behavioral nudges in a cyber security environment. In *Design, User Experience, and Usability. Theories, Methods, and Tools for Designing the User Experience: Third International Conference, DUXU 2014, Held as Part of HCI International 2014, Heraklion, Crete, Greece, June 22-27, 2014, Proceedings, Part I 3* (pp. 229-239). Springer International Publishing. [https://doi.org/10.1007/978-3-319-07668-3\\_23](https://doi.org/10.1007/978-3-319-07668-3_23)
- Crosen, R., & Gneezy, U. (2009). Gender differences in preferences. *Journal of Economic Literature*, 47(2), 448-474. <https://doi.org/10.1257/jel.47.2.448>
- Czeizler, A., & Garbarino, E. (2017). Give blood today or save lives tomorrow: matching decision and message construal level to maximize blood donation intentions. *Health marketing quarterly*, 34(3), 175-186. <https://doi.org/10.1080/07359683.2017.1346430>

- Dang, D. A., & Dang, V. A. (2021). Cooperation makes beliefs: Weather variation and social trust in Vietnam. *Journal of Behavioral and Experimental Economics*, *91*, 101669. <https://doi.org/10.1016/j.socec.2021.101669>
- Dargan, S., & Schermer, J. A. (2022). Predicting altruism with personality “beyond” the Big Five. *Personality and Individual Differences*, *185*, 111258. <https://doi.org/10.1016/j.paid.2021.111258>
- De Araújo, F. A., Carbone, E., Conell-Price, L., Dunietz, M. W., Jaroszewicz, A., Landsman, R., Lamé, D., Vesterlund, L., Wang, S. W., & Wilson, A. J. (2016). The slider task: an example of restricted inference on incentive effects. *Journal of the Economic Science Association*, *2*(1), 1–12. <https://doi.org/10.1007/s40881-016-0025-7>
- De Philippis, M., Locatelli, A., Papini, G., & Torrini, R. (2022). La crescita dell’economia italiana e il divario Nord-Sud: trend storici e prospettive alla luce dei recenti scenari demografici [Italian economic growth and the North-South gap: Historical trends and future projections in light of the recent demographic scenarios]. *Bank of Italy Occasional Paper*, (683). <https://doi.org/10.2139/ssrn.4109462>
- Delhey, J., & Welzel, C. (2012). Generalizing trust: How outgroup-trust grows beyond ingroup-trust. *World Values Research*, *5*(3): 46-69. <https://doi.org/10.2139/ssrn.2390636>
- Do, K. T., Moreira, J. F. G., & Telzer, E. H. (2017). But is helping you worth the risk? Defining prosocial risk taking in adolescence. *Developmental cognitive neuroscience*, *25*, 260-271. <https://doi.org/10.1016/j.dcn.2016.11.008>
- Dohmen, T., Falk, A., Huffman, D., Sunde, U., Schupp, J., & Wagner, G. G. (2011). Individual risk attitudes: Measurement, determinants, and behavioral consequences. *Journal of the European Economic Association*, *9*(3), 522-550. <https://doi.org/10.1111/j.1542-4774.2011.01015.x>
- Dohmen, T., Quercia, S., & Willrodt, J. (2023). On the psychology of the relation between optimism and risk taking. *Journal of Risk and Uncertainty*, 1-22. <https://doi.org/10.1007/s11166-023-09409-z>

- Dolan, P., Hallsworth, M., Halpern, D., King, D., & Vlaev, I. (2010). MINDSPACE: Influencing behaviour through public policy. *Institute for Government and Cabinet Office*.
- Dolan, P., Hallsworth, M., Halpern, D., King, D., Metcalfe, R., & Vlaev, I. (2012). Influencing behaviour: The mindspace way. *Journal of Economic Psychology*, 33(1), 264-277. <https://doi.org/10.1016/j.joep.2011.10.009>
- Drouvelis, M. (2021). *Social Preferences: An Introduction to Behavioural Economics and Experimental Research*. Agenda Publishing. <https://doi.org/10.2307/j.ctv1wgvb4b>
- Dunn, E. W., Aknin, L. B., & Norton, M. I. (2014). Prosocial spending and happiness: Using money to benefit others pays off. *Current directions in psychological science*, 23(1), 41-47. <https://doi.org/10.1177/0963721413512503>
- Eckel, C. C., & Grossman, P. J. (1996). Altruism in anonymous dictator games. *Games and Economic Behavior*, 16(2), 181-191. <https://doi.org/10.1006/game.1996.0081>
- Eckel, C. C., & Grossman, P. J. (2008). Forecasting risk attitudes: An experimental study using actual and forecast gamble choices. *Journal of Economic Behavior & Organization*, 68(1), 1-17. <https://doi.org/10.1016/j.jebo.2008.04.006>
- Eckel, C. C., & Wilson, R. K. (2004). Is trust a risky decision?. *Journal of Economic Behavior & Organization*, 55(4), 447-465. <https://doi.org/10.1016/j.jebo.2003.11.003>
- Eckel, C. C., Hoover, H. G., Krupka, E. L., Sinha, N., & Wilson, R. K. (2023). Using social norms to explain giving behavior. *Experimental Economics*, 1-27. <https://doi.org/10.1007/s10683-023-09811-z>
- Ellsberg, D. (1961). Risk, ambiguity, and the Savage axioms. *The Quarterly Journal of Economics*, 75(4), 643-669. <https://doi.org/10.2307/1884324>
- Elmshäuser, B. (2022). Altruism and Ambiguity in the Centipede game.
- Eriksen, K. W., Kvaløy, O., & Luzuriaga, M. (2020). Risk-taking on behalf of others. *Journal of Behavioral and Experimental Finance*, 26, 100283. <https://doi.org/10.1016/j.jbef.2020.100283>

- Ert, E., & Haruvy, E. (2017). Revisiting risk aversion: Can risk preferences change with experience?. *Economics Letters*, *151*, 91-95. <https://doi.org/10.1016/j.econlet.2016.12.008>
- Evans, J. S. B., & Stanovich, K. E. (2013). Dual-process theories of higher cognition: Advancing the debate. *Perspectives on Psychological Science*, *8*(3), 223-241. <https://doi.org/10.1177/1745691612460685>
- Evans, R., & Ferguson, E. (2014). Defining and measuring blood donor altruism: a theoretical approach from biology, economics and psychology. *Vox sanguinis*, *106*(2), 118-126. <https://doi.org/10.1111/vox.12080>
- Exley, C. L. (2016). Excusing selfishness in charitable giving: The role of risk. *The Review of Economic Studies*, *83*(2), 587. <https://doi.org/10.1093/restud/rdv051>
- Fahle, S., & Sautua, S. I. (2021). How do risk attitudes affect pro-social behavior? Theory and experiment. *Theory and Decision*, *91*(1), 101-122. <https://doi.org/10.1007/s11238-020-09788-8>
- Falk, A., Becker, A., Dohmen, T., Enke, B., Huffman, D., & Sunde, U. (2018). Global evidence on economic preferences. *The Quarterly Journal of Economics*, *133*(4), 1645-1692. <https://doi.org/10.1093/qje/qjy013>
- Falk, A., Becker, A., Dohmen, T., Huffman, D., & Sunde, U. (2023). The preference survey module: A validated instrument for measuring risk, time, and social preferences. *Management Science*, *69*(4), 1935–1950. <https://doi.org/10.1287/mnsc.2022.4455>
- Fanon F. (1952), *Peau noire, masques blancs*, Éditions du Seuil. <https://doi.org/10.4000/socio-anthropologie.3340>
- Fanon, F. (1961), *Les damnés de la terre*, Paris Editions Maspéro. Ressenya <http://archives.umc.edu.dz/handle/123456789/126518>
- Farrell, K., Ferguson, E., James, V., & Lowe, K. C. (2001). Confidence in the safety of blood for transfusion: the effect of message framing. *Transfusion*, *41*(11), 1335-1340. <https://doi.org/10.1046/j.1537-2995.2001.41111335.x>

- Farthing, G. W. (2005). Attitudes toward heroic and nonheroic physical risk takers as mates and as friends. *Evolution and Human Behavior*, 26(2), 171-185.  
<https://doi.org/10.1016/j.evolhumbehav.2004.08.004>
- Fazio, A., Reggiani, T., & Scervini, F. (2023). Social media charity campaigns and pro-social behaviour. Evidence from the Ice Bucket Challenge. *Journal of Economic Psychology*, 96, 102624. <https://doi.org/10.1016/j.joep.2023.102624>
- Fehr, E. (2009). On the economics and biology of trust. *Journal of the European Economic Association*, 7(2-3), 235-266. <https://doi.org/10.1162/JEEA.2009.7.2-3.235>
- Fehr, E., & Fischbacher, U. (2003). The nature of human altruism. *Nature*, 425(6960), 785-791.  
<https://doi.org/10.1038/nature02043>
- Fehr, E., & Schmidt, K. M. (2006). The economics of fairness, reciprocity and altruism—experimental evidence and new theories. *Handbook of the economics of giving, altruism and reciprocity*, 1, 615-691. [https://doi.org/10.1016/S1574-0714\(06\)01008-6](https://doi.org/10.1016/S1574-0714(06)01008-6)
- Feiler, D. C., Tost, L. P., & Grant, A. M. (2012). Mixed reasons, missed givings: The costs of blending egoistic and altruistic reasons in donation requests. *Journal of Experimental Social Psychology*, 48(6), 1322-1328. <https://doi.org/10.1016/j.jesp.2012.05.014>
- FeldmanHall, O., & Shenhav, A. (2019). Resolving uncertainty in a social world. *Nature human behaviour*, 3(5), 426-435. <https://doi.org/10.1038/s41562-019-0590-x>
- Felice, E. (2015). Italy's North-South divide (1861-2011): the state of the art. *MPRA Paper No*, 62209.  
<https://mpra.ub.uni-muenchen.de/62209/>
- Felsen, G., Castelo, N., & Reiner, P. B. (2013). Decisional enhancement and autonomy: Public attitudes towards overt and covert nudges. *Judgment and Decision Making*, 8(3), 202–213.  
<https://doi.org/10.1017/S1930297500005933>
- Ferguson, E. (1996). Predictors of future behaviour: A review of the psychological literature on blood donation. *British Journal of Health Psychology*, 1(4), 287-308. <https://doi.org/10.1111/j.2044-8287.1996.tb00510.x>

- Ferguson, E. (2015). Mechanism of altruism approach to blood donor recruitment and retention: a review and future directions. *Transfusion Medicine*, 25(4), 211-226.  
<https://doi.org/10.1111/tme.12233>
- Ferguson, E. (2021). Inequality averse and compassionate blood donor: implication for interventions. *Vox sanguinis*, 116(8), 862-871. <https://doi.org/10.1111/vox.13088>
- Ferguson, E. (2022). What blood and organ donation can tell us about cooperation?. *Current opinion in psychology*, 44, 202-207. <https://doi.org/10.1016/j.copsyc.2021.09.005>
- Ferguson, E., & Lawrence, C. (2016). Blood donation and altruism: the mechanisms of altruism approach. *ISBT0 Science Series*, 11(S1), 148-157. <https://doi.org/10.1111/voxs.12209>
- Ferguson, E., & Lawrence, C. (2018). It is only fair: Blood donors are more sensitive to violations of fairness norms than nondonors—converging psychometric and ultimatum game evidence. *Vox sanguinis*, 113(3), 242-250. <https://doi.org/10.1111/vox.12636>
- Ferguson, E., & Lawrence, C. (2019). Altruistic and warm-glow motivations: variation by blood donor career. *TPM: Testing, Psychometrics, Methodology in Applied Psychology*, 26(4), 6339-651.  
<https://doi.org/10.4473/TPM26.4.10>
- Ferguson, E., Atsma, F., De Kort, W., & Veldhuizen, I. (2012). Exploring the pattern of blood donor beliefs in first-time, novice, and experienced donors: differentiating reluctant altruism, pure altruism, impure altruism, and warm glow. *Transfusion*, 52(2), 343-355.  
<https://doi.org/10.1111/j.1537-2995.2011.03279.x>
- Ferguson, E., Edwards, A. R., & Masser, B. M. (2022). Simple reciprocal fairness message to enhance non-donor's willingness to donate blood. *Annals of Behavioral Medicine*, 56(1), 89-99.  
<https://doi.org/10.1093/abm/kaab026>
- Ferguson, E., Farrell, K., & Lawrence, C. (2008). Blood donation is an act of benevolence rather than altruism. *Health Psychology*, 27(3), 327. <https://doi.org/10.1037/0278-6133.27.3.327>
- Ferguson, E., France, C. R., Abraham, C., Ditto, B., & Sheeran, P. (2007). Improving blood donor recruitment and retention: integrating theoretical advances from social and behavioral science

research agendas. *Transfusion*, 47(11), 1999-2010. <https://doi.org/10.1111/j.1537-2995.2007.01423.x>

Ferrari, J. R., Barone, R. C., Jason, L. A., & Rose, T. (1985). The use of incentives to increase blood donations. *The Journal of social psychology*, 125(6), 791-793. <https://doi.org/10.1080/00224545.1985.9713559>

Fershtman, C., & Gneezy, U. (2001). Discrimination in a segmented society: An experimental approach. *The Quarterly Journal of Economics*, 116(1), 351-377. <https://doi.org/10.1162/003355301556338>

Filippin, A., & Crosetto, P. (2016). A reconsideration of gender differences in risk attitudes. *Management Science*, 62(11), 3138-3160. <https://doi.org/10.1287/mnsc.2015.2294>

Fischbacher, U., Gächter, S., & Fehr, E. (2001). Are people conditionally cooperative? Evidence from a public goods experiment. *Economics Letters*, 71(3), 397-404. [https://doi.org/10.1016/S0165-1765\(01\)00394-9](https://doi.org/10.1016/S0165-1765(01)00394-9)

Fogg, B. J. (2009). A behavior model for persuasive design. In *Proceedings of the 4th international Conference on Persuasive Technology*, 1-7. <https://doi.org/10.1145/1541948.1541999>

Fong, C. M. (2007). Evidence from an experiment on charity to welfare recipients: Reciprocity, altruism and the empathic responsiveness hypothesis. *The Economic Journal*, 117(522), 1008-1024. <https://doi.org/10.1111/j.1468-0297.2007.02076.x>

Fonte, D., Blondé, J., & Girandola, F. (2017). How to encourage non-donors to be more willing to donate blood? Testing of binding communication based interventions. *Transfusion Medicine*, 27(3), 207-212. <https://doi.org/10.1111/tme.12376>

Forberger, S., Reisch, L., Kampfmann, T., & Zeeb, H. (2019). Nudging to move: a scoping review of the use of choice architecture interventions to promote physical activity in the general population. *International Journal of Behavioral Nutrition and Physical Activity*, 16(1), 1-14. <https://doi.org/10.1186/s12966-019-0844-z>

- Forberger, S., Wichmann, F., & Comito, C. N. (2022). Nudges used to promote physical activity and to reduce sedentary behaviour in the workplace: Results of a scoping review. *Preventive medicine*, 155, 106922. <https://doi.org/10.1016/j.ypmed.2021.106922>
- Fortunato, G. (1911). *Il Mezzogiorno e lo Stato italiano. Discorsi politici (1880-1910)*, Laterza.
- Fosgaard, T., Hansen, L., Jacobsen, C., Sørensen, E., Romose, M., & Ullum, H. (2020). Can text messages save lives? A field experiment on blood donor motivation. *Transfusion*, 60(3), 460-465. <https://doi.org/10.1111/trf.15633>
- France, C. R., France, J. L., Himawan, L. K., Jeitani, A., & Williams, L. A. (2020). Emotional mechanisms and format effects of motivational questions for blood donation. *Transfusion*, 60(9), 1998-2009. <https://doi.org/10.1111/trf.15942>
- France, C. R., Kowalsky, J. M., France, J. L., Himawan, L. K., Kessler, D. A., & Shaz, B. H. (2014). The blood donor identity survey: a multidimensional measure of blood donor motivations. *Transfusion*, 54(8), 2098-2105. <https://doi.org/10.1111/trf.12588>
- Freundt, J., & Lange, A. (2017). On the determinants of giving under risk. *Journal of Economic Behavior & Organization*, 142, 24-31. <https://doi.org/10.1016/j.jebo.2017.07.017>
- Friis, R., Skov, L. R., Olsen, A., Appleton, K. M., Saulais, L., & Dinnella, C. (2017). Comparison of three nudge interventions (priming, default option, and perceived variety) to promote vegetable consumption in a self-service buffet setting. *PLoS One*, 12(5), e0176028. <https://doi.org/10.1371/journal.pone.0176028>
- Fukuyama F. (1999). *The Great Disruption: Human Nature and the Reconstitution of Social Order*, Simon & Shuster.
- Fukuyama, F. (1996). *Trust: The social virtues and the creation of prosperity*. Simon and Schuster.
- Furnham, A. (2003). Belief in a just world: research progress over the past decade. *Personality and Individual Differences*, 34 (5), 795–817. [https://doi.org/10.1016/S0191-8869\(02\)00072-7](https://doi.org/10.1016/S0191-8869(02)00072-7)

- Garcia, T., Massoni, S., & Villevall, M. C. (2020). Ambiguity and excuse-driven behavior in charitable giving. *European Economic Review*, *124*, 103412.  
<https://doi.org/10.1016/j.euroecorev.2020.103412>
- Gaudeul, A. (2015). Social preferences under risk: Ex-post fairness vs. efficiency. *Jena Economic Research Papers*, *10*. <https://doi.org/10.2139/ssrn.2627664>
- Gaudeul, A. (2016). Social preferences under risk: Minimizing collective risk vs. reducing ex-post inequality. *Center for European, Governance and Economic Development Research, Discussion Paper*, (283). <https://doi.org/10.2139/ssrn.2785508>
- Gauriot, R., Heger, S., & Slonim, R. (2022). Eliciting Preferences for Risk and Altruism: Experimental Evidence. *CESifo Working Paper*, No. 9993. <https://doi.org/10.2139/ssrn.4246400>
- Gemelli, C. N., Carver, A., Garn, A., Wright, S. T., & Davison, T. E. (2018). Evaluation of the impact of a personalized postdonation short messaging service on the retention of whole blood donors. *Transfusion*, *58*(3), 701-709. <https://doi.org/10.1111/trf.14463>
- Germain, M., Glynn, S. A., Schreiber, G. B., Gelinas, S., King, M., Jones, M., ... & Tu, Y. (2007). Determinants of return behavior: a comparison of current and lapsed donors. *Transfusion*, *47*(10), 1862-1870. <https://doi.org/10.1111/j.1537-2995.2007.01409.x>
- Giles, M., Mcclenahan, C., Cairns, E., & Mallet, J. (2004). An application of the theory of planned behaviour to blood donation: the importance of self-efficacy. *Health education research*, *19*(4), 380-391. <https://doi.org/10.1093/her/cyg063>
- Gill, D., & Prowse, V. L. (2012). A structural analysis of disappointment aversion in a real effort competition. *The American Economic Review*, *102*(1), 469–503.  
<https://doi.org/10.1257/aer.102.1.469>
- Gillum, R. F., & Masters, K. S. (2010). Religiousness and blood donation: findings from a national survey. *Journal of health psychology*, *15*(2), 163-172. <https://doi.org/10.1177/1359105309345171>
- Gino, F., Ayal, S., & Ariely, D. (2013). Self-serving altruism? The lure of unethical actions that benefit others. *Journal of Economic Behavior & Organization*, *93*, 285-292.  
<https://doi.org/10.1016/j.jebo.2013.04.005>

- Glimcher, P. W., Camerer C. F., Fehr E., & Poldrack R. A. (2009). *Neuroeconomics: Decision Making and the Brain*. New York: Academic Press
- Glynn, S. A., Schreiber, G. B., Murphy, E. L., Kessler, D., Higgins, M., Wright, D. J., ... & Retrovirus Epidemiology Donor Study. (2006). Factors influencing the decision to donate: racial and ethnic comparisons. *Transfusion*, 46(6), 980-990. <https://doi.org/10.1111/j.1537-2995.2006.00831.x>
- Glynn, S. A., Williams, A. E., Nass, C. C., Bethel, J., Kessler, D., Scott, E. P., ... & Retrovirus Epidemiology Donor Study. (2003). Attitudes toward blood donation incentives in the United States: implications for donor recruitment. *Transfusion*, 43(1), 7-16. <https://doi.org/10.1046/j.1537-2995.2003.00252.x>
- Gneezy, U., Imas, A., & List, J. (2015). *Estimating individual ambiguity aversion: A simple approach* (No. w20982). National Bureau of Economic Research. <https://doi.org/10.3386/w20982>
- Gneezy, U., Leonard, K. L., & List, J. A. (2009). Gender differences in competition: Evidence from a matrilineal and a patriarchal society. *Econometrica*, 77(5), 1637-1664. <https://doi.org/10.3982/ecta6690>
- Godager, G., & Wiesen, D. (2013). Profit or patients' health benefit? Exploring the heterogeneity in physician altruism. *Journal of health economics*, 32(6), 1105-1116. <https://doi.org/10.1016/j.jhealeco.2013.08.008>
- Godin, G., Germain, M., Conner, M., Delage, G., & Sheeran, P. (2014). Promoting the return of lapsed blood donors: A seven-arm randomized controlled trial of the question-behavior effect. *Health Psychology*, 33(7), 646. <https://doi.org/10.1037/a0033505>
- Godin, G., Sheeran, P., Conner, M., Germain, M., Blondeau, D., Gagné, C., ... & Naccache, H. (2005). Factors explaining the intention to give blood among the general population. *Vox sanguinis*, 89(3), 140-149. <https://doi.org/10.1111/j.1423-0410.2005.00674.x>
- Godin, G., Vézina-Im, L. A., Bélanger-Gravel, A., & Amireault, S. (2012). Efficacy of interventions promoting blood donation: a systematic review. *Transfusion Medicine Reviews*, 26(3), 224-237. <https://doi.org/10.1016/j.tmr.2011.10.001>

- Goerg, S., Lightle, J., & Ryvkin, D. (2016). Priming the charitable pump: An experimental investigation of two-stage raffles. *Economic Inquiry*, 54(1), 508-519.  
<https://doi.org/10.1111/ecin.12245>
- Goette, L., & Stutzer, A. (2020). Blood donations and incentives: Evidence from a field experiment. *Journal of Economic Behavior & Organization*, 170, 52-74.  
<https://doi.org/10.1016/j.jebo.2019.11.021>
- Goette, L., & Tripodi, E. (2020). Does positive feedback of social impact motivate prosocial behavior? A field experiment with blood donors. *Journal of Economic Behavior & Organization*, 175, 1-8.  
<https://doi.org/10.1016/j.jebo.2020.04.014>
- Goette, L., & Tripodi, E. (2022). Social Recognition: Experimental Evidence from Blood Donors.  
<https://doi.org/10.2139/ssrn.4097845>
- Goette, L., Stutzer, A., & Frey, B. M. (2010). Prosocial motivation and blood donations: a survey of the empirical literature. *Transfusion Medicine and Hemotherapy*, 37(3), 149-154.  
<https://doi.org/10.1159/000314737>
- Goette, L., Stutzer, A., Yavuzcan, G., & Frey, B. M. (2009). Free cholesterol testing as a motivation device in blood donations: evidence from field experiments. *Transfusion*, 49(3), 524-531.  
<https://doi.org/10.1111/j.1537-2995.2008.02007.x>
- Gold, N., Lin, Y., Ashcroft, R., & Osman, M. (2020). ‘Better off, as judged by themselves’: Do people support nudges as a method to change their own behavior? *Behavioural Public Policy*, 1-30.  
<https://doi.org/10.1017/bpp.2020.6>
- Gorleer, S., Bracke, P., & Hustinx, L. (2020). The organizational field of blood collection: A multilevel analysis of organizational determinants of blood donation in Europe. *European Sociological Review*, 36(3), 474-492. <https://doi.org/10.1093/esr/jcaa002>
- Gorleer, S., Bracke, P., & Hustinx, L. (2023). Institutionalizing Voluntary Blood Donation: Explaining the Cross-National Variance in the Approval of Paid Blood or Plasma Donation in Europe. *Nonprofit and Voluntary Sector Quarterly*, 52(6), 1753-1777.  
<https://doi.org/10.1177/08997640221139818>

- Gosling, S. D., Rentfrow, P. J., & Swann Jr, W. B. (2003). A very brief measure of the Big-Five personality domains. *Journal of Research in Personality*, 37(6), 504-528.  
[https://doi.org/10.1016/S0092-6566\(03\)00046-1](https://doi.org/10.1016/S0092-6566(03)00046-1)
- Gråd, E., Erlandsson, A., & Tinghög, G. (2021). Do nudges crowd out prosocial behavior?. *Behavioural Public Policy*, 1-14. <https://doi.org/10.1017/bpp.2021.10>
- Graf, C., Suanet, B., Wiepking, P., & Merz, E. M. (2023). Social norms offer explanation for inconsistent effects of incentives on prosocial behavior. *Journal of Economic Behavior & Organization*, 211, 429-441. <https://doi.org/10.1016/j.jebo.2023.05.003>
- Granovetter, M. S. (1973). The strength of weak ties. *American journal of sociology*, 78(6), 1360-1380.  
<https://doi.org/10.1086/225469>
- Greenberg, S.L. Koole & T. Pyszczynski (Eds.), *Handbook of experimental existential psychology* (pp. 215–230). New York: Guilford Press.
- Greene, J. D., & Paxton, J. M. (2009). Patterns of neural activity associated with honest and dishonest moral decisions. *Proceedings of the National Academy of Sciences*, 106(30), 12506-12511.  
<https://doi.org/10.1073/pnas.0900152106>
- Greinacher, A., Fendrich, K., & Hoffmann, W. (2010). Demographic changes: the impact for safe blood supply. *Transfusion Medicine and Hemotherapy*, 37(3), 141-148.  
<https://doi.org/10.1159/000313949>
- Grossman, P. J., Zhan, W., & Eckel, C. C. (2020). *Does How We Measure Altruism Matter? Playing Both Roles in Dictator Games*. Monash University.
- Grüne-Yanoff, T. (2018). Boosts vs. nudges from a welfarist perspective. *Revue d'Economie Politique*, 128(2), 209–224. <https://doi.org/10.3917/redp.282.0209>
- Grüne-Yanoff, T., & Hertwig, R. (2016). Nudge versus boost: How coherent are policy and theory? *Minds and Machines*, 26(1–2), 149–183. <https://doi.org/10.1007/s11023-015-9367-9>

- Grüne-Yanoff, T., Marchionni, C., & Feufel, M. A. (2018). Toward a framework for selecting behavioural policies: How to choose between boosts and nudges. *Economics and Philosophy*, 34, 243–266. <https://doi.org/10.1017/S0266267118000032>
- Gucciardo, G. (2014). Diseguaglianze, fiducia e capitale sociale nel Mezzogiorno. *Meridiana*, 79(79), 165-192. <https://hdl.handle.net/10447/97334>
- Guiso, L., Sapienza, P., & Zingales, L. (2004). The Role of Social Capital in Financial Development. *The American Economic Review*, 94(3), 526–556. <https://www.jstor.org/stable/3592941>
- Guiso, L., Sapienza, P., & Zingales, L. (2008). Social capital as good culture. *Journal of the European Economic Association*, 6(2-3), 295-320. <https://doi.org/10.1162/JEEA.2008.6.2-3.295>
- Guiso, L., Sapienza, P., & Zingales, L. (2011). Civic capital as the missing link. *Handbook of social economics*, 1, 417-480. <https://doi.org/10.1016/B978-0-444-53187-2.00010-3>
- Güth, W., Levati, M. V., & Ploner, M. (2008). On the social dimension of time and risk preferences: An experimental study. *Economic Inquiry*, 46(2), 261-272 . <https://doi.org/10.1111/j.1465-7295.2007.00067.x>
- Hafer, C.L., & Begue, L. (2005). Experimental research on just world theory: problems, developments, and future challenges. *Psychological Bulletin*, 131 (1), 128–167. <https://doi.org/10.1037/0033-2909.131.1.128>
- Haisley, E. C., & Weber, R. A. (2010). Self-serving interpretations of ambiguity in other-regarding behavior. *Games and Economic Behavior*, 68(2), 614-625. <https://doi.org/10.1016/j.geb.2009.08.002>
- Hanna, R., & Linden, L. (2009). *Measuring discrimination in education* (No. w15057). National Bureau of Economic Research. <https://doi.org/10.3386/w15057>
- Hands, D. W. (2021). Libertarian paternalism: Making rational fools. *Review of Behavioral Economics*, 8(3-4), 305-326. <https://doi.org/10.1561/105.00000144>
- Hanifan, L. J. (1916). The rural school community center. *The Annals of the American Academy of Political and Social Science*, 67(1), 130-138. <https://doi.org/10.1177/000271621606700118>

- Hansen, P. G. (2016). The definition of nudge and libertarian paternalism: Does the hand fit the glove?. *European Journal of Risk Regulation*, 7(1), 155-174. <https://doi.org/10.1017/S1867299X00005468>
- Hansen, P. G. (2019). *Tools and ethics for applied behavioural insights: The BASIC toolkit*. Organisation for Economic Cooperation and Development, OECD.
- Hansen, P. G., & Jespersen, A. M. (2013). Nudge and the manipulation of choice: A framework for the responsible use of the nudge approach to behaviour change in public policy. *European Journal of Risk Regulation*, 4(1), 3-28. <https://doi.org/10.1017/S1867299X00002762>
- Healy, K. (2000). Embedded altruism: blood collection regimes and the European Union's donor population. *American journal of sociology*, 105(6), 1633-1657. <https://doi.org/10.1086/210468>
- Heckman J. J., Stixrud J., Urzua S. (2006). The Effects of Cognitive and Noncognitive Abilities on Labor Market Outcomes and Social Behavior, *Journal of Labor Economics*, 24 (3), 411-482 <https://doi.org/10.1086/504455>
- Heger, S. A., Slonim, R., Garbarino, E., Wang, C., & Waller, D. (2020). Redesigning the market for volunteers: A donor registry. *Management Science*, 66(8), 3528-3541. <https://doi.org/10.1287/mnsc.2019.3371>
- Hertwig, R., & Grüne-Yanoff, T. (2017). Nudging and boosting: Steering or empowering good decisions. *Perspectives on Psychological Science*, 12(6), 973–986. <https://doi.org/10.1177/1745691617702496>
- Hilgard, E. R. (1980). The trilogy of mind: Cognition, affection, and conation. *Journal of the History of the Behavioral Sciences*, 16(2), 107-117. <https://doi.org/10.1177/1745691617702496>
- Hoff, K., & Pandey, P. (2006). Discrimination, social identity, and durable inequalities. *The American Economic Review*, 96(2), 206–211. <https://doi.org/10.1257/000282806777212611>
- Hollands G. J., Bignardi G, Johnston M, Kelly M, Ogilvie D, Petticrew M, Prestwich A, Shemilt I, Sutton S, & Marteau T (2017). The TIPPME intervention typology for changing environments to change behaviour. *Nature Human Behaviour*, 1(8), 1-9. <https://doi.org/10.1038/s41562-017-0140>

- Hollands G. J., Shemilt I, Marteau TM, Jebb SA, Kelly MP, Nakamura R, Suhrcrke M, & Ogilvie D (2013). Altering micro-environments to change population health behaviour: towards an evidence base for choice architecture interventions. *BMC public health*, 13(1), 1-6.  
<https://doi.org/10.1186/1471-2458-13-1218>
- Holt, C. A., & Laury, S. K. (2002). Risk aversion and incentive effects. *The American Economic Review*, 92(5), 1644-1655. <https://doi.org/10.1257/000282802762024700>
- House, B. R. (2018). How do social norms influence prosocial development?. *Current Opinion in Psychology*, 20, 87-91. <https://doi.org/10.1016/j.copsyc.2017.08.011>
- Hu, J., Li, Y., Yin, Y., Blue, P. R., Yu, H., & Zhou, X. (2017). How do self-interest and other-need interact in the brain to determine altruistic behavior?. *Neuroimage*, 157, 598-611.  
<https://doi.org/10.1016/j.neuroimage.2017.06.040>
- Huettel, S. A., Stowe, C. J., Gordon, E. M., Warner, B. T., & Platt, M. L. (2006). Neural signatures of economic preferences for risk and ambiguity. *Neuron*, 49(5), 765-775.  
<https://doi.org/10.1016/j.neuron.2006.01.024>
- Huis in 't Veld, E. M., de Kort, W. L., & Merz, E. M. (2019). Determinants of blood donation willingness in the European Union: a cross-country perspective on perceived transfusion safety, concerns, and incentives. *Transfusion*, 59(4), 1273-1282. <https://doi.org/10.1111/trf.15209>
- Hupfer, M. E. (2006). Helping me, helping you: self-referencing and gender roles in donor advertising. *Transfusion*, 46(6), 996-1005. <https://doi.org/10.1111/j.1537-2995.2006.00834.x>
- Hyman, D. A. (2006). Rescue without law: An empirical perspective on the duty to rescue. *Texas Law Review*, 84(3), 653-737.
- Iajya, V., Lacetera, N., Macis, M., & Slonim, R. (2013). The effects of information, social and financial incentives on voluntary undirected blood donations: Evidence from a field experiment in Argentina. *Social Science & Medicine*, 98, 214-223.  
<https://doi.org/10.1016/j.socscimed.2013.09.012>

- Ichino, A., & Maggi, G. (2000). Work environment and individual background: Explaining regional shirking differentials in a large Italian firm. *The Quarterly Journal of Economics*, 115(3), 1057-1090. <https://doi.org/10.1162/003355300554890>
- Infante, G., Lecouteux, G., & Sugden, R. (2016). Preference purification and the inner rational agent: a critique of the conventional wisdom of behavioural welfare economics. *Journal of Economic Methodology*, 23(1), 1-25. <https://doi.org/10.1080/1350178X.2015.1070527>
- INVALSI (2022). Rapporto INVALSI 2022 [https://invalsi-areaprove.cineca.it/docs/2022/Rilevazioni\\_Nazionali/Rapporto/Rapporto\\_Prove\\_INVALSI\\_2022.pdf](https://invalsi-areaprove.cineca.it/docs/2022/Rilevazioni_Nazionali/Rapporto/Rapporto_Prove_INVALSI_2022.pdf)
- Istat (2022a). La fiducia nelle istituzioni del paese <https://www.istat.it/it/archivio/270599>
- Istat (2022b). Struttura e profili del settore non profit, anno 2020. <https://www.istat.it/it/archivio/275918>
- Istat (2022c). Natalità e fecondità della popolazione residente. [https://www.istat.it/it/archivio/279006#:~:text=La%20pandemia%20accentua%20il%20calo%20dei%20nati&text=La%20denatalit%C3%A0%20prosegue%20nel%202022,2020%20\(1%2C24\)](https://www.istat.it/it/archivio/279006#:~:text=La%20pandemia%20accentua%20il%20calo%20dei%20nati&text=La%20denatalit%C3%A0%20prosegue%20nel%202022,2020%20(1%2C24))
- Istat (2023a). I divari territoriali nel PNRR: dieci obiettivi per il Mezzogiorno. <https://www.istat.it/it/archivio/280052>
- Istat (2023b). Il benessere equo e sostenibile in Italia 2022. <https://www.istat.it/it/archivio/282920>
- Jabbi, M., Swart, M., & Keyzers, C. (2007). Empathy for positive and negative emotions in the gustatory cortex. *Neuroimage*, 34(4), 1744-1753. <https://doi.org/10.1016/j.neuroimage.2006.10.032>
- Jenni, K., & Loewenstein, G. (1997). Explaining the identifiable victim effect. *Journal of Risk and UHealthncertainty*, 14(3), 235-257. <https://doi.org/10.1023/A:1007740225484>
- Jiang, F., Yue, X., Lu, S., Yu, G., & Zhu, F. (2016). How belief in a just world benefits mental health: The effects of optimism and gratitude. *Social Indicators Research*, 126, 411-423. <https://doi.org/10.1007/s11205-015-0877-x>

- John, P., & Stoker, G. (2019). Rethinking the role of experts and expertise in behavioural public policy. *Policy & Politics*, 47(2), 209-225. <https://doi.org/10.1332/030557319X15526371698257>
- Johnson, E. J., Shu, S. B., Dellaert, B. G., Fox, C., Goldstein, D. G., Häubl, G., ... & Weber, E. U. (2012). Beyond nudges: Tools of a choice architecture. *Marketing letters*, 23(2), 487-504. <https://doi.org/10.1007/s11002-012-9186-1>
- Jordan, J. J., Hoffman, M., Nowak, M. A., & Rand, D. G. (2016). Uncalculating cooperation is used to signal trustworthiness. *Proceedings of the National Academy of Sciences*, 113(31), 8658-8663. <https://doi.org/10.1073/pnas.1601280113>
- Jung, J. Y., & Mellers, B. A. (2016). American attitudes toward nudges. *Judgment and Decision Making*, 11(1), 62–74. <https://doi.org/10.1017/S1930297500007592>
- Kahneman D. (2011). *Thinking, Fast and Slow*, Macmillan.
- Kahneman, D. L., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, 47(2), 363-391. <https://doi.org/10.2307/1914185>
- Kappes, A., Nussberger, A. M., Faber, N. S., Kahane, G., Savulescu, J., & Crockett, M. J. (2018). Uncertainty about the impact of social decisions increases prosocial behaviour. *Nature human behaviour*, 2(8), 573-580. <https://doi.org/10.1038/s41562-018-0372-x>
- Karaca-Mandic, P., Norton, E. C., & Dowd, B. (2012). Interaction terms in nonlinear models. *Health services research*, 47(1pt1), 255-274. <https://doi.org/10.1111/j.1475-6773.2011.01314.x>
- Kelemen, D. (1999). Function, goals and intention: children's teleological reasoning about objects. *Trends in Cognitive Sciences*, 3 (12), 461–468. [https://doi.org/10.1016/S1364-6613\(99\)01402-3](https://doi.org/10.1016/S1364-6613(99)01402-3)
- Kelly, S., & Dunbar, R. I. (2001). Who dares, wins: Heroism versus altruism in women's mate choice. *Human Nature*, 12, 89-105. <https://doi.org/10.1007/s12110-001-1018-6>
- Keser, C., Kliemt, H., & Späth, M. (2023). Charitable giving: The role of framing and information. *PloS One*, 18(7), e0288400. <https://doi.org/10.1371/journal.pone.0288400>

- Knack, S., & Keefer, P. (1997). Does social capital have an economic payoff? A cross-country investigation. *The Quarterly Journal of Economics*, *112*(4), 1251-1288.  
<https://doi.org/10.1162/003355300555475>
- Kocher, M. G., Martinsson, P., Matzat, D., & Wollbrant, C. (2015). The role of beliefs, trust, and risk in contributions to a public good. *Journal of Economic Psychology*, *51*, 236-244.  
<https://doi.org/10.1016/j.joep.2015.10.001>
- Korenok, O., Millner, E. L., & Razzolini, L. (2018). Taking aversion. *Journal of Economic Behavior & Organization*, *150*, 397-403. <https://doi.org/10.1016/j.jebo.2018.01.021>
- Kostick, K. M., Trejo, M., Volk, R. J., Estep, J. D., & Blumenthal-Barby, J. S. (2020). Using nudges to enhance clinicians' implementation of shared decision making with patient decision aids. *MDM Policy & Practice*, *5*(1). <https://doi.org/10.1177/2381468320915906>
- Krawczyk, M., & Le Lec, F. (2010). 'Give me a chance!' An experiment in social decision under risk. *Experimental Economics*, *13*, 500-511. <https://doi.org/10.1007/s10683-010-9253-5>
- Krupka, E. L., & Weber, R. A. (2013). Identifying social norms using coordination games: Why does dictator game sharing vary?. *Journal of the European Economic Association*, *11*(3), 495-524.  
<https://doi.org/10.1111/jeea.12006>
- Kulow, K., & Kramer, T. (2016). In pursuit of good karma: When charitable appeals to do right go wrong. *Journal of Consumer Research*, *43*(2), 334-353. <https://doi.org/10.1093/jcr/ucw018>
- Kwak, Y., Pearson, J., & Huettel, S. A. (2014). Differential reward learning for self and others predicts self-reported altruism. *PLoS One*, *9*(9), e107621. <https://doi.org/10.1371/journal.pone.0107621>
- Lacetera, N., & Macis, M. (2010). Do all material incentives for pro-social activities backfire? The response to cash and non-cash incentives for blood donations. *Journal of Economic Psychology*, *31*(4), 738-748. <https://doi.org/10.1016/j.joep.2010.05.007>
- Lacetera, N., & Macis, M. (2013). Time for blood: the effect of paid leave legislation on altruistic behavior. *The Journal of Law, Economics, & Organization*, *29*(6), 1384-1420.  
<https://doi.org/10.1093/jleo/ews019>

- Lacetera, N., Macis, M., & Slonim, R. (2012). Will there be blood? Incentives and displacement effects in pro-social behavior. *American Economic Journal: Economic Policy*, 4(1), 186-223.  
<https://doi.org/10.1257/pol.4.1.186>
- Lacetera, N., Macis, M., & Slonim, R. (2013). Economic rewards to motivate blood donations. *Science*, 340(6135), 927-928. <https://doi.org/10.1126/science.1232280>
- Lades, L. K., & Delaney, L. (2022). Nudge FORGOOD. *Behavioural Public Policy*, 6(1), 75-94.  
<https://doi.org/10.1017/bpp.2019.53>
- Landry, D. W. (2006). Voluntary reciprocal altruism: a novel strategy to encourage deceased organ donation. *Kidney international*, 69(6), 957-959. <https://doi.org/10.1038/sj.ki.5000280>
- Lange, A., List, J., & Price, M. (2007). A fundraising mechanism inspired by historical tontines: Theory and experimental evidence. *Journal of Public Economics*, 91(9), 1750–1782.  
<https://doi.org/10.1016/j.jpubeco.2007.05.001>
- Lattimore, P. K., Baker, J. R., & Witte, A. D. (1992). The influence of probability on risky choice: A parametric examination. *Journal of Economic Behavior & Organization*, 17(3), 377-400.  
[https://doi.org/10.1016/S0167-2681\(95\)90015-2](https://doi.org/10.1016/S0167-2681(95)90015-2)
- Lee, S., & Feeley, T. H. (2016). The identifiable victim effect: A meta-analytic review. *Social Influence*, 11(3), 199-215. <https://doi.org/10.1080/15534510.2016.1216891>
- Lei, V., & Vesely, F. (2010). In-Group versus Out-Group Trust: The Impact of Income Inequality. *Southern Economic Journal*, 76(4), 1049–1063.  
<https://doi.org/10.4284/sej.2010.76.4.1049>
- Lemmens, K. P., Abraham, C., Hoekstra, T., Ruiter, R. A., De Kort, W. L. A. M., Brug, J., & Schaalma, H. P. (2005). Why don't young people volunteer to give blood? An investigation of the correlates of donation intentions among young nondonors. *Transfusion*, 45(6), 945-955.  
<https://doi.org/10.1111/j.1537-2995.2005.04379.x>
- Lemmens, K. P., Abraham, C., Ruiter, R. A., Veldhuizen, I. J., Dehing, C. J., Bos, A. E., & Schaalma, H. P. (2009). Modelling antecedents of blood donation motivation among non-donors of varying

age and education. *British journal of psychology*, 100(1), 71-90.

<https://doi.org/10.1348/000712608X310237>

Lerner, M. (2013). *The Belief in a Just World: A Fundamental Delusion*. Springer Science & Business Media.

Lerner, M.J., & Miller, D.T. (1978). Just world research and the attribution process: looking back and ahead. *Psychological Bulletin*, 85 (5), 1030–1051. <https://doi.org/10.1037/0033-2909.85.5.1030>

Levenson, M. R. (1990). Risk taking and personality. *Journal of personality and social psychology*, 58(6), 1073. <https://doi.org/10.1037/0022-3514.58.6.1073>

Li, J. (2018). Plastic surgery or primary care? Altruistic preferences and expected specialty choice of US medical students. *Journal of health economics*, 62, 45-59.

<https://doi.org/10.1016/j.jhealeco.2018.09.005>

Lin, Y., Osman, M., & Ashcroft, R. (2017). Nudge: concept, effectiveness, and ethics. *Basic and Applied Social Psychology*, 39(6), 293-306. <https://doi.org/10.1080/01973533.2017.1356304>

Liu, C., Xiao, X., Pi, Q., Tan, Q., & Zhan, Y. (2023). Are you more risk-seeking when helping others? Effects of situational urgency and peer presence on prosocial risky behavior. *Frontiers in psychology*, 14, 1036624. <https://doi.org/10.3389/fpsyg.2023.1036624>

Livingston, J. A., & Rasulmukhamedov, R. (2023). On the Interpretation of Giving in Dictator Games When the Recipient is a Charity. *Journal of Economic Behavior & Organization*, 208, 275-285.

<https://doi.org/10.1016/j.jebo.2023.01.025>

Ljunge, M. (2010). Sick of the Welfare State? Adaptation in the Demand for Social Insurance. *University Copenhagen*. <https://doi.org/10.2139/ssrn.1967413>

Loewenstein, G., Bryce, C., Hagmann, D., & Rajpal, S. (2015). Warning: You are about to be nudged. *Behavioral Science and Policy*, 1(1), 35–42. <https://doi.org/10.1177/237946151500100106>

Löfgren, Å., & Nordblom, K. (2020). A theoretical framework of decision making explaining the mechanisms of nudging. *Journal of Economic Behavior and Organization*, 174, 1–12.

<https://doi.org/10.1016/j.jebo.2020.03.021>

- Lownik, E., Riley, E., Konstenius, T., Riley, W., & McCullough, J. (2012). Knowledge, attitudes and practices surveys of blood donation in developing countries. *Vox sanguinis*, *103*(1), 64-74. <https://doi.org/10.1111/j.1423-0410.2012.01600.x>
- Lucifora C., Meurs D. (2012). Family Values, Social Needs and Preferences for Welfare, *IZA Discussion Paper Series*. <https://doi.org/10.2139/ssrn.2173667>
- Lynn, R. (2010). In Italy, north–south differences in IQ predict differences in income, education, infant mortality, stature, and literacy. *Intelligence*, *38*(1), 93-100. <https://doi.org/10.1016/j.intell.2009.07.004>
- Machina, M. J., & Siniscalchi, M. (2014). Ambiguity and ambiguity aversion. In *Handbook of the Economics of Risk and Uncertainty* (Vol. 1, pp. 729-807). North-Holland. <https://doi.org/10.1016/B978-0-444-53685-3.00013-1>
- Malhotra, D. (2010). (When) are religious people nicer? Religious salience and the “Sunday Effect” on pro-social behavior. *Judgement and Decision Making*, *5*(2), 138–143. <https://doi.org/10.1016/j.jpubeco.2017.04.005>
- Mancini, F., & Gangemi, A. (2004). Aversion to risk and guilt. *Clinical Psychology & Psychotherapy: An International Journal of Theory & Practice*, *11*(3), 199-206. <https://doi.org/10.1002/cpp.418>
- Marchiori, D. R., Adriaanse, M. A., & de Ridder, D. T. (2017). Unresolved questions in nudging research: Putting the psychology back in nudging. *Social and Personality Psychology Compass*, *11*(1), e12297. <https://doi.org/10.1111/spc3.12297>
- Margana, L., Bhogal, M. S., Bartlett, J. E., & Farrelly, D. (2019). The roles of altruism, heroism, and physical attractiveness in female mate choice. *Personality and Individual Differences*, *137*, 126-130. <https://doi.org/10.1016/j.paid.2018.08.018>
- Margolis, H. (1984). *Selfishness, altruism, and rationality*. University of Chicago Press.
- Martín-Santana, J. D., Reinares-Lara, E., & Reinares-Lara, P. (2018). Using radio advertising to promote blood donation. *Journal of Nonprofit & Public Sector Marketing*, *30*(1), 52-73. <https://doi.org/10.1080/10495142.2017.1326340>

- Martín-Santana, J. D., Reinares-Lara, E., & Romero-Domínguez, L. (2020). Modelling the role of anticipated emotions in blood donor behaviour: A cross-sectional study. *Journal of Economic Psychology*, *81*, 102325. <https://doi.org/10.1016/j.joep.2020.102325>
- Masser, B. M., White, K. M., Hyde, M. K., & Terry, D. J. (2008). The psychology of blood donation: current research and future directions. *Transfusion Medicine Reviews*, *22*(3), 215-233. <https://doi.org/10.1016/j.tmr.2008.02.005>
- Masser, B. M., White, K. M., Hyde, M. K., Terry, D. J., & Robinson, N. G. (2009). Predicting blood donation intentions and behavior among Australian blood donors: testing an extended theory of planned behavior model. *Transfusion*, *49*(2), 320-329. <https://doi.org/10.1111/j.1537-2995.2008.01981.x>
- Mayer, N. D., & Tormala, Z. L. (2010). “Think” versus “feel” framing effects in persuasion. *Personality and social psychology bulletin*, *36*(4), 443-454. <https://doi.org/10.1177/0146167210362981>
- Mellström, C., & Johannesson, M. (2008). Crowding out in blood donation: was Titmuss right?. *Journal of the European Economic Association*, *6*(4), 845-863. <https://doi.org/10.1162/JEEA.2008.6.4.845>
- Mertens, S., Herberz, M., Hahnel, U. J., & Brosch, T. (2022). The effectiveness of nudging: A meta-analysis of choice architecture interventions across behavioral domains. *Proceedings of the National Academy of Sciences*, *119*(1), e2107346118. <https://doi.org/10.1073/pnas.2107346118>
- Merz, E. M., Zijlstra, B. J., & De Kort, W. L. (2017). Blood donor show behaviour after an invitation to donate: The influence of collection site factors. *Vox sanguinis*, *112*(7), 628-637. <https://doi.org/10.1111/vox.12562>
- Mills, S. (2020). Nudge/sludge symmetry: On the relationship between nudge and sludge and the resulting ontological, normative and transparency implications. *Behavioural Public Policy*, 1-24. <https://doi.org/10.1017/bpp.2020.61>
- Mills, S., Whittle, R., Ahmed, R., Walsh, T., & Wessel, M. (2023). Dark patterns and sludge audits: An integrated approach. *Behavioural Public Policy*, 1-27. <https://doi.org/10.1017/bpp.2023.24>

- Misje, A. H., Bosnes, V., Gåsdal, O., & Heier, H. E. (2005). Motivation, recruitment and retention of voluntary non-remunerated blood donors: a survey-based questionnaire study. *Vox sanguinis*, 89(4), 236-244. <https://doi.org/10.1111/j.1423-0410.2005.00706.x>
- Mohanty, N., Biswas, S. N., & Mishra, D. (2021). Message Framing and Perceived Risk of Blood Donation. *Journal of Nonprofit & Public Sector Marketing*, 1-29. <https://doi.org/10.1080/10495142.2021.1959488>
- Mongin, P., & Cozic, M. (2018). Rethinking nudge: not one but three concepts. *Behavioural Public Policy*, 2(1), 107-124. <https://doi.org/10.1017/bpp.2016.16>
- Morgan, J. (2000). Financing public goods by means of lotteries. *The Review of Economic Studies*, 67(4), 761-784. <https://doi.org/10.1111/1467-937X.00153>
- Morgan, J., & Sefton, M. (2000). Funding public goods with lotteries: experimental evidence. *The Review of Economic Studies*, 67(4), 785-810. <https://doi.org/10.1111/1467-937X.00154>
- Moussaoui, L. S., Herren-Vichet, J., Baldelli, S., Waldvogel, S., & Desrichard, O. (2019). Examining if sending text messages to thank blood donors for saving lives is a “great idea”? Evidence from a randomized field experiment. *Journal of Nonprofit & Public Sector Marketing*, 31(5), 486-506. <https://doi.org/10.1080/10495142.2018.1526753>
- Moussaoui, L. S., Naef, D., Tissot, J. D., & Desrichard, O. (2016). “Save lives” arguments might not be as effective as you think: A randomized field experiment on blood donation. *Transfusion clinique et biologique*, 23(2), 59-63. <https://doi.org/10.1016/j.tracli.2016.03.003>
- Mukherjee, S. (2022). Consumer altruism and risk taking: why do altruistic consumers take more risks?. *International Review on Public and Nonprofit Marketing*, 19(4), 781-803. <https://doi.org/10.1007/s12208-021-00323-1>
- Münscher, R., Vetter, M., & Scheuerle, T. (2016). A review and taxonomy of choice architecture techniques. *Journal of Behavioral Decision Making*, 29(5), 511-524. <https://doi.org/10.1002/bdm.1897>

- Nannicini, T., Stella, A., Tabellini, G., & Troiano, U. (2013). Social capital and political accountability. *American Economic Journal: Economic Policy*, 5(2), 222-250.  
<https://doi.org/10.1257/pol.5.2.222>
- Nichols P. (1975). *Italia, Italia*, Aldo Garzanti Editore, Milano.
- Nicholson, N., Soane, E., Fenton-O'Creevy, M., & Willman, P. (2005). Personality and domain-specific risk taking. *Journal of Risk Research*, 8(2), 157-176.  
<https://doi.org/10.1080/1366987032000123856>
- Nitti F. S. (1901). *L'Italia all'alba del secolo XX*, Roux & Viarengo.
- Niza, C., Tung, B., & Marteau, T. M. (2013). Incentivizing blood donation: Systematic review and meta-analysis to test Titmuss' hypotheses. *Health Psychology*, 32(9), 941.  
<https://doi.org/10.1037/a0032740>
- Nowak, M. A., & Sigmund, K. (2005). Evolution of indirect reciprocity. *Nature*, 437(7063), 1291-1298. <https://doi.org/10.1038/nature04131>
- O'Donoghue, T., & Somerville, J. (2018). Modeling risk aversion in economics. *Journal of Economic Perspectives*, 32(2), 91-114. <https://doi.org/10.1257/jep.32.2.91>
- Otto, P. E., & Bolle, F. (2011). Multiple facets of altruism and their influence on blood donation. *The Journal of Socio-Economics*, 40(5), 558-563. <https://doi.org/10.1016/j.socec.2011.04.010>
- Ou-Yang, J., Huang, X. Y., Fu, Y. S., Dai, L., Zhong, H. B., Jiang, J., & Liang, H. Q. (2021). Effects of message framing on recruiting Rh-D-negative blood donors in an emergency situation: Two randomized trials. *British Journal of Health Psychology*. <https://doi.org/10.1111/bjhp.12551>
- Palm-Forster, L. H., Ferraro, P. J., Janusch, N., Vossler, C. A., & Messer, K. D. (2019). Behavioral and experimental agri-environmental research: methodological challenges, literature gaps, and recommendations. *Environmental and Resource Economics*, 73, 719-742.  
<https://doi.org/10.1007/s10640-019-00342-x>

- Paulhus, D. L., Shaffer, D. R., & Downing, L. L. (1976). Effects of making blood donor motives salient upon donor retention: A field experiment. *Personality and Social Psychology Bulletin*, 3(1), 99-102. <https://doi.org/10.1177/014616727600300117>
- Paunov, Y., Wänke, M., & Vogel, T. (2019). Transparency effects on policy compliance: Disclosing how defaults work can enhance their effectiveness. *Behavioural Public Policy*, 3(2), 187–2. <https://doi.org/10.1017/bpp.2018.40>
- Pedroni, A., Frey, R., Bruhin, A., Dutilh, G., Hertwig, R., & Rieskamp, J. (2017). The risk elicitation puzzle. *Nature Human Behaviour*, 1(11), 803-809. <https://doi.org/10.1038/s41562-017-0219-x>
- Pérez-Escudero, A., Friedman, J., & Gore, J. (2016). Preferential interactions promote blind cooperation and informed defection. *Proceedings of the National Academy of Sciences*, 113(49), 13995-14000. <https://doi.org/10.1073/pnas.1606456113>
- Petticrew M., Maani N., Pettigrew L., Rutter H., Van Schalkwyk M. C. (2020). Dark Nudges and Sludge in Big Alcohol: Behavioral Economics, Cognitive Biases, and Alcohol Industry Corporate Social Responsibility. *The Milbank Quarterly*, 98, 1290-1328. <https://doi.org/10.1111/1468-0009.12475>
- Piersma, T. W., Bekkers, R., de Kort, W., & Merz, E. M. (2021). Altruism in blood donation: Out of sight out of mind? Closing donation centers influences blood donor lapse. *Health & place*, 67, 102495. <https://doi.org/10.1016/j.healthplace.2020.102495>
- Piersma, T. W., & Klinkenberg, E. F. (2018). The relation between blood donor recruitment and donor diversity and loyalty in the Netherlands. *ISBT Science Series*, 13(4), 384-393. <https://doi.org/10.1111/voxs.12460>
- Piliavin, J. A., & Callero, P. L. (1991). *Giving blood: the development of an altruistic identity*. Johns Hopkins University Press
- Piliavin, J. A., & Libby, D. (1986). Personal norms, perceived social norms, and blood donation. *Humboldt Journal of Social Relations*, 159-194. <http://www.jstor.org/stable/23262664>

- Piliavin, J. A., Callero, P. L., & Evans, D. E. (1982). Addiction to altruism? Opponent-process theory and habitual blood donation. *Journal of Personality and Social Psychology*, 43(6), 1200. <https://doi.org/10.1037/0022-3514.43.6.1200>
- Pitrè G. (1880). *Proverbi Siciliani raccolti e confrontati con quelli degli altri dialetti d'Italia da Giuseppe Pitrè: Volume primo-[quarto]*. Luigi Pedone Lauriel, Editore, Palermo.
- Pizzorno, A. (1966). Amoral familism and historical marginality. *International review of community development*, 15(16), 55-66. <https://doi.org/10.4000/qds.2492>
- Polman, E., & Wu, K. (2020). Decision making for others involving risk: A review and meta-analysis. *Journal of Economic Psychology*, 77, 102184. <https://doi.org/10.1016/j.joep.2019.06.007>
- Pulford, B. D. (2009). Short article: Is luck on my side? Optimism, pessimism, and ambiguity aversion. *Quarterly Journal of Experimental Psychology*, 62(6), 1079-1087. <https://doi.org/10.1080/17470210802592113>
- Putnam R. D. (1993). *Making Democracy Work: Civic Traditions in Modern Italy*, Princeton Univ Pr; trad. it di N. Messori, *La tradizione civica nelle regioni italiane*, Arnoldo Mondadori Editore. <https://doi.org/10.2307/j.ctt7s8r7>
- Putnam, R. D. (2000). *Bowling alone: The collapse and revival of American community*. Simon and Schuster. <https://doi.org/10.1145/358916.361990>
- Putnam, R., & Helliwell, J. (1995). Economic growth and social capital in Italy. *Eastern economic journal*, 21(3), 295-307. <http://www.jstor.org/stable/40325643>.
- Rabin, M., & Thaler, R. H. (2001). Anomalies: risk aversion. *Journal of Economic perspectives*, 15(1), 219-232. <https://doi.org/10.1257/jep.15.1.219>
- Radean, M. (2023). ginteff: A generalized command for computing interaction effects. *The Stata Journal*, 23(2), 301-335. <https://doi.org/10.1177/1536867X231175253>

- Rammstedt, B., & John, O. P. (2007). Measuring personality in one minute or less: A 10-item short version of the Big Five Inventory in English and German. *Journal of research in personality, 41*(1), 203-212. <https://doi.org/10.1016/j.jrp.2006.02.001>
- Rand, D. G., Greene, J. D., & Nowak, M. A. (2012). Spontaneous giving and calculated greed. *Nature, 489*(7416), 427-430. <https://doi.org/10.1038/nature11467>
- Rangel, A., Camerer, C., & Montague, P. R. (2008). A framework for studying the neurobiology of value-based decision making. *Nature reviews neuroscience, 9*(7), 545-556. <https://doi.org/10.1038/nrn2357>
- Reich, B., & Wang, X. (2015). And justice for all: Revisiting the global belief in a just world scale. *Personality and Individual Differences, 78*, 68-76. <https://doi.org/10.1016/j.paid.2015.01.031>
- Reich, P., Roberts, P., Laabs, N., Chinn, A., McEvoy, P., Hirschler, N., & Murphy, E. L. (2006). A randomized trial of blood donor recruitment strategies. *Transfusion, 46*(7), 1090-1096. <https://doi.org/10.1111/j.1537-2995.2006.00856.x>
- Renner, S., Lindenmeier, J., Tscheulin, D. K., & Drevs, F. (2013). Guilt appeals and prosocial behavior: An experimental analysis of the effects of anticipatory versus reactive guilt appeals on the effectiveness of blood donor appeals. *Journal of Nonprofit & Public Sector Marketing, 25*(3), 237-255. <https://doi.org/10.1080/10495142.2013.816595>
- Reñosa, M. D. C., Landicho, J., Wachinger, J., Dalglisch, S. L., Bärnighausen, K., Bärnighausen, T., & McMahon, S. A. (2021). Nudging toward vaccination: a systematic review. *BMJ global health, 6*(9), e006237. <https://doi.org/10.1136/bmjgh-2021-006237>
- Rizzo, M. J., & Whitman, G. (2019). *Escaping paternalism: Rationality, behavioral economics, and public policy*. Cambridge University Press. <https://doi.org/10.1017/9781139061810>
- Romano, S. F. (1945). *Storia della questione meridionale* (Vol. 1). Edizioni Pantea.
- Romero-Domínguez, L., Martín-Santana, J. D., & Beerli-Palacio, A. (2019). Segmenting active blood donors according to their barriers to develop retention programs. *Transfusion medicine reviews, 33*(3), 176-182. <https://doi.org/10.1016/j.tmr.2019.06.004>

- Royse, D. (1999). Exploring ways to retain first-time volunteer blood donors. *Research on Social Work Practice, 9*(1), 76-85. <https://doi.org/10.1177/104973159900900106>
- Ruff, H. A., & Rothbart, M. K. (2001). *Attention in early development: Themes and variations*. Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780195136326.001.0001>
- Rushton, J. P., & Campbell, A. C. (1977). Modeling, vicarious reinforcement and extraversion on blood donating in adults: Immediate and long-term effects. *European Journal of Social Psychology, 7*(3), 297-306. <https://doi.org/10.1002/ejsp.2420070304>
- San Martín, R., Kwak, Y., Pearson, J. M., Woldorff, M. G., & Huettel, S. A. (2016). Altruistic traits are predicted by neural responses to monetary outcomes for self vs charity. *Social Cognitive and Affective Neuroscience, 11*(6), 863-876. <https://doi.org/10.1093/scan/nsw026>
- Sanchez, A. M., Ameti, D. I., Schreiber, G. B., Thomson, R. A., Lo, A., Bethel, J., ... & Retrovirus Epidemiology Donor Study. (2001). The potential impact of incentives on future blood donation behavior. *Transfusion, 41*(2), 172-178. <https://doi.org/10.1046/j.1537-2995.2001.41020172.x>
- Sarason, I. G., Sarason, B. R., Pierce, G. R., Shearin, E. N., & Sayers, M. H. (1991). A Social Learning Approach to Increasing Blood Donations 1. *Journal of Applied Social Psychology, 21*(11), 896-918. <https://doi.org/10.1111/j.1559-1816.1991.tb00449.x>
- Schröder, J. M., Merz, E. M., Suanet, B., & Wiepking, P. (2023a). The social contagion of prosocial behaviour: How neighbourhood blood donations influence individual donation behaviour. *Health & Place, 83*, 103072. <https://doi.org/10.1016/j.healthplace.2023.103072>
- Schröder, J. M., Merz, E. M., Suanet, B., & Wiepking, P. (2023b). Did you donate? Talking about donations predicts compliance with solicitations for donations. *PLoS One, 18*(2), e0281214. <https://doi.org/10.1371/journal.pone.0281214>
- Schulz, J. F., Bahrami-Rad, D., Beauchamp, J. P., & Henrich, J. (2019). The Church, intensive kinship, and global psychological variation. *Science, 366*(6466), eaau5141. <https://doi.org/10.1126/science.aau5141>
- Selten, R., & Ockenfels, A. (1998). An experimental solidarity game. *Journal of Economic Behavior & Organization, 34*(4), 517-539. [https://doi.org/10.1016/S0167-2681\(97\)00107-8](https://doi.org/10.1016/S0167-2681(97)00107-8)

- Sénémeaud, C., Sanrey, C., Callé, N., Plainfossé, C., Belhaire, A., & Georget, P. (2017). The watching-eyes phenomenon and blood donation: Does exposure to pictures of eyes increase blood donation by young adults?. *Transfusion and Apheresis Science*, *56*(2), 168-170.  
<https://doi.org/10.1016/j.transci.2016.11.001>
- Sgroi, D., Redoano, M., Liberini, F., Lockwood, B., Bracco, E., & Porcelli, F. (2020). Cultural identity and social capital in Italy. *Social Science Research Network*. [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3708645](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3708645)
- Sharot, T. (2011). The optimism bias. *Current biology*, *21*(23), R941-R945.  
<https://doi.org/10.1016/j.cub.2011.10.030>
- Sheeran, P., & Webb, T. L. (2016). The intention–behavior gap. *Social and personality psychology compass*, *10*(9), 503-518. <https://doi.org/10.1111/spc3.12265>
- Singer, T., Critchley, H. D., & Preuschoff, K. (2009). A common role of insula in feelings, empathy and uncertainty. *Trends in cognitive sciences*, *13*(8), 334-340.  
<https://doi.org/10.1016/j.tics.2009.05.001>
- Smith, H. S., Blumenthal-Barby, J. S., Chatterjee, R., Hindera, O., Huang, A., Kothari, R., & Vlaev, I. (2022). A review of the MINDSPACE framework for nudging health promotion during early stages of the COVID-19 Pandemic. *Population Health Management*, *25*(4), 487-500.  
<https://doi.org/10.1089/pop.2021.0269>
- Soman D., Xu, J., & Cheema, A. (2010). Decision points: A theory emerges. *Rotman Magazine Winter*, 64-68.
- Soman, D., Cowen, D., Kannan, N. & Feng, B. (2019). Seeing sludge: Towards a dashboard to help organizations recognize impedance to end-user decisions and action. *Behavioural Economics in Action at Rotman* (BEAR) Report series. <https://doi.org/10.2139/ssrn.3460734>
- Song, B., & Wen, T. J. (2019). Integrating incidental and integral emotions in non-profit communications: An experiment of blood donation message. *International Journal of Strategic Communication*, *13*(1), 42-59. <https://doi.org/10.1080/1553118X.2018.1524381>

- Stark, O., Budzinski, W., & Jakubek, M. (2022). Risk aversion when preferences are altruistic. *Economics Letters*, 216, 110450. <https://doi.org/10.1016/j.econlet.2022.110450>
- Steele, W. R., Schreiber, G. B., Gultinan, A., Nass, C., Glynn, S. A., Wright, D. J., ... & Retrovirus Epidemiology Donor Study. (2008). The role of altruistic behavior, empathetic concern, and social responsibility motivation in blood donation behavior. *Transfusion*, 48(1), 43-54. <https://doi.org/10.1111/j.1537-2995.2007.01481>.
- Stutzer, A., Goette, L., & Zehnder, M. (2011). Active decisions and prosocial behaviour: a field experiment on blood donation. *The Economic Journal*, 121(556), F476-F493. <https://doi.org/10.1111/j.1468-0297.2011.02477.x>
- Sugden, R. (2018). *The community of advantage: A behavioural economist's defence of the market*. Oxford University Press.
- Sun, T., Gao, G., & Jin, G. Z. (2019). Mobile messaging for offline group formation in prosocial activities: A large field experiment. *Management Science*, 65(6), 2717-2736. <https://doi.org/10.1287/mnsc.2018.3069>
- Sun, T., Lu, S. F., & Jin, G. Z. (2016). Solving shortage in a priceless market: Insights from blood donation. *Journal of health economics*, 48, 149-165. <https://doi.org/10.1016/j.jhealeco.2016.05.001>
- Sunstein, C. R. (2015). Nudging smokers. *New England Journal of Medicine*, 372(22), 2150-2151. <https://doi.org/10.1056/NEJMe1503200>
- Sunstein, C. R. (2016). People prefer system 2 nudges (kind of). *Duke Law Journal*, 66, 121–168. <https://doi.org/10.2139/ssrn.2731868>
- Sunstein, C. R. (2018). Misconceptions about nudges. *Journal of Behavioral Economics for Policy*, 2(1), 61–67.
- Sunstein, C. R. (2019). Nudging: A very short guide. *Business Economics*, 54(2), 127-129. <https://doi.org/10.1057/s11369-018-00104-5>

- Sunstein, C. R. (2020). Sludge audits. *Behavioural Public Policy*, 1-20.  
<https://doi.org/10.2139/ssrn.3379367>
- Szaszi, B., Palinkas, A., Palfi, B., Szollosi, A., & Aczel, B. (2018). A Systematic Scoping Review of the Choice Architecture Movement: Toward Understanding When and Why Nudges Work. *Journal of Behavioral Decision Making*, 31(3), 355–366.  
<https://doi.org/10.1002/bdm.2035>
- Tabellini, G. (2008). Institutions and culture. *Journal of the European Economic Association*, 6(2-3), 255–294. <https://doi.org/10.1162/JEEA.2008.6.2-3.255>
- Tappin, B. M., & McKay, R. T. (2017). The illusion of moral superiority. *Social psychological and personality science*, 8(6), 623-631. <https://doi.org/10.1177/1948550616673878>
- Teeuwen, E., & Stavrova, O. (2020). Does Karma Moderate the Association between Moral Self-Perception and Optimism Bias?.
- Thaler R. H.; & Sunstein C. (2008). *Nudge: Improving Decisions about Health, Wealth, and Happiness*. New Haven, CT: Yale University Press.
- Thaler, R. H. (2018). Nudge, not sludge. *Science*, 361(6401), 431-431.  
<https://doi.org/10.1126/science.aau9241>
- Titmuss, R. M. (1970). *The gift relationship: From human blood to social policy*. London: Allen & Unwin.
- Trishala, M. (2021). Big Five Personality traits as determinants of pro-social behaviour. *Indian Journal of Positive Psychology*, 12(2), 200-203.
- Tucker, W. T., & Ferson, S. (2008). Evolved altruism, strong reciprocity, and perception of risk. *Annals of the New York Academy of Sciences*, 1128(1), 111-120. <https://doi.org/10.1196/annals.1399.012>
- Turner, J. C., Brown, R. J., & Tajfel, H. (1979). Social comparison and group interest in ingroup favouritism. *European journal of social psychology*, 9(2), 187-204.  
<https://doi.org/10.1002/ejsp.2420090207>

- Umer, H., Kurosaki, T., & Iwasaki, I. (2022). Unearned endowment and charity recipient lead to higher donations: A meta-analysis of the dictator game lab experiments. *Journal of Behavioral and Experimental Economics*, 97, 101827. <https://doi.org/10.1016/j.socec.2022.101827>
- Verga G. (1881), *I Malavoglia*, Treves editore.
- Vives, M. L., & FeldmanHall, O. (2018). Tolerance to ambiguous uncertainty predicts prosocial behavior. *Nature communications*, 9(1), 1-9. <https://doi.org/10.1038/s41467-018-04631-9>
- Vlaev, I., & Dolan, P. (2009). *From changing cognitions to changing the context: a dual-route model of behaviour change*. London: Imperial College Business School.
- Vlaev, I., & Dolan, P. (2015). Action change theory: A reinforcement learning perspective on behavior change. *Review of General Psychology*, 19(1), 69-95. <https://doi.org/10.1037/gpr0000029>
- Vlaev, I., King, D., Dolan, P., & Darzi, A. (2016). The theory and practice of “nudging”: changing health behaviors. *Public Administration Review*, 76(4), 550-561. <https://doi.org/10.1111/puar.12564>
- Vuletić Čugalj, D. (2015). How Effective are Reminders and Frames in Incentivizing Blood Donations?. *CERGE-EI Working Paper Series*, (554). <https://doi.org/10.2139/ssrn.2700608>
- Wally, S., & Baum, J. R. (1994). Personal and structural determinants of the pace of strategic decision making. *Academy of Management journal*, 37(4), 932-956. <https://doi.org/10.2307/256605>
- Wang T. M., Heine F., & van Witteloostuijn A. (2023), Pro-Social Risk-Taking and Intergroup Conflict A Volunteer's Dilemma Experiment, *Games and Economic Behavior*, 140, 363–379. <https://doi.org/10.1016/j.geb.2023.04.003>
- Wang, S. Y., & Groene, O. (2020). The effectiveness of behavioral economics-informed interventions on physician behavioral change: a systematic literature review. *PLoS One*, 15(6), e0234149. <https://doi.org/10.1371/journal.pone.0234149>
- Wang, W., Li, S., Li, J., & Wang, Y. (2021). The COVID-19 Pandemic Changes the Nudging Effect of Social Information on Individuals' Blood Donation Intention. *Frontiers in Psychology*, 12. <https://doi.org/10.3389/fpsyg.2021.736002>

- Wansink, B. (2015). Change their choice! Changing behavior using the CAN approach and activism research. *Psychology & Marketing*, 32(5), 486–500.  
<https://doi.org/10.1371/journal.pone.0234149>
- Weber, M., & Kalberg, S. (2013). *The Protestant ethic and the spirit of capitalism*. Routledge.  
<https://doi.org/10.4324/9781315063645>
- Weinstein, N. D. (1980). Unrealistic optimism about future life events. *Journal of personality and social psychology*, 39(5), 806. <https://doi.org/10.1037/0022-3514.39.5.806>
- Weinstein, N. D. (1984). Why it won't happen to me: perceptions of risk factors and susceptibility. *Health psychology*, 3(5), 431. <https://doi.org/10.1037/0278-6133.3.5.431>
- Weinstein, N. D. (1987). Unrealistic optimism about susceptibility to health problems: Conclusions from a community-wide sample. *Journal of behavioral medicine*, 10(5), 481-500.  
<https://doi.org/10.1007/BF00846146>
- Wevers, A., Wigboldus, D. H., van Baaren, R., & Veldhuizen, I. J. (2014). Return behavior of occasional and multigallon blood donors: the role of theory of planned behavior, self-identity, and organizational variables. *Transfusion*, 54(3pt2), 805-813. <https://doi.org/10.1111/trf.12309>
- White, C. J., Kelly, J. M., Shariff, A. F., & Norenzayan, A. (2019). Supernatural norm enforcement: Thinking about karma and God reduces selfishness among believers. *Journal of Experimental Social Psychology*, 84, 103797. <https://doi.org/10.1016/j.jesp.2019.03.008>
- White, C. J., Norenzayan, A., & Schaller, M. (2018). The content and correlates of belief in Karma across cultures. *Personality and Social Psychology Bulletin*, 45(8), 1184-1201.  
<https://doi.org/10.1177/0146167218808502>
- Wiese, J. V. (2023). Karma and honest behavior: An experimental study. *Journal of Behavioral and Experimental Economics*, 104, 102018. <https://doi.org/10.1016/j.socec.2023.102018>
- Wildman, J., & Hollingsworth, B. (2009). Blood donation and the nature of altruism. *Journal of health economics*, 28(2), 492-503. <https://doi.org/10.1016/j.jhealeco.2008.11.005>

- Willard, A.K., & Norenzayan, A. (2013). Cognitive biases explain religious belief, paranormal belief, and belief in life's purpose. *Cognition*, *129* (2), 379–391.  
<https://doi.org/10.1016/j.cognition.2013.07.016>
- Wiltermuth, S. S. (2011). Cheating more when the spoils are split. *Organizational Behavior and Human Decision Processes*, *115*(2), 157-168. <https://doi.org/10.1016/j.obhdp.2010.10.001>
- Xie, X., Kai-Jie, M. A., Jia-Tao, H. E., and Quan, J. (2019). Descriptive norms promote willingness to voluntarily donate blood rather than actual blood donation. *Advances in Psychological Science*, *27*(6), 1019. <https://doi.org/10.3724/SP.J.1042.2019.01019>
- Xiong, W., Gao, X., He, Z., Yu, H., Liu, H., & Zhou, X. (2020). Affective evaluation of others' altruistic decisions under risk and ambiguity. *Neuroimage*, *218*, 116996.  
<https://doi.org/10.1016/j.neuroimage.2020.116996>
- Young, M. J., & Morris, M. W. (2004). Existential Meanings and Cultural Models: The Interplay of Personal and Supernatural Agency in American and Hindu Ways of Responding to Uncertainty. In J. Greenberg, S. L. Koole, & T. Pyszczynski (Eds.), *Handbook of Experimental Existential Psychology* (pp. 215–230). The Guilford Press
- Young, M.J., Morris, M.W., Burrus, J., Krishnan, L., & Regmi, M.P. (2011). Deity and destiny: patterns of fatalistic thinking in Christian and Hindu cultures. *Journal of Cross-Cultural Psychology*, *42*, 1032–1055. <https://doi.org/10.1177/0022022110381123>
- Zarghamee, H. S., Messer, K. D., Fooks, J. R., Schulze, W. D., Wu, S., & Yan, J. (2017). Nudging charitable giving: Three field experiments. *Journal of Behavioral and Experimental Economics*, *66*, 137-149. <https://doi.org/10.1016/j.socec.2016.04.008>