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Introduction

During my studies I had the opportunity to discover various fields in the area of economics and to develop a particular interest for the relationships between social and psychological factors and economic behavior in a series of important domains.

This doctoral thesis is a collection of three empirical essays dealing with key topics addressed in the last years within the broad Behavioral Economics research area. A common feature of the studies illustrated in the following chapters is the focus on the key role played by psychological and social factors in shaping economic decision-making processes. In particular, we focus our attention on the role of one's *personality traits* and the influence of her *peers* as factors that could drive and alter individual choices as well as her perception of objective reality in economically relevant decision contexts.

The first chapter, titled "Objective and subjective status: the role of personality bias" is joint work with my supervisor Luca Zarri and professor Alessandro Bucciol. In this essay, analyzing survey data from the 2006-2012 waves of the US Health and Retirement Study, we explore the factors which influence the relationship between objective and subjective measures of individual status with regard to two key domains: health status and social status. Our data suggest that the two indicators of health status are highly positively correlated; similarly, also the subjective and objective measures of social status are strongly positively linked. In addition, their correlations with personality traits are not negligible. Then, we estimate a bivariate model including basic demographic variables and we find that the two objective indexes of health and social status have a positive and significant effect on their subjective counterparts. Adding individual characteristics, we show that all the "Big Five" personality traits strongly influence both subjective measures. Even more interestingly, both the sign and the significance of the effects of four personality variables are the same for the two subjective measures under study. Our findings indicate that more open, conscientious and extraverted individuals report higher health and social status levels, while more agreeable and neurotic persons declare lower health and social status levels. These results are also confirmed when the other subjective measure is included in the regression specification, highlighting the relevant role of personality. Then these evidences suggest that there is a persistent gap between objective and subjective

measures that holds across partially unrelated domains and that is likely due to "personality bias".

The second chapter illustrates an incentivized pen and paper experiment run at a primary school in Italy, involving 301 students aged 9 to 12 years. The title of this work is "Loss aversion and risk attitude among children: "self-other" differences in decision making". By studying risk preferences and loss aversion in children, this essay allows us to draw some broad comparisons with prior work focusing on adults' decision making in these domains. Moreover, we investigate whether, other things being equal, decision making differs when individuals have to decide for themselves ("self") and when they have to make choices that will have consequences on other subjects ("other"). We discover that children who choose for others are more risk seeking than those who decide for themselves. A self-other treatment effect emerges also by counting the number of inconsistent answers, as it is significantly higher for children who decide for others (revealing a careless attitude in this decision context). Furthermore, we noted that some children expose others to an extremely high risk, leading them to losses. Analyzing their risk preferences, we find neutral behavior towards losses that shifts to a more risk averse behavior for the same options presented as winnings. Moreover, we investigate whether children's loss aversion changes over time, considering three different time horizons (i.e., "now", "after a week", "after a month") and we observe that its level increases over time. Carrying out an ordered logit analysis, we document that the degree of risk aversion in the frame of winnings is significantly greater for foreign children and for those who spend little time with their parents, while we observe a strong gender effect in the frame of losses. Finally, our findings indicate that children who are more impatient display lower loss aversion for losses in near future.

The third chapter reports a laboratory experiment on Dictator Game, focusing on the potential role of different kinds of "similarity" in affecting giving choices. Its title is "Preference for giving: the influence of similar and dissimilar dictators". By collecting experimental data among students at VELE, the Experimental Economics Lab of the Department of Economics of the University of Verona, we investigate whether subjects' (incentivized) giving choices in a Dictator Game are affected by information over the allocation of a similar Dictator in terms of demographic characteristics, hobbies and beliefs. We use a between-subjects design and introduce three treatments which differ in the way information about allocations and characteristics of other Dictators is provided. When participants receive the desired Dictator information and pay for it, they tend to choose a fair sharing, while when participants receive

group information and cannot choose it, they tend to act selfishly. Our data indicate also that, when a cost has to be incurred, only about 50% of Dictators choose to receive information, while, when information is costless, about 90% of individuals decide to receive it. Even more interestingly, our results highlight little importance for hobbies' information and a clear preference for information over beliefs. Carrying out an OLS regression, we show that feeling similar to other individuals leads to behave in line with them. Moreover, our findings indicate that Dictators who search for approval and others' appreciation, who are more easily influenced and more agreeable tend to align their choices with others. We also observe that those who receive random information focus their attention on the allocation distribution, while those who receive desired information give more importance to it. Finally, we find that social variables regarding one's peers (such as others' approval and others' appreciation) have a stronger effect in explaining the conformism measure rather than the pro-sociality measure, while personality variables have a more relevant impact on pro-sociality rather than on conformity. Indeed, we observe that Dictators who are more open and agreeable are more pro-social, while those who are more conscious are more selfish, as documented by prior work.

Chapter 1

Objective and Subjective Status: The Role of Personality Bias

Abstract

Analyzing survey data from the 2006-2012 waves of the US Health and Retirement Study, we seek to shed light on the factors underlying the relationship between objective and subjective measures of health and social status. We estimate a bivariate model including basic demographic variables and we find that the two objective indexes of health and social status have a positive and significant effect on their subjective counterparts. Adding individual characteristics, we show that all the "Big Five" personality traits strongly influence both subjective measures. Even more interestingly, both the sign and the significance of the effects of four personality variables are the same for the two subjective measures under study. Our findings indicate that more open, conscientious and extraverted individuals report higher health and social status levels, while more agreeable and neurotic persons declare lower health and social status levels. These results are also confirmed when the other subjective measure is included in the regression specification, highlighting the relevant role of personality. On the whole, this evidence suggests that there is a persistent gap between objective and subjective measures that holds across partially unrelated domains and that is likely due to "personality bias".

1. Introduction

What drives human perception of objective reality? Why is it the case that our subjective judgments often depart from actual data? And why do individuals often differ from one another in their evaluations of the same phenomena? Over the centuries, these intriguing but challenging questions have attracted the interest of philosophers, who argued for long over the meaning of subjectivity and objectivity as well as the relationships between the individual self, her mental categories and her knowledge of the external world (Ladkin, 2005).

In this study, we empirically address a question related to the subjectivity of human evaluations by conjecturing that non-cognitive factors such as our personality traits may significantly alter our self-evaluations of reality with regard to relevant life domains. More specifically, we test the hypothesis that a "personality bias" is at work by distorting our subjective perception of *our own* objective condition and that the same personality traits play a similar role across different and only partially related domains such as *social status* and *health status*.

Prior work indicated that personality traits affect the individual's perception of her own position in the social ladder (Bucciol et al., 2015), even after controlling for the relationship between subjective and objective social status. In this work, we aim to take a step further as we conjecture that a personality bias manifests itself as a more general phenomenon and, therefore, might help us significantly account for the gap between objective and subjective status with regard to multiple life domains. In particular, we decided to include the health domain into the analysis, as previous studies have shown that individuals tend to misperceive their actual health conditions (Booth-Kewley and Vickers, 1994; Costa and McCrae, 1984; Rodin and Salovey, 1989). While many studies investigate the link between health and personality by considering either objective or subjective health status, our dataset lends itself to the analysis of both objective and subjective health status and, therefore, we seek to understand whether, how and to what extent individuals' personality characteristics may distort the perception of their health conditions.

Therefore, through our empirical analysis we wonder whether, when we estimate a bivariate model that incorporates both social status and health status, the effects of personality traits on subjective status are similar (in terms of both sign and significance levels), after controlling for the relationship between subjective and objective status. To assess personality, we have recourse to the established "Big Five" model (Costa and McCrae, 1991) developed within the so-called personality psychology.

The remainder of this chapter is structured as follows. Section 2 contains a literature review on health status, on the link between objective and subjective measures, and on personality traits. In Section 3 we present the data we use to explore this topic. Section 4 contains the main findings of our analysis and Section 5 concludes. Appendices A.1 and A.2 provide details on the construction of some key variables, and Appendix A.3 describes the empirical methodology.

2. Literature Review

2.1. Objective and Subjective Health Status

The simple word "health" in fact hides various meanings: health indeed can be subjectively interpreted as *being* (person without illness), as *having* (person with a reserve), and as *doing* (person without disability). As Wright (1985) points out, "investigators have rarely, if ever, provided definitions of health for their subjects. Subjects have been left to use their own interpretation". D'Houtand and Field (1984) studied a French sample in order to determine how people themselves perceive the meaning of health. They found that lower class respondents view health primarily in instrumental (e.g. ability to perform social roles) and negative (absence of illness) terms, whereas higher class subjects interpret health in a more positive and self-oriented fashion. Krause and Jay (1994) showed that respondents do not use the same frame of reference in rating their overall health as excellent, good, fair, or poor. More specifically, data suggest that younger people tend to adopt more often healthy behaviors, such as doing physical activity, eating a balanced diet, not smoking, whereas those who are older are more inclined to think in terms of health problems. With regard to race, it seems that non-whites may think about health problems when asked to rate their overall health, whereas whites may be more likely to use general physical functioning as a frame of reference. Next, available evidence also indicates that respondents with lower levels of educational attainment may be more inclined to use health behaviors[1] as a frame of reference.

There is today a large empirical literature dealing with the application and interpretation of self-assessed health. One strand of literature emphasized problems with measures of self-reported health with regard to income inequality, labor supply and retirement

[1] Conner and Norman (1996) define health behaviors as any activity undertaken for the purpose of preventing or detecting disease o for improving health and well-being.

decisions. Another area of work focuses on questions concerning data analysis and solutions to heterogeneity problems. More recently, a variety of authors have opted for the use of more objective indicators of health status, such as responses to questions about specific health conditions or limitations, doctors' reports or information on mortality. A possible limitation, however, for instance in retirement models, is that objective indicators like these measure health rather than work capacity: information from physical exams does not control for the specific demands of a person's job environment or the interaction between a person's skills and his health limitations. On the other hand, the use of self-reported indicators only in these models could lead to overestimate the importance of health status: for example, a person who identifies herself as incapable of work or in poor health, could make retirement decision limiting the effect of other economic variables. Therefore, it is important to incorporate information from both self-reported and objective measure of health.

A number of studies have investigated the correlation between the level of income inequality in a population and health outcomes, showing that the average health among people living in high inequality areas appears to be lower than among people living in low-inequality areas. A statistically significant relationship has been reported in studies using aggregate data both across countries (Rodgers, 1979; Wilkinson, 1992) and across regions within countries (Kawachi and Kennedy, 1997; Lynch et al., 1998). Authors typically suggested that inequality has an effect on health either because it is a source of psychosocial stress, or because it fosters the development of environments hazardous to public health. Hildebrand (2009) found consistent evidence that income inequality is negatively related to self-rated health status in the European Union for both men and women, particularly when measured at national level. However, despite its statistical significance, the magnitude of the impact of inequality on health is very small. Moreover, Fernandez Mayoralas et al. (2012) showed that differences between men and women in perceived health status become more pronounced with age, reflecting a worse situation among women. Compared to the unmarried, the married may not report poorer health until developing more severe health problems. These findings suggest the married tend to overestimate their health status. With regard to life satisfaction, Gwozdz and Sousa-Poza (2010) confirmed that a rapid decline in life satisfaction is primarily attributable to low levels of perceived health. However, despite major exposure to serious health problems like heart attacks, strokes, diabetes, arthritis, Parkinson's, and cataracts, life satisfaction among the oldest does not generally depend on their objective health status.

Many other studies investigate the relation between objective and subjective health status. For example, Bound (1991) documents that labor supply models are sensitive to the measures of health used. When self-reported measures are used, health seems to play a larger role and economic factors a smaller one than when more objective measures are used. Bennett (2005), instead, examines the relationship between subjective and objective health and social engagement in survivors from the Nottingham Longitudinal Study of Activity and Ageing (NLSAA). He finds that social engagement is a useful predictor of subjective physical health. However, objective health is not predicted by social engagement. This suggests that social engagement may act on subjective health through a psychosocial pathway which may be absent in its relationship with objective health.

On the whole, then, existing works in this literature indicate that several factors influence subjective and objective health status and likely mediate the relationship between the two health dimensions.

2.2. Objective and Subjective Status

It is plausible that self-perceived (i.e. subjectively filtered) measures do not correspond necessarily to objective measures. For instance, one's subjective socio-economic status may differ from her actual position in the social ladder, one's perceived health status might not coincide with his actual psychophysical difficulties and individuals' fear of crime in their neighbourhood and actual crime figures may well be substantially misaligned. The discrepancy between the two measures could change a lot depending on the context as well as on personal knowledge, experiences and other characteristics of the individuals. Objective and subjective assessments could affect each other, but anyway they remain different measures because the subjective one is filtered by personal knowledge, experiences and characteristics.

Past research has shed light on the relationships between objective and subjective measures within several economic and non-economic domains, including housing, career success, employee performance. Nygren et al. (2007) examine the link between objective and perceived housing in old age (see on this also Oswald and Wahl, 2004). They find that very old people living in more accessible homes perceive their housing as more useful and meaningful with respect to their daily activities, and they are less dependent on external control in relation to their housing. Other work focuses on the relationship between objective and subjective career success. Both are associated to a wide range of predictors, but in a different way. Ng et

al. (2005) consider four categories of predictors of objective and subjective career success: human capital, sociodemographic status, organizational sponsorship and stable individual differences. They find that the first two factors are strongly related to objective career success while the latter two categories are more associated with subjective career success. Nabi (1999) instead finds that the highest objective career success is reported by employees with a high level of education, who work in larger organizations with well-structured progression ladders and invest a great deal of effort in their work role. On the other hand, the highest subjective career success is declared by employees who are high in work centrality, who work in organizations with well-structured progression ladders and employment security. Other studies analyse the directions of influence between objective and subjective career success. Some view objective success as the basis for the subjective evaluation of success (Judge et al., 1995; Ng et al., 2005), whereas others consider the subjective perception of success as a by-product of objective success (Nicholson and De Waal-Andrews, 2005). Abele and Spurk (2009) study the inter-relation between the two dimensions of success over time analysing ten years and considering changes in objective success (income, hierarchical position) and subjective success both as comparison with a reference group (other-referent subjective success) and in terms of own job satisfaction. They find that objective success affects both the initial level and the growth of other-referent subjective success, but it does not influence job satisfaction. Furthermore, they show that both measures of subjective success as well as initial levels and their changes have strong effects on the growth of objective success.

Another context in which objective and subjective measures may significantly differ concerns performances. For example, Harris (2001) analyses the link between market orientation and performance studying a UK industry. His results suggest that market orientation is positively associated with company performance in certain environmental conditions when subjective measures of performance are taken into account and in a more limited range of environmental conditions when objective measures of performance are considered. With regard to employee performance, instead, there is not a common interpretation of the relationship between objective and subjective measures of it. Some researchers treat different performance measures synonymously (Fried, 1991; Williams and Livingstone, 1994). Nathan and Alexander (1988) detect a difference between objective and subjective measures in only one of the seven relationships examined and conclude that the objective-subjective distinction may be more illusory than real. Other scholars, instead, agree that objective and subjective performances should not be viewed as interchangeable (Murphy

and Cleveland, 1991; Heneman, 1986). These results are confirmed in the meta-analysis of Bommer et al. (1995). In their study, objective and subjective ratings of employee performance have a correlation equal to 0.389, indicating that the two measures should not be used interchangeably. However, despite the limited sample, their meta-analysis suggests that objective and subjective measures of the same construct at the same level may be interchangeable. The link between objective and subjective measures of performance is also studied considering urban services. In this context subjective measures are indicators constructed from citizens' responses about their experiences, perceptions and evaluations of services received. The objective measures, instead, take into account the records of the service agencies themselves. Many authors agree on the low congruence and, then, the discrepancy between the two indicators. For example, Stipak (1979) studying Los Angeles metropolitan area, finds that objective indicators of police services and park and recreation services are at most only weakly related to citizens' evaluation of those services. He argues that large improvements in objective performance generally appear to have negligible effects on citizens' subjective evaluations. Brown and Coulter (1983) support this position and, analysing data from Tuscaloosa, Alabama, argue that satisfaction levels and services levels appear to be independent. In contrast, Carroll (1978) reports a significant relationship between citizens' perceptions and objective measures considering street conditions.

A well-known discrepancy studied among economists and psychologists is related to subjective well-being and wealth. Some works analyse the relation between income and life satisfaction. Schyns (2002), for instance, examines whether income at individual level and wealth at the national level affect the life satisfaction of a population. He finds that poor people living in poor countries are less satisfied with their lives than poor people living in affluent countries and that poor individuals change more in their life satisfaction than rich individuals. O' Connell (2004) also shows that there exists a stronger relation between satisfaction and equality of income distribution rather than between satisfaction and size of income. Other researches also try to explain the well-known "happiness paradox". Beyond the positional and the hedonic treadmills, which describe how people' concern about status and rising aspirations keep happiness from rising along with income, Binswanger (2006) proposes two additional treadmills: the multi-option treadmill that describes how the constantly increasing number of options to spend money and time leads people to feel unable to make the right decisions and to actually enjoy the chosen option, and the time-saving treadmill that highlights how time-saving innovations tend to intensify the use of leisure time instead of mitigating the time pressure.

Lora and Fajardo (2013) explore the factors behind the discrepancies between objective and subjective social-class identification. Their empirical results show that, for 16 Latin American countries, the distance between perception and objective social ranking is large, and that perceived social ranking is associated not just with income, but with all forms of wealth, personal capabilities, interpersonal relations, financial and material assets, and perceptions of economic insecurity. For instance, having at least complete secondary education helps to explain why some people who are objectively poor classify themselves as middle class. Not having kids makes some poor individuals see themselves as middle class and, in contrast, having kids makes some wealthy individuals see themselves as middle class. Among the material conditions of life, owning a car or a washing machine, or access to finance make some objectively poor people self-assess themselves as middle class whereas lack of those things induces some objectively wealthy people to consider themselves as middle class. Sosnaud et al. (2013) evaluate the extent and the origin of the differences between subjective class identifications and objective social class positions and study their relationship with vote choice in American presidential elections. They find that there are considerable differences between Americans' subjective and objective social class: over two-thirds of the upper-middle class have "deflated perceptions", that is subjective status is lower than objective status, half of the middle class have concordant perceptions, and more than a third of the working class have "inflated perceptions", that is subjective status is higher than objective status. They also show that this discrepancy depends on sociodemographic factors, in particular race and education. In addition, the analysis reveals that class perceptions are more likely to vote Republican; however, this relationship is not significant when they control for race and income.

Another context which presents a gap between objective and subjective measures is crime. The British Crime Survey (BCS) identifies widespread public ignorance about crime and criminal justice, and it also recognises a discrepancy between subjective fear and objective risk. For example, the 2000 BCS reports a fall between 1997 and 1999 in almost all offence categories. However, despite this reduction and a previous one between 1995 and 1997, the level of worrying about crime has remained relatively stable (Mirrlees-Black et al., 1998). Kershaw et al. (2000), in an attempt to understand whether people are indeed more worried about crime than they should be, suggest that the increased discrepancy between perceived crime and real crime, in particular at the national level, may be related to media representations. Moreover, the BCS also notes that perceptions are associated with actual levels of risk: people living in high-risk areas are more likely to predict their victimisation than those

living in low-risk areas. In addition, the 1998 BCS finds that also the knowledge about juvenile crime is poor; only a minority (16%) of respondents correctly identified that most known offenders are adults and not juveniles.

One topic of interest in pricing research regards the effect of price on quality perceptions. Also in this context the relationship between subjective and objective evaluations of the price-quality may display a discrepancy between the two measures. For instance, Lichtenstein and Burton (1989) conduct four studies to assess the accuracy with which consumers perceive objective price-quality relationships. Their results suggest that the price-quality perceptions are more accurate for nondurable products than for durable ones.

Moreover, some recent works regard the gap between perceived and actual inflation and, in particular, the idea that the introduction of euro has increased individuals' misperception of prices. Aucremanne et al.'s (2007) study provides support to this hypothesis; they also find that the break in the relationship between perceived and measured inflation is fairly homogenous across individuals with different socio-demographic characteristics and that the results do not change when national CPIs instead of HICPs are used as benchmarks. Dziuda and Mastrobuoni (2006) show that consumers who still convert prices to their old currency have higher inflation perceptions. In particular, they observe a persistent overestimation of inflation as time passes, at least in an environment of positive inflation. Their results also suggest that inflation perceptions are higher for older consumers and less educated people. Traut-Mattausch et al. (2004) highlight the importance of psychological factors, and especially the role of a priori expectations, and provide experimental evidence of a systematic bias related to participants' perceptions of price increases.

Other studies concern the link between objective and subjective social status and the role played by other variables in this relationship. In particular, several studies in the last years have focused on the subjective-objective distinction with regard to the two domains investigated in this study, i.e. social status and health. Chen and Fan (2015) analyse the divergence between subjective and objective social status in contemporary China finding that more than half of urban residents underestimate their social position and that, in contrast, more than half of rural residents overestimate it. They also show that status discordance is negatively affected by family income, education, and occupational prestige and positively correlated with the perceived upward social mobility. Moreover, the effects of objective indicators and perceived mobility are different between urban and rural residents. Most of the works in this field focus the relationship between objective and subjective social status on various aspects of

perceived and actual health. The existence of a relevant relationship between these variables is well evident in the study of Kopp et al. (2010). Analysing the association of these measures with male and female middle-aged mortality, the authors show that the two social status indicators are highly significantly correlated with self-rated health, both among men and women. Sakurai et al. (2010) analyse the impact of subjective and objective social status on mental health. They find that, in the Japanese community, subjective social status seems to be a stronger predictor of psychological distress among both men and women than traditional measures of objective status such as education, income and occupation. Adler et al. (2000) examine both objective and subjective social status in relation to psychological and physiological functioning in a group of healthy white women. They show that subjective social status is more consistently and strongly associated to psychological functioning and other health-related factors (self-rated health, heart rate, sleep latency, body fat distribution, and cortisol habituation to repeated stress) than objective social status. This result is also confirmed by the study of Macleod et al. (2005). Indeed, studying 5232 Scottish men for 25 years, they observe that subjective social status is a stronger determinant of psychosocial health and stress level than objective social position. In addition, they find that both subjective and objective measures of lower social position are associated with poorer health. Also Nobles at al. (2013) find that, among Indonesians aged 35 and older, perceived status decreases with declining health. Moreover, they show a reverse causality between subjective status and health measures and that these relationships persist in the presence of controls for unobserved traits, such as family background and aspects of personality. Marmot (1998) instead examines the contributions of psychosocial factors to socioeconomic differences in health and disease and in order to demonstrate the extent of the association between socioeconomic status and health he considers three variables: self-reported physical health, waist-hip ratio and psychological well-being and their interactions with other factors that theory or previous empirical works suggest should be related to these measures. He finds that a combination of aspects - social, environmental and individual- is important as determinant of the health of populations, and then that not only the single psychological factor explains differentials in health. In addition, the results of Operario et al. (2004) highlight the positive and significant correlation of subjective social status with health measures, and show a slightly stronger association of self-rated health with subjective social status than with income or education. Their OLS regression confirms these evidences: subjective social status has the largest impact on subjective health status even after controlling for other socio-economic indicators and after including negative

affect variables. Also the study of Singh-Manoux et al. (2005) examines whether subjective socioeconomic status predicts health status and change in health status over time better than objective socioeconomic status. Their results reveal that both measures of social status are significantly related to health outcomes and to a decline in health status over time. However, when the two measures of social status enter simultaneously in the model, only the subjective measure continues to be significantly associated with health and change in health. The role of subjective social status as mediator between objective social status and health is also investigated by Demakakos et al. (2008). Using data of 3368 men and 4065 women aged 52 years or older from the English Longitudinal Study of Ageing, they find that subjective social status mediates fully or partially the associations of education and occupational class with self-reported and clinical health measures. In addition, it mediates the link between wealth and self-reported health measures. Franzini et al.' (2006) study highlights the complexity of the interactions between objective and subjective social status, acculturation, and health in a Mexican-origin individuals sample. Their results indicate that sociocultural factors, in particular social support, personal opportunity, and trust, explain differences between subjective and objective social status. Moreover, they find that subjective social status is associated with self-rated health even when adjusting for objective social status. In addition, sociocultural characteristics, specially perceived victimization, appear to mediate the effects of subjective social status on mental and physical health. Cohen et al. (2008), instead, study the relationship between socioeconomic status measures and the susceptibility to common cold exposing 193 healthy men and women ages 21-55 years to a rhinovirus or influenza virus. They find that an increasing subjective socioeconomic status is associated with a decreasing risk for developing a cold for both viruses. They also show that this link is independent of objective socioeconomic status and of cognitive, affective and social disposition that might provide alternative explanations for this connection. Ritterman et al. (2009) analyse the influence of Mexican adolescents' social status on substance use. Their results reveal that adolescents who perceive themselves as higher in social status in reference to their local community report more smoking and drinking. These findings are similar when objective social status is considered. On the other hand, adolescents who perceive themselves as higher in social standing in reference to Mexican society as a whole declare substance use with less probability. Moreover, Leu et al. (2008) examine the association between subjective social status and mental health among Asian immigrants and investigate whether age at immigration is a potential moderator in the previous relationship. They find that higher ratings of subjective social status are associated

with lower change of mood dysfunction, a composite of anxiety and affective disorder symptoms. They obtain similar results, even if with lower effects, when consider as subjective social status a measure that compares participants with others in the community that are more important to them. They also show that, in both cases, neither education nor household income is a significant predictor of mental health. Many other works reveal significant effects of social status on health status; it seems, instead, that only few studies analyse the influence of health aspects on social status measures. Singh-Manoux et al. (2003), in addition to find that subjective social status is a strong predictor of ill-health, try to determine the most important variables which explain the subjective social status. Among the 16 predictor variables, they also consider psychological well-being measures (hopelessness, control at work, general life control, mental health, vigilance, hostility, and optimism). Despite their high and significant correlations with subjective social status, they do not result important determinants of social position. This study, indeed, shows that occupational position, education, household income, satisfaction with standard of living, and feeling of financial security regarding the future are the five most relevant predictors of subjective social status.

On the whole, then, existing empirical works dealing with the distinction between subjective and objective measures along various dimensions indicate that in many situations there are important factors at work that, by differentially shaping objective and subjective measures, drive a wedge between the two.

2.3. Personality Traits

Roberts (2009) famously defines personality traits as "the relatively enduring patterns of thoughts, feelings, and behaviours that reflect the tendency to respond in certain ways under certain circumstances". A growing number of studies sheds light on the importance of personality traits in a wide range of economic domains, including corporate financial policies (Malmendier et al., 2011), household financial behavior (Nyhus and Webley, 2001; Brown and Taylor, 2014; Gherzi et al., 2014; Bucciol and Zarri, 2015), academic achievement (Goldberg et al., 1998; Chamorro-Premuzic and Furnham, 2005; Heckman et al., 2006; Cunha et al., 2010), job performance (Barrick and Mount, 1991; Hogan and Holland, 2003; Roberts et al., 2007), career success (Boudreau et al., 2001; Caliendo et al., 2014), Body Mass Index and smoking habit (Rustichini et al., 2012).

In the last 20 years there has been a growing consensus in the psychology literature over the idea that there are five basic or primary personality traits which are invariant across age groups and cultures (Costa and McCrae, 1991). These so called "Big Five" traits are generally denoted with the terms Openness to Experience, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. In Table 1 we report a general definition of these five factors taken from the APA Dictionary of Psychology together with the personality facets associated with them in our dataset.

Table 1. The "Big Five" personality traits

Personality Trait	**Definition from APA Dictionary of Psychology**	**Facets**
Openness	"The tendency to be open to new aesthetic, cultural, or intellectual experiences."	Creative Imaginative Intelligent Curious Broad-minded Sophisticated Adventurous
Conscientiousness	"The tendency to be organized, responsible, and hardworking."	Organized Responsible Hardworking (Not) Careless Thorough
Extraversion	"An orientation of one's interests and energies toward the outer world of people and things rather than the inner world of subjective experience; characterized by positive affect and sociability."	Outgoing Friendly Lively Active Talkative
Agreeableness	"The tendency to act in a cooperative, unselfish manner."	Helpful Warm Caring Softhearted Sympathetic
Neuroticism	"A chronic level of emotional instability and proneness to psychological distress. Emotional stability is predictability and consistency in emotional reactions, with absence of rapid mood changes."	Moody Worrying Nervous (Not) Calm

Many empirical studies suggest that personality traits, along with other psychosocial variables, may have a strong link with health in old age, in terms of reporting physical symptoms, satisfaction with health, general well-being and healthy behavior (Booth-Kewley and Vickers, 1994; Costa and McCrae, 1984; Rodin and Salovey, 1989). Chapman et al. (2006) examine the association of personality traits with different aspects of health. They used the Medical Outcomes Survey Short Form-36 (SF-36), instrumental activities of daily living (IADLs), and the physical self-maintenance scale to assess different aspects of Health-Related Quality of Life (HRQOL). They discovered that a higher neuroticism level is associated with lower functioning on the IADLs and the physical self-maintenance scale, and worse HRQOL on the Social Functioning and Role Emotional subscales of the SF-36. Higher conscientiousness is associated with better HRQOL on the SF-36 Role Physical scale and better IADL function. In exploratory moderation analyses, a higher openness level diminishes the effect of medical burden on IADL impairment. Dubayova et el. (2009) explored whether neuroticism and extraversion contribute also to the variance in Quality of Life in patients with Parkinson's disease when controlling for age, functional status and disease duration. Their results for neuroticism are in line with studies focusing on other patient groups, including patients with cognitive impairments, chronic pain and depression. A high level of neuroticism predicts the use of ineffective passive coping strategies, and those patients reported worse perception of their health problems (Beekman et al., 1996; Hazebroek-Kampschreur et al., 2003; Goodwin and Gotlib, 2004). A higher score in extraversion, instead, is significantly associated with better emotional well-being in males, but surprisingly, with worse emotional well-being in females.

Other studies analyzed the association of both physical and mental health with personality. For example, Campbell et al. (2012) found that individuals report both better physical and mental health if they are extraverted, but less conscientious and less neurotic. This finding is generally consistent with previous research with the NEO Five-Factor Inventory, a short version of NEO Personality Inventory, that indicated that neuroticism is negatively associated with positive health (Debruin, 2006; Endemann and Zimmermann, 2009; Jerant et al., 2008; Lockenhoff et al., 2009). A growing body of work shows that personality traits also predict longevity. In particular, traits related to Conscientiousness, Openness and Agreeableness are associated with longer lifespans while those related to Neuroticism are linked to shorter lifespans (Martin et al., 2007; Kern and Friedman, 2008; Mroczek and Spiro, 2007).

Some studies document that Conscientiousness is linked to health-protective behaviors, including exercise, abstention from tobacco and lower levels of alcohol abuse and risky driving (Bogg and Roberts, 2004), and consumption of a lower fat diet (Goldberg and Strycker, 2002). Hong and Paunonen (2009) examined the relation between the "Big Five" personality traits and health-risk behaviors among university students, in order to predict tobacco and alcohol consumption, and speeding in the car. Their findings revealed that low Conscientiousness and low Agreeableness are associated with these potentially health damaging behaviors. Extraversion is additionally connected with alcohol use. Interaction effects are found between Conscientiousness and Agreeableness on smoking and, only for men, drinking. Korotkov (2008), using hierarchical multiple regression, also found that Openness, Extraversion, and Neuroticism moderate the relationship between stress and health behavior, and that, under high stress, conscientious individuals tend to engage in more health behaviors. Moreover, Hampson and Goldberg (2006), exploring the influence of childhood personality traits on some health behaviors in midlife, found that childhood Conscientiousness is associated with less adult smoking and better adult self-rated health. Moreover, both the initial level and the growth in hostility, a facet of Neuroticism, during elementary school predict cigarette, alcohol and marijuana use in high school, while sociability, a facet of Extraversion, predicts drinking but not smoking (Hampson et al., 2010). Other research confirmed the association of the "Big Five" traits with some self-reported health behaviors and health outcomes among adults (Booth-Kewly and Vickers, 1994; Ingledew and Brunning, 1999). In particular, Conscientiousness is associated with less tobacco use (Clark and Watson, 1999; Tucker et al., 1995), reduced exposure to environmental tobacco smoke (Hampson et al., 2000), and less alcohol consumption (Tucker et al., 1995). Extraversion, instead, is associated with higher levels of smoking and physical exercise (Gilbert, 1995; Courneya and Rhodes, 2003).

Previous empirical studies examined also the relationship between the Big Five model and other economic variables and life outcomes. Goldberg et al. (1998) find that traits such as Openness and Conscientiousness are particularly important in determining how many total years of education individuals complete in their lifetimes. Several papers have shown that facets of Conscientiousness (self-control and attention) and traits related to Neuroticism (internal locus of control and self-esteem) predict successful graduation from high school (Bowman and Matthews, 1960; Hathaway et al., 1969; Janosz et al., 1997; Heckman et al., 2006; Cunha et al., 2010). Recent evidence indicates also that Neuroticism, defined as a chronic level

of emotional instability and proneness to psychological distress, negatively impacts educational attainment (Almlund et al., 2011).

A growing number of works shows that personality is associated with labor market outcomes. Conscientiousness is linked to job performance and wage (Nyhus and Pons, 2005; Salgado, 1997; Hogan and Holland, 2003) and its importance does not vary much with job complexity (Barrick and Mount, 1991). Facets related to Emotional Stability, the opposite of Neuroticism, are also important for labour market success (Gottschalk, 2005; Almlund et al., 2011). Previous research has provided some support also to the relation between personality and the duration of unemployment. Gallo et al. (2003) find that an internal locus of control is associated with a higher probability of reemployment. Similarly, the studies of Caliendo et al. (2010) and McGee (2010) support the previous result underlining the marginal benefit of a higher locus of control while Rustichini et al. (2012) detect a strong positive effect of Openness on job persistence. Moreover, personality traits affect occupational choice. Conscientiousness, locus of control and self-esteem predict sorting into occupations (Barrick and Mount, 1991; Ham et al., 2009; Heckman et al., 2006). Analysing eighteen occupational categories, Cobb-Clark and Tan (2011) report that for, men, an increase in Agreeableness is associated with a decrease in the probability of being a manager and a business professional; in contrast, for women, an increase in Openness is associated with an increase in being a manager. Furthermore, Boudreau et al. (2001) find that Extraversion and Neuroticism influence career success respectively with a positive and a negative effect, while Conscientiousness and Agreeableness have a negative impact on job remuneration. Similar results are obtained by Caliendo et al. (2014) on a sample of German households. They show that Openness and Extraversion significantly affect entry into self-employment in contrast to the influence of Agreeableness. Next, they document that the explanatory power of personality variables is comparable to that of education, which is one of the key determinants of entrepreneurship.

Several articles focus on the relationship between personality traits and earnings. For instance, Drago (2011) shows that individuals' self-esteem, defined as the perception that individuals have about their own ability, has a large impact on their earnings. Similarly, Proto and Rustichini's (2015) results reveal that personality traits such as Openness, Conscientiousness and Extraversion significantly increase income. Mueller and Plug (2006) explore how individual characteristics affect the earnings of a large group of men and women who graduated from Wisconsin high school in 1957 and were re-interviewed in 1992. They find that, among men, greater levels of earnings are associated with antagonism, related to

Agreeableness, emotional stability, related to Neuroticism, and Openness while, among women, they are associated with Conscientiousness and Openness.

Previous works also focus on the impact of personality traits on financial behaviour. Nyhus and Webley (2001) report that more emotionally stable and introverted individuals save more and borrow less, whereas more agreeable persons do the opposite. Gherzi et al. (2014) show that personality and market returns influence investors' portfolio monitoring behaviour. Indeed, investors behave like hyper-vigilant meerkats increasing their portfolio monitoring following both positive and daily negative market returns. Moreover, they find that Neuroticism moderates the pattern of portfolio monitoring. Harrison et al.'s (2015) cross-national study reveals, instead, that factors such as Anxiety, Utility-for-Lifestyle, Utility-for-Investment and Awareness account for a lot of the variation in students' attitudes to their debt incurred while studying. Brown and Taylor (2014) investigate the link between household finances and personality traits, detecting a relevant effect for Extraversion. Also Bucciol and Zarri (2015) deal with personality traits and individual portfolio decisions: they show that lower Agreeableness and higher Cynical Hostility predict higher willingness to take risks. Other studies, instead, document that Neuroticism affects attitude to risk, decreasing the propensity to take risks (Hirsh et al., 2008; Borghans et al., 2009; Anderson et al., 2011; Becker et al., 2012). Moreover, results in Dohmen et al. (2010) indicate a significant relationship among risk preferences, Openness and Agreeableness while Becker et al.'s (2012) findings suggest a positive link between risk attitude and Extraversion.

Rustichini et al. (2012) focus on the relationship between personality traits and economic preferences, and find that Extraversion modulates the aversion to ambiguity, reducing the specific aversion to options where the probability of outcomes is not well-defined. A possible interpretation is that Extraversion is associated with a more optimistic view which leads individuals to expect the more favourable option because of a greater sensitivity to wins (Sharpe et al., 2011). With regard to time preferences, instead, several studies suggest positive correlations between delay discounting and questionnaire measures of impulsiveness, which is considered the opposite of Conscientiousness (Hinson et al., 2003; Ostaszewski, 1996; Richards et al., 1999; Swann et al., 2002). Other findings also suggest positive correlations between delay discounting and Extraversion (Hirsh et al., 2008; Ostaszewski, 1996). Almlund et al. (2011), instead, report that time preference is significantly correlated only to Agreeableness; this finding is confirmed by Anderson et al.'s (2011) study concerning delay acceptance in a truck-driver sample. Evidence on the link between social preferences and

personality is stronger. Dohmen et al. (2008) show that trust is related positively to Agreeableness and Openness, and negatively to Conscientiousness and Neuroticism; positive reciprocity is, instead, positively associated with all five personality traits while negative reciprocity is linked negatively to Conscientiousness and Extraversion, and positively to Neuroticism. In addition, Ben-Ner and Kramer (2010) shed light on different links between Extraversion and behavior in the dictator game, which can be interpreted as a measure of altruism, depending on the type of relationship between subjects examined.

Few studies, instead, investigate the relationship between social status and psychological factors. Anderson et al. (2001), considering three different social groups (fraternity, sorority, and dormitory), find that high Extraversion predicts greater social status for both genders while high Neuroticism predicts lower social status for men. The link of personality traits with social status is clear in Bucciol et al.'s (2015) study. The authors compare two measures of social status (one subjective and one objective), finding high correlation between them and a relevant relationship with all the Big Five traits. Then, as many works show, personality traits are associated to several economically relevant variables. The following analysis aims to shed light the role of personality traits in explaining the gap between objective and subjective measures of health and social status. In the next sections we illustrate our data and analysis on the relationships between personality characteristics and objective and subjective measures of health and then the link between these dimensions considering also social status.

3. Data

We use data from the US *Health and Retirement Study* (HRS), a biannual panel survey on a representative national sample of the American population aged 50 or more. HRS was designed to obtain detailed information regarding the dynamics of retirement and how retirement interacts with health, health insurance, and economic well-being. The survey provides comprehensive and detailed information on a wide range of domains such as demographics, health status, housing, family structure, employment history, disability and net worth, creating a bio-socioeconomic picture of the cohort under study. The number of individuals and households interviewed increase over the years as more people become eligible and the ones that are already in the survey are followed in time.

HRS is characterized by a core part available and stable since the introduction of the survey (1992), plus further sections added over time. For the aim of this study we focus our attention on the "psychosocial and lifestyle" section. This module was introduced in 2004, including personality variables since 2006. For this reason, the analysis presented in the following sections considers only individuals interviewed in the years 2006, 2008, 2010 and 2012. Moreover, as a sample restriction we exclude from the analysis individuals aged more than 80, for two reasons: the older elderly are deliberately oversampled in the HRS design, and we are concerned they could find it difficult to understand the questions and report the correct answers. Therefore, we focus on individuals with full information on all the variables under investigation and in the 50-80 age range, which is important also because individuals in this age group have been shown to have stable personality traits (Cobb-Clark and Schurer, 2012; Terracciano et al., 2006). Considering these restrictions, we end up having 16,558 observations on 10,107 households.

3.1. Summary Statistics

The main variables for this study concern objective and the subjective status. In particular, based on available data, we focus our attention on health and social status. Therefore, the four target variables for our analysis are *Subjective Health Status* (SHS), *Objective Health Status* (OHS), *Subjective Social Status* (SSS), and *Objective Social Status* (OSS).

The first one regards the subjective perception of an individual's health status. This variable is related to the following question:

"Would you say your health is excellent, very good, good, fair, or poor?"

Therefore, the variable SHS takes five values, from 1 to 5, where the greatest corresponds to the best health status. In order to compare this subjective evaluation with a reliable objective measure of health status, the variable OHS is also considered. *Objective Health Status* is an index created from a factor analysis with polychoric correlation, obtained considering information about some chronic diseases and some physical difficulties. This index is built following Poterba et al. (2013), who used the same HRS data. The variables taken into account to make this index are all dummy variables equal to 1 if the respondent has the specific health problem or experience; the corresponding questions in HRS are listed in Table 2.

Table 2. Questions for building objective health index

Question in HRS
G001: difficulty with walking several blocks
G004: difficulty with sitting for about two hours
G005: difficulty with getting up from a chair after sitting for long periods
G006: difficulty with climbing several flights of stairs without resting
G008: difficulty with stooping, kneeling, or crouching
G009: difficulty with reaching or extending your arms above shoulder level
G010: difficulty with pulling or pushing large objects
G011: difficulty with lifting or carrying weights
G012: difficulty with picking up a dime from a table
G014: difficulty with dressing
G016: difficulty with walking across a room
G021: difficulty with bathing or showering
G023: difficulty with eating
G025: difficulty with getting in or out of bed
G030: difficulty with using the toilet
M002: health problems limit work
C002: with respect to the previous period, now health is worse
C018: ever experienced cancer
C005: ever experienced high blood pressure
C010: ever experienced diabetes
C030: ever experienced chronic lung disease
C036: ever experienced heart problems
C053: ever experienced stroke
C065: ever experienced emotional, nervous, or psychiatric problems
C070: ever experienced arthritis
N099: ever experienced hospital stay in the last two year
N114: ever experienced nursing home stay in the last two years

The variable *Subjective Social Status* (SSS), instead, refers to the subjective evaluation of an individual's own position on the social ladder. This variable originates from the following question:

"Think of this ladder as representing where people stand in our society. At the top of the ladder are the people who are the best off - those who have the most money, most education, and best jobs. At the bottom are the people who are the worst off - who have the least money, least education, and the worst jobs or no jobs. The higher up you are on this ladder, the closer you are to the people at the very top and the lower you are, the closer you are to the people at the very bottom."

The answer has to be provided by drawing a cross on one of the ten rungs in a picture of a ladder, giving the individuals a simple, intuitive and clear way to immediately understand what the question asks, by somehow visualizing the entire society and her own position at the same time. The question underlines three objective dimensions – money, education and jobs – that we have considered as our natural departure point to build an objective measure of socio-economic status, the *Objective Social Status* (OSS). As OHS, this index is drawn from a factor analysis with polychoric correlation, created considering the degree of education (college, high school, lower), and the logs of income, financial and real wealth[2]. Moreover, we rescaled the SSS to have the same range (1-5) as SHS, and the two objective indexes OHS and OSS to have the same corresponding average as the two subjective variables.

Other important variables for our aim are those related to the personality traits. The Big Five personality traits are built as five indexes (openness, conscientiousness, extraversion, agreeableness, and neuroticism) from the answers to a question asking to report how well each of 26 adjectives fits the respondent. This procedure is taken from Smith et al. (2013). For details see Appendix A.2.

Table 3 reports summary statistics on the variables used in this analysis. We divide the explanatory variables in two groups: control and personality variables. The first one includes, in addition to basic demographic information, also experienced past traumas because we believe that negative life events may bias both health and social subjective status.

Table 3. Summary statistics (15,781 observations)

Variable	Mean	Std. Dev.	Min.	Max.
Control variables				
Age/10	6.674	0.758	5	8
Female	0.593	0.491	0	1
Non-white	0.152	0.359	0	1
Immigrate	0.083	0.276	0	1
Married	0.682	0.466	0	1
Employee	0.300	0.458	0	1
Self-employed	0.092	0.289	0	1
Life trauma	0.170	0.169	0	1
Early life trauma	0.130	0.212	0	1

[2] To be precise, the HRS question on the social ladder refers to ‘‘the most money, most education, and best jobs” and ‘‘the least money, least education, and the worst jobs or no jobs”. While it is easy to create a ranking for education and money, the definition of ‘‘best jobs” is highly subjective. For this reason, we decided to build the OSS index disregarding information on jobs.

Year 2006	0.284	0.451	0	1
Year 2008	0.259	0.438	0	1
Year 2010	0.249	0.432	0	1
Year 2012	0.208	0.406	0	1
Personality variables				
Openness	0.651	0.182	0	1
Conscientiousness	0.690	0.132	0	1
Extraversion	0.735	0.184	0	1
Agreeableness	0.845	0.158	0	1
Neuroticism	0.444	0.157	0	1
Objective and subjective variables				
Objective Health Status (OHS)	3.304	0.637	1.218	4.012
Subjective Health Status (SHS)	3.304	1.047	1	5
Objective Social Status (OSS)	3.445	0.841	0.152	5.571
Subjective Social Status (SSS)	3.445	0.760	1	5

Table 4 shows the polychoric correlation of each variable with the subjective and the objective indexes. We can observe that the two measures of health status are highly positively correlated (0.615); similarly, also the two measures of social status have a high positive correlation (0.393).

Table 4. Correlations with objective and subjective indexes

Variable	Correlation with			
	OHS	SHS	OSS	SSS
Control variables				
Age/10	-0.146	-0.077	0.058	0.066
Female	-0.144	0.009	-0.120	-0.098
Non-white	-0.123	-0.226	-0.408	-0.161
Immigrate	0.025	-0.144	-0.200	-0.072
Married	0.164	0.155	0.387	0.207
Employee	0.336	0.224	0.029	0.019
Self-employed	0.252	0.213	0.216	0.156
Life trauma	-0.198	-0.149	-0.083	-0.081
Early life trauma	-0.130	-0.128	-0.129	-0.154
Year 2006	0.064	0.072	0.062	0.052
Year 2008	-0.001	-0.042	0.030	-0.020
Year 2010	-0.016	0.028	-0.012	0.007
Year 2012	-0.054	-0.068	-0.087	-0.047
Personality variables				
Openness	0.148	0.224	0.144	0.283
Conscientiousness	0.188	0.240	0.161	0.200
Extraversion	0.164	0.247	0.071	0.235
Agreeableness	0.020	0.112	0.018	0.095
Neuroticism	-0.183	-0.204	-0.130	-0.174
Objective and subjective variables				
Objective Health Status (OHS)	1	0.614	0.310	0.260
Subjective Health Status (SHS)	0.614	1	0.355	0.310
Objective Social Status (OSS)	0.310	0.355	1	0.394
Subjective Social Status (SSE)	0.260	0.310	0.394	1

Figure 1 displays the distribution of the subjective and objective health indexes. We can immediately see that in both cases the modal value is 4; for OHS this value represents the maximum value while for SHS we observe also extremely high self-perceived health status with the maximum in 5. Similarly, Figure 2 shows the distribution of the subjective and the objective social status highlighting the larger skewness of OSS with respect to SSS. Finally, Figure 3 displays the relation between the objective and the subjective indexes, for both health and social status.

Figure 1. Distribution of objective and subjective health status

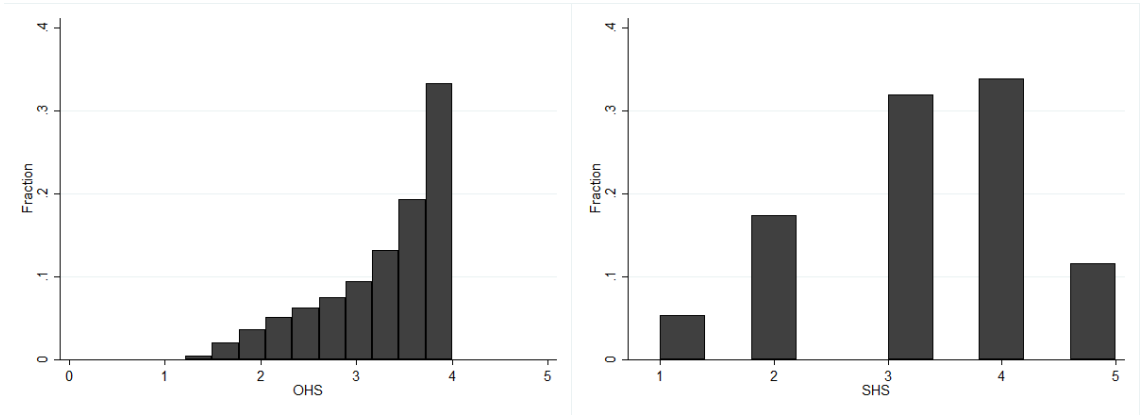


Figure 2. Distribution of objective and subjective social status

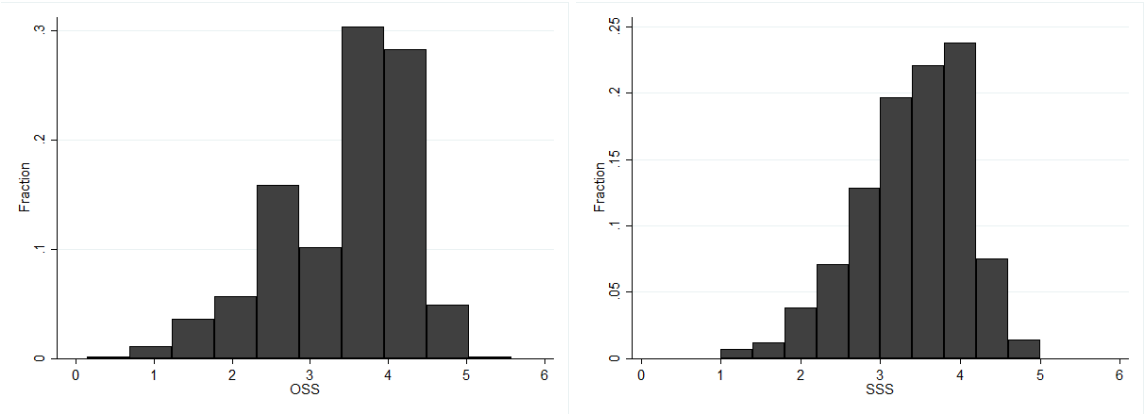
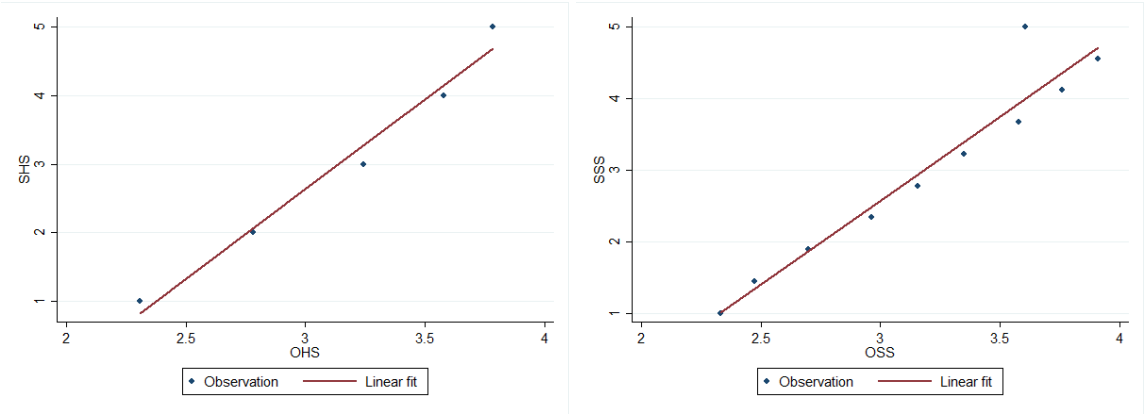


Figure 3. Linear relation between objective and subjective indexes



4. Empirical Analysis

In order to better understand the intertwined net of relations between the various dimensions that we have seen in Section 2 and both objective and subjective measures, we have estimated some regression models with different specifications. In Section 4.1, we focus our attention on subjective health status; we study first the connection of SHS with basic demographic information, then its relationship with the objective index OHS, and finally its link with personality traits. Therefore, our complete model is the following:

$$SHS = \alpha + \beta_1 OHS + \beta_2 X_{control} + \beta_3 X_{personality} + \varepsilon$$

The other aim of this analysis is to study together subjective and objective health and subjective and objective social status and analyse effects and interactions between them and personality traits. For this purpose, in Section 4.2 we study the relationship between the subjective and the objective indexes estimating a bivariate model, carrying out both an OLS regression and an IV regression. Similarly, in Section 4.3 we carry out the same previous regressions adding personality variables. Therefore, our complete bivariate model has SHS and SSS as dependent variables and explores the link between them and the following explanatory variables:

$$\begin{cases} SHS = \alpha_H + \beta_{1H} OHS + \beta_{2H} OSS + \beta_{3H} X_{control} + \beta_{4H} X_{personality} + \varepsilon_H \\ SSS = \alpha_S + \beta_{1S} OHS + \beta_{2S} OSS + \beta_{3S} X_{control} + \beta_{4S} X_{personality} + \varepsilon_S \end{cases}$$

Finally, in Section 4.4, we add among the explanatory variables also the other subjective measure and we carry out an IV regression adjusting the possible endogeneity of both objective and subjective variables.

Although our dataset presents a panel structure, we have just one or two observations per household. This limited number of repeated observations creates small variability within the same household, and consequently it prevents us from using specific models for panel data. For this reason, we carry out a cross-sectional analysis with standard errors clustered at the household level to account for possible correlations across observations from the same household.

4.1. Subjective Health Status

As we have seen in Section 2, an individual's health status is known to be associated to many variables. The objective measure is a plausible predictor of the subjective health perception; this natural dimension as starting point to measure health status might be significantly altered by own characteristics. Indeed, individuals could react positively or negatively to the same disease or have an optimistic or pessimistic view of the reality; therefore, personality could significantly modify the individuals' perception of their own health status. In Table 5, we report the results of OLS and IV regressions considering as dependent variable SHS. It is plausible, indeed, that there exists reverse causality between objective and subjective measures. Moreover, it is not possible to rule out that there are omitted variables which influence both health status measures. Therefore, the results of the OLS regression in Column 2 may suffer from a bias due to the endogeneity of the OHS variable. For this reason in Columns 3 and 4 we report the IV estimates based on the approach of Lewbel (2012). This technique allows to artificially create instruments for the first stage equation, and it is useful when the IV model otherwise does not meet the order condition for identification – that is, as in our case, when there are no valid instruments available. For details about this method, see Appendix A.3.

We first consider only the control variables. We can observe from Column 1 that most variables are strongly correlated with SHS. Better educated and richer individuals, females, employees and self-employed workers declare very good health, while non-white and immigrated individuals and those who suffered from some sort of trauma during life report a worse health status. In Column 2, Table 5, we add the objective measure of health status and we find that it has a positive and strong effect on SHS. The other variables have similar influence to the previous specification. In Column 3, Table 5, we report the results of an IV regression carried out considering the specification in Column 2; as we can observe, most of the results are confirmed. Finally, in Column 4, Table 5, we add personality variables to the prior specification. As we can observe, the results about the variables already used in Column 3 are similar to the previous ones, for both the size and the significance of the effects. More interestingly, we find that all personality variables are strongly correlated with the subjective health status. In particular, individuals who are more open, conscientious and extraverted declare a higher health status while those who are more agreeable and neurotic report lower health status.

Table 5. Objective and subjective health status

	(1)	(2)	(3)	(4)
Dependent Variable	SHS	SHS	SHS	SHS
Method	OLS	OLS	IV	IV
OHS		0.880***	0.781***	0.666***
		(0.012)	(0.033)	(0.033)
Openness				0.186***
				(0.051)
Conscientiousness				0.519***
				(0.066)
Extraversion				0.609***
				(0.053)
Agreeableness				-0.109*
				(0.058)
Neuroticism				-0.657***
				(0.051)
Age/10	0.004	0.047***	0.042***	0.014
	(0.014)	(0.011)	(0.011)	(0.011)
Female	0.112***	0.203***	0.193***	0.174***
	(0.019)	(0.016)	(0.016)	(0.016)
Non-white	-0.135***	-0.118***	-0.120***	-0.167***
	(0.026)	(0.022)	(0.022)	(0.022)
Immigrate	-0.141***	-0.239***	-0.228***	-0.179***
	(0.035)	(0.030)	(0.030)	(0.029)
Married	0.008	0.011	0.010	0.017
	(0.021)	(0.018)	(0.018)	(0.017)
Employee	0.361***	0.102***	0.131***	0.134***
	(0.021)	(0.018)	(0.020)	(0.020)
Self-employed	0.389***	0.155***	0.182***	0.153***
	(0.031)	(0.026)	(0.028)	(0.027)
High School	0.191***	0.109***	0.118***	0.101***
	(0.023)	(0.019)	(0.020)	(0.019)
College	0.279***	0.171***	0.183***	0.150***
	(0.029)	(0.024)	(0.024)	(0.024)
Ln (income)	0.069***	0.043***	0.046***	0.041***
	(0.009)	(0.007)	(0.007)	(0.007)
Ln (financial wealth)	0.036***	0.018***	0.020***	0.019***
	(0.002)	(0.002)	(0.002)	(0.002)
Ln (real wealth)	0.034***	0.015***	0.017***	0.014***
	(0.003)	(0.003)	(0.003)	(0.003)
Life trauma	-0.601***	-0.128***	-0.181***	-0.237***
	(0.053)	(0.045)	(0.048)	(0.047)
Early life trauma	-0.224***	-0.058*	-0.077**	-0.050
	(0.042)	(0.034)	(0.035)	(0.034)
Year 2008	-0.085***	-0.080***	-0.080***	-0.081***
	(0.021)	(0.018)	(0.018)	(0.017)
Year 2010	0.005	0.016	0.015	0.015
	(0.016)	(0.015)	(0.015)	(0.015)

Year 2012	-0.055**	-0.056***	-0.056***	-0.046**
	(0.023)	(0.019)	(0.019)	(0.019)
Constant	1.785***	-0.803***	-0.512***	-0.376**
	(0.134)	(0.114)	(0.144)	(0.152)
Observations	15,781	15,781	15,781	15,781
R-squared	0.182	0.410	0.407	0.430

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

4.2. Link between Objective and Subjective Status

As we have seen in Section 2, the relation between the subjective and the objective status is known to be associated to many characteristics with regard to multiple domains. In the following analysis we focus on health and social status indexes and their link with basic demographic information.

In Table 6 we report our results: in Columns 1 and 2 we consider an OLS regression while in Columns 3 and 4 we carry out an IV regression based on the previously illustrated approach suggested by Lewbel (2012). Indeed, because of the estimation of a bivariate model, both subjective variables could be affected by both objective indexes. Moreover, as before, it is not possible to rule out that there are omitted variables which influence both objective and subjective measures. Therefore, the results of OLS regressions in Columns 1 and 2 may suffer from a bias due to the endogeneity of the OHS and OSS variables.

Table 6. Objective and subjective indexes

	(1)	(2)	(3)	(4)
Dependent Variable	SSS	SHS	SSS	SHS
Method	OLS	OLS	IV	IV
OHS	0.178***	0.885***	0.221***	0.805***
	(0.010)	(0.011)	(0.030)	(0.034)
OSS	0.287***	0.192***	0.114***	0.204***
	(0.008)	(0.009)	(0.024)	(0.028)
Age/10	0.079***	0.038***	0.101***	0.034***
	(0.008)	(0.010)	(0.009)	(0.010)
Female	-0.028**	0.195***	-0.028**	0.187***
	(0.012)	(0.014)	(0.012)	(0.014)
Non-white	0.033**	-0.116***	-0.061***	-0.119***
	(0.016)	(0.019)	(0.020)	(0.024)
Immigrate	-0.013	-0.240***	-0.066***	-0.232***
	(0.020)	(0.024)	(0.022)	(0.025)
Married	0.070***	0.014	0.151***	0.016

	(0.013)	(0.015)	(0.017)	(0.019)
Employee	0.014	0.122***	0.025	0.147***
	(0.014)	(0.016)	(0.017)	(0.019)
Self-employed	0.086***	0.175***	0.123***	0.198***
	(0.020)	(0.024)	(0.022)	(0.026)
Life trauma	-0.059*	-0.109***	-0.082**	-0.153***
	(0.033)	(0.039)	(0.037)	(0.043)
Early life trauma	-0.246***	-0.076**	-0.298***	-0.094***
	(0.026)	(0.031)	(0.028)	(0.033)
Year 2008	-0.052***	-0.086***	-0.051***	-0.087***
	(0.015)	(0.018)	(0.015)	(0.018)
Year 2010	-0.021	0.021	-0.033**	0.020
	(0.015)	(0.018)	(0.015)	(0.018)
Year 2012	-0.054***	-0.058***	-0.077***	-0.059***
	(0.016)	(0.019)	(0.017)	(0.019)
Constant	1.369***	-0.618***	1.655***	-0.365***
	(0.070)	(0.082)	(0.117)	(0.136)
Observations	15,781	15,781	15,781	15,781
R-squared	0.190	0.407	0.163	0.405

Cluster standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

As we can observe from Column 1 in Table 6, both objective indexes, OHS and OSS, have a positive and significant effect on the dependent variable SSS; the effect is greater for OSS, as expected. Moreover, most control variables are significant: older and married individuals, non-white persons and self-employed workers report themselves higher in the ladder. On the contrary, females and those who suffered from some sort of trauma during life, in particular during childhood or adolescence, reveal lower SSS. Similarly, in Column 2 of Table 6 we have the estimates of the same model considering SHS instead of SSS as dependent variable. Also in this case both objective indexes are positive and significant; in particular, we can observe that the effect of OHS on SHS is greater than the effect of OSS on SSS, as previous correlation already revealed. With regard to the control variables, older individuals, females, employees and self-employed workers declare very good health, while non-white and immigrated individuals report a worse health status. Moreover, past life traumas have a negative effect on the individual perception of health status; we can note that this influence is smaller than its effect on the subjective evaluation on the social ladder. In both models the year of the survey is also relevant and has a negative effect on both subjective variables.

Most of these results are confirmed also when we carry out the IV regression. As we can see in Columns 3 and 4, Table 6, both objective indexes have positive and significant effects on both subjective health and social status. In addition, both the sign and the significance of the

effects of control variables are similar to OLS regressions, with two exceptions: when we consider the social status model the variable *Non-white* changes sign while the variable *Immigrate* becomes significant.

4.3. The Role of Personality Traits

It is plausible that some characteristics of personality could affect both subjective health and social status. For example, Jerram and Coleman (1999) found that Neuroticism is associated with a number of reported medical problems, negatively perceived health status and frequency of visits to the general practitioner; Extraversion is linked with positive health behaviours and Openness to experience and Agreeableness are connected with positive health perceptions. Other studies, instead, showed that personality traits could influence both actual and perceived social status. For instance, more open people may be more active and successful when searching for a job (Barrick and Mount, 1991; Boudreau et al., 2001) while more conscientious individuals may be more committed to their studies, allowing them to obtain higher education (Noftle and Robins, 2007) and achieve academic and vocational success (Jensen, 1998).

Taking into account these evidences, we add personality variables to the prior specification. Similarly to the previous table, in Columns 1 and 2 of Table 7 we consider an OLS regression while in Columns 3 and 4 of Table 7 we carry out an IV regression. In addition to the previous reasons, it is plausible to use instrumental variables also because both objective and subjective status could be affected by personality traits as the study of Bucciol et al. (2015) about social status and personality traits suggests.

Table 7. Subjective status and personality traits

	(1)	(2)	(3)	(4)
Dependent Variable	SSS	SHS	SSS	SHS
Method	OLS	OLS	IV	IV
OHS	0.110***	0.814***	0.141***	0.682***
	(0.009)	(0.011)	(0.028)	(0.034)
OSS	0.254***	0.165***	0.085***	0.174***
	(0.007)	(0.009)	(0.022)	(0.027)
Openness	0.733***	0.244***	0.818***	0.252***
	(0.037)	(0.044)	(0.039)	(0.046)
Conscientiousness	0.166***	0.445***	0.265***	0.526***
	(0.048)	(0.058)	(0.053)	(0.063)

Extraversion	0.437***	0.518***	0.404***	0.576***
	(0.039)	(0.046)	(0.041)	(0.049)
Agreeableness	-0.189***	-0.079	-0.221***	-0.121**
	(0.043)	(0.052)	(0.045)	(0.053)
Neuroticism	-0.454***	-0.580***	-0.526***	-0.665***
	(0.035)	(0.043)	(0.040)	(0.048)
Age/10	0.072***	0.018*	0.092***	0.010
	(0.008)	(0.010)	(0.009)	(0.010)
Female	-0.028**	0.183***	-0.025**	0.171***
	(0.012)	(0.014)	(0.012)	(0.014)
Non-white	-0.016	-0.158***	-0.109***	-0.173***
	(0.016)	(0.019)	(0.020)	(0.023)
Immigrate	0.021	-0.199***	-0.025	-0.184***
	(0.019)	(0.023)	(0.021)	(0.025)
Married	0.083***	0.020	0.162***	0.027
	(0.012)	(0.015)	(0.016)	(0.019)
Employee	0.006	0.111***	0.016	0.149***
	(0.013)	(0.016)	(0.015)	(0.018)
Self-employed	0.029	0.134***	0.061***	0.168***
	(0.019)	(0.023)	(0.021)	(0.025)
Life trauma	-0.150***	-0.154***	-0.184***	-0.225***
	(0.032)	(0.039)	(0.036)	(0.042)
Early life trauma	-0.209***	-0.042	-0.254***	-0.067**
	(0.025)	(0.031)	(0.027)	(0.032)
Year 2008	-0.052***	-0.086***	-0.051***	-0.087***
	(0.014)	(0.017)	(0.014)	(0.017)
Year 2010	-0.023	0.021	-0.035**	0.018
	(0.014)	(0.017)	(0.015)	(0.018)
Year 2012	-0.047***	-0.050***	-0.069***	-0.051***
	(0.015)	(0.019)	(0.016)	(0.019)
Constant	1.217***	-0.667***	1.494***	-0.233*
	(0.076)	(0.092)	(0.118)	(0.140)
Observations	15,781	15,781	15,781	15,781
R-squared	0.255	0.434	0.230	0.429

Cluster standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

As we can observe in Column 1 of Table 7, both objective indexes still have positive and significant effects on SSS although their influence is smaller than what we observe in the previous specification in Column 1, Table 6. We also find that all personality variables are strongly correlated with the subjective social status. In particular, individuals who are more open, conscientious and extraverted declare a higher social status while those who are more agreeable and neurotic report lower social status. Moreover, the level of SSS increases with age and is higher for married individuals, while it falls for females and those who suffer from life traumas. In Column 2 in Table 7 we consider, instead, SHS as dependent variable. We can

observe that both objective indexes increase significantly the individual perception of health status. Also in this case, as expected, we find that the personality of an individual is important to characterise her own status evaluation. The subjective health status, indeed, is positively correlated with such personality traits as openness, conscientiousness and extraversion and negatively correlated with neuroticism. In addition, we find that older individuals, females, employees and self-employed workers declare very good health, while non-white and immigrated persons report worse health status.

As we can see in Columns 3 and 4 of Table 7, most of the previous results are confirmed when we carry out the IV regression. In both models all personality variables are strongly linked to the subjective indexes. In particular, these variables have the same sign but greater effects with respect to the OLS regression. The correlation of the remaining characteristics is similar to the previous regressions with the exception of *Age* that is now insignificant for SHS and *Early life trauma* that has now a negative and significant effect on SHS. Moreover, we can observe that, in comparison with the results in Columns 1 and 2, the effect of OHS increases for SSS and decreases for SHS; on the contrary, the effect of OSS decreases for SSS and increases for SHS.

Our study focuses on two distinct domains, that is health and social status; in both cases we find that the effects of personality traits are very strong. In particular, both the sign and the significance of the effects of four personality variables are the same for the two subjective measures of health and social status. Moreover, it seems that the effects of *Openness* and *Agreeableness* are greater for SSS while the effects of *Conscientiousness*, *Extraversion* and *Neuroticism* are stronger for SHS. In order to evaluate whether the influence of personality traits changes significantly between health status and social status, we run a test on coefficients of our bivariate model. We find that *Openness* and *Agreeableness* have stronger effects on SSS (F=76.95 with p-value=0.000 and F=2.83 with p-value=0.092, respectively) while *Conscientiousness* and *Neuroticism* have greater effects on SHS (F=14.64 with p-value=0.000 and F=5.57 with p-value=0.018, respectively).

These results provide further evidence that personality and objective and subjective measures are strongly intertwined, so that omitting one of them risks introducing a significant bias in the analysis.

4.4. The Influence of Subjective Components

As we have seen in Section 2, health and social status are closely related each other; in particular, subjective social status influences self-rated health, similarly subjective health status could affect social perceptions. Then, each subjective component might play an important role in explaining the other subjective measure. For this reason, we add in our bivariate model the subjective measures and we carry out an IV regression adjusting the possible endogeneity of both objective and subjective variables. Moreover, this alternative specification could partially solve the problem of omitted variables; indeed, the subjective component, included among the explanatory variables, could capture the same omitted variables which might affect the dependent variable, subjective too. Finally, this model could verify whether personality has still strong effects, despite the presence of the subjective measure, likewise affected by individual characteristics. In Table 8 we report our results.

Table 8. Influence of subjective measures

	(1)	(2)
Dependent Variable	SSS	SHS
Method	IV	IV
OHS	0.068*	0.678***
	(0.039)	(0.034)
OSS	0.067***	0.165***
	(0.024)	(0.026)
SHS	0.111***	
	(0.043)	
SSS		0.091**
		(0.038)
Openness	0.789***	0.177***
	(0.040)	(0.057)
Conscientiousness	0.203***	0.497***
	(0.057)	(0.063)
Extraversion	0.338***	0.536***
	(0.048)	(0.051)
Agreeableness	-0.206***	-0.098*
	(0.045)	(0.054)
Neuroticism	-0.449***	-0.612***
	(0.050)	(0.052)
Age/10	0.091***	0.002
	(0.009)	(0.011)
Female	-0.044***	0.174***
	(0.014)	(0.014)
Non-white	-0.088***	-0.162***
	(0.021)	(0.024)

Immigrate	-0.004	-0.183***
	(0.022)	(0.025)
Married	0.158***	0.012
	(0.016)	(0.020)
Employee	-0.002	0.145***
	(0.017)	(0.018)
Self-employed	0.041*	0.160***
	(0.022)	(0.025)
Life trauma	-0.156***	-0.204***
	(0.037)	(0.043)
Early life trauma	-0.245***	-0.043
	(0.027)	(0.033)
Year 2008	-0.042***	-0.083***
	(0.015)	(0.017)
Year 2010	-0.037**	0.021
	(0.015)	(0.018)
Year 2012	-0.063***	-0.045**
	(0.016)	(0.019)
Constant	1.507***	-0.396***
	(0.117)	(0.151)
Observations	15,781	15,781
R-squared	0.232	0.432

Cluster standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

As we can observe from Table 8, in both cases the subjective measures erode to a small extent the effects of the other variables. Indeed, the two objective indexes still have a positive and a significant influence on both dependent variables, and all personality traits still play an important role on the own status evaluations. However, we can note that the effects of both objective indexes are smaller than those in Column 3 and 4, Table 7, resulting without including subjective measures in the model. Moreover, with respect to the previous results, unlike OSS, OHS loses significance on the model with SSS as dependent variable, while both objective measures have the same significance in the model with SHS as dependent variable. In addition, SHS has a stronger positive effect on SSS than SSS on SHS, as expected since the objective counterpart has a smaller influence in the first case and a greater impact in the second one. With regard to personality variables, we find that all effects slightly decrease, but have the same significance and the same sign as the previous results, with the exception of the variable *Agreeableness* which loses significance in the model with SHS as dependent variable. Finally, the effects of control variables are similar to the previous regression. Then, despite the presence of the subjective component, these results underline further the relevant role of personality traits and the importance of individual characteristics to explain the gap between

objective and subjective measures.

5. Conclusion

Prior research has found that, in various situations, there exists a persistent gap between objective and subjective measures. Moreover, previous works have highlighted the importance of personality in a wide range of economic domains. Using data from the US Health and Retirement Study, this essay aimed to investigate whether personality characteristics affect the relationship between the objective and the subjective measures of health and social status.

Our data suggest that the objective and the subjective measures of health status are highly positively correlated; similarly, also the two indicators of social status are strongly positively linked. In addition, their correlations with personality traits are not negligible. First we studied the link between health status and personality traits and we found that more open, conscientious and extraverted individuals report higher level of health status, while more agreeable and neurotic persons reveal lower health levels. As a further step, we included social status into the analysis and, by estimating a bivariate model which includes basic demographic characteristics, we showed that the two objective indexes of health and social status have a positive and significant effect on both subjective counterparts. Then, we added personality variables in the regression: we showed that both objective indexes still have positive and significant effects on the two subjective status even if their influence is smaller than the previously detected one, and, more importantly, we found that all personality traits have strong effects on SSS and SHS. In particular, individuals who are more open, conscientious and extraverted declare higher health and social status, while those who are more agreeable and neurotic report lower health and social status. Moreover, both the sign and the significance of the effects of four personality variables are the same for the two subjective measures under study.

Since there could exist reverse causality between the objective and the subjective status, and personality traits influence both of these measures and, therefore, a problem of endogeneity could emerge, we carried out IV regressions based on the approach of Lewbel (2012). Most of the previous results are confirmed even with this specification. Finally, to solve the possible problem of omitted variables, we added the two subjective components among the explanatory variables of our bivariate model. We found that each subjective measure has a positive and significant effect on the other subjective variable. However, although all effects

slightly decrease, the two objective indexes still are positively correlated with both dependent variables and all personality traits play an important role on both status evaluations.

Our results highlight the importance of personality traits in explaining the persistent gap between objective and subjective measures of health and social status. Even though we considered two specific domains which are also related to each other, this discrepancy could hold across partially unrelated domains and could still be due to personality bias. Therefore, a next step in this research area could be to seek to understand whether we can generalize our results in other contexts different from health and social status. In particular, an interesting avenue for future research would be to compare effects, signs and significances of personality traits considering subjective judgments of situations outside the individual sphere rather than self-evaluations of situations that directly involve individuals. For instance, the results could be different when we analyze the satisfaction of own job-career and when we study subjective evaluations of crime or the quality of some products.

Moreover, these evidences suggest that both measures provide key information about people's level of well-being: the objective one indicates the real situation of individuals' life, while the subjective one reveals how individuals perceive themselves and, therefore, might be linked with individuals' happiness. Then, as the recent literature has revealed, also this study confirms that subjective measures contain relevant and independent information and that it is important for future research to consider both indicators. Also policy makers could take into account both measures in their proposals because of distorted individuals' perceptions of reality due to different personality characteristics. As to individuals themselves, another general implication that can be drawn from our analysis is that they should become more aware about their actual situations in order to make sound economic decisions.

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Chapter 2

Loss Aversion and Risk Attitude among Children: "Self-Other" Differences in Decision Making

Abstract

By means of an experiment run in a primary school in Italy, we study risk preferences and loss aversion among children aged 9 to 12 years old and we investigate whether decision making differs when individuals have to decide for themselves ("self") and when they have to make choices that will have consequences on other subjects ("other"). We find that children who choose for others are more risk seeking than those who decide for themselves. A self-other treatment effect emerges also by counting the number of inconsistent answers, as it is significantly higher for children who decide for others (suggesting a careless attitude in this decision context). Moreover, we noted that some children expose others to an extremely high risk, leading them to losses. Analyzing their risk preferences, we find neutral behavior towards losses that shifts to a more risk averse behavior for the same options presented as winnings. Furthermore, we consider three time horizons for the measure of loss aversion (i.e., "now", "after a week", "after a month") and we observe that its level increases over time. Carrying out an ordered logit analysis, we find that the degree of risk aversion in the frame of winnings is significantly greater for foreign children and those who stay little time with parents while we observe a strong gender effect in the frame of losses. Finally, our findings indicate that children who are more impatient display lower loss aversion for losses in near future.

1. Introduction

Deviations from standard economic predictions often occur when individuals have to make risky decisions. People often turn out to reverse their preferences under ambiguity (Maafi, 2011), weight probabilities non-linearly (Abdellaoui, 2000) and take too little risk in investments involving losses (Fellner and Sutter, 2009). These evidences have been found for the general population (Booij et al., 2010) as well as in a variety of countries (Akay et al., 2011).

Not surprisingly, the majority of research in decision making has been conducted with adults rather than children, one of the key reasons being that adults are better able to understand instructions and tasks, as well as to master the underlying concepts such as risk and probability. However, recent works demonstrate that children are capable of understanding probabilities and intuitively use multiplication to figure expected values for simple prospects (Schlottmann and Anderson, 1994; Rice, 1995; Schlottmann, 2001; Harbaugh et al., 2002; Levin and Hart, 2003; Schlottmann and Wilkening, 2011). The present work aims to study risk preferences and loss aversion in children aged between 9 and 12 years. We seek to contribute to our understanding of whether their behavior is similar to that of adults, which is well-known in the literature, or whether risk aversion and loss aversion, that are observable in adults, develop over the years. Moreover, we investigate whether loss aversion changes over time, considering different time horizons (present, after a week, after a month). Finally, since the recent literature has detected a relevant difference in decision making "for others" rather than "for oneself", we consider two treatments: a "*Self" Treatment,* in which children choose for themselves, and an "*Other" Treatment*, in which they are informed that they have to decide for another child, attending a different class and being the same age. In other words, in the latter treatment they have to decide by knowing that the actual consequences of their decisions will not regard themselves but another child attending the same school (without knowing his/her identity).

Since children are typically more courageous, impulsive, spontaneous, optimistic and less forward-looking than adults, we conjecture that they are more risk seeking and less loss averse, in particular if the losses are projected into the future. In addition, loss aversion could diminish when children choose for another child because of greater distance of the risk from themselves or, on the other hand, the risk tolerance could decrease because of children' concern that the other child receives a sure amount. Probably, the direction of their behavior depends on how much children identify themselves with the other.

Analysing our data, we document a clear treatment effect: children who choose for others are more risk seeking than those who decide for themselves. We observe a higher number of inconsistent answers for children who decide for others, suggesting a careless attitude in this decision context. Further, it seems that some children expose others to an exaggerate risk, making them lose. Studying their risk preferences, we find neutral behavior towards losses that shifts to a more risk averse behavior for the same options presented as winnings. Moreover, we observe that the level of loss aversion increases over time. Comparing our results to those highlighted in literature on these topics, it seems clear that children are more risk seeking than adults, suggesting that risk and loss aversion develop with age and with an increasing influence of external conditioning.

The remainder of the chapter is structured as follows. Section 2 contains a literature review on risk attitude and loss aversion in children and on self-other behavior. In Section 3 we present the design of the experiment while Section 4 describes the data we collected. Section 5 contains the main findings of our analysis and Section 6 concludes. Appendices provide details on instructions and questionnaires and describe the construction of some of the variables we used.

2. Literature Review

2.1. Risk Preferences and Loss Aversion in Children

In their transition from childhood to adulthood, children and adolescents experience an increasing number of decisions involving uncertainty and long-term consequences. Despite the limited empirical evidence, the existing literature on children's risk attitude, loss aversion and time preferences suggests that children are relatively more risk seeking and delay averse than adults (Harbaugh et al., 2002; Levin and Hart, 2003; Bettinger and Slonim, 2007; Levin et al., 2007). In their experimental study, Sutter et al. (2013) find that on average children and adolescents, aged ten to eighteen years, are risk averse, ambiguity averse and impatient. They also observe a strong gender difference (such that girls are more risk averse than boys) and a clear relation between high-ability students and high level of patience. Moreover, they find a significant link between risk aversion and time preferences, with more risk-averse subjects being more patient. Involving children aged five to six years, Levin and Hart (2003) instead study their risky decision making and compare their behavior with that of the parents. They

develop a method that permits them to compare risky choices for gains and losses by simple counting procedures. Across their experiments, they find that most children and adults prefer risky choices in the domain of losses than in domain of gains, concluding that this tendency develops at an early age and is consistent with the well-known value function of prospect theory (Kahneman and Tversky, 1979). Furthermore, the propensity to take more risk in losses than in gains seems to be a characteristic of children with greater shyness and impulsivity, but less sadness. Following these children for three years, Levin et al. (2007) observe the same pattern of means across time periods. Their results evidence that children use both probability and outcome information in risky decision choices. Moreover, the findings confirm the tendency to be more risk seeking to avoid a loss than to achieve a gain of equal magnitude and reveal a greater willingness to take risks on the part of children, compared to their parents. Also Harbaugh et al. (2002) investigate how risk attitude varies with age. They find that children and youths significantly underweight low probability events and also that, in situations with a small probability of a large loss, they are more likely to take the risky than the safe option. They detect this behavior also for older individuals, unlike most of experimental work on adults. Though, their weighting function over losses underweights low probability events and overweighs high probability ones to a lesser extent than children do.

Studying neural behavior, Barklet-Levenson et al. (2013) examine the impact of potential losses as well as gains on adolescents and adults. They find that adolescents and adults are similarly loss averse when considering mixed gambles. Across age groups, loss amounts are shown to have a greater impact on choice than gain amounts, consistently with the idea that adolescents and adults do not differ in risk perception (Steinberg, 2004). However, they observe that, while adolescents and adults used similar neural network accepting gambles, they exhibit different neural responses to the process of rejecting gambles. Moreover, Van Leijenhorst et al. (2010) studying the neurocognitive development of reward and control regions in participants from four age groups (pre-pubertal children, early adolescents, older adolescents and young adults) show that brain regions implicated in decisions making under risk follow distinct developmental trajectories. Reward-related regions show an increased sensitivity to rewards in adolescence and follow an inverted U-shaped developmental pattern, whereas cognitive control-related regions mature slowly and follow a linear development.

Schlottmann and Tring (2005) analyse how positive and negative framing of decisions affects children's EV judgements and choices. The results show that children, aged six to nine years, choose the sure thing in 89% of gain and 46% of loss trials. Indeed, they find strong risk

aversion for gains that shifts towards risk seeking for the same options presented as losses. This evidence is in line with the results of Levin and Hart (2003), but partially in contrast with Reyna and Ellis (1994), who observe risk-seeking choices, consistent across frames, for pre-school children. According to fuzzy-trace theory, Reyna and Ellis (1994) find that younger children focus on quantitative differences between outcomes and do not exhibit framing effects while older children, assimilated these quantitative differences, display the standard framing pattern showing greater risk seeking for losses than for gains. Instead, for the intermediate age group, they observe a clear interaction between frame and risk level, and at the highest level of risk a reverse framing emerges: greater risk seeking for gains than for losses.

2.2. "Self-Other" Decision Making

In many daily situations people make decisions for others. It is thus important to understand the similarities and differences involved in taking decisions for another person versus for oneself. Kray and Gonzalez (1999), conducting three studies, find that when individuals give advice, they are more inclined to focus on the most important aspect of the decision while they give more uniform weight to all relevant aspects when they decide for themselves. The researchers argue that this differential weighting could help explaining why the proper decision appears to be obvious from an outside perspective, but it is not so clear to the person involved, who has to consider more aspects of the decision problem. Lu et al. (2012) analyse instead the different weights that people attach to desirability and feasibility. Based on construal level theory, they find that, compared to self-decision makers, those who decide for others give more importance to desirability attributes and less weight to feasibility aspects. By running five experiments, they show that decision behaviors are determined by the decision target (i.e. for whom such decisions are made).

One area that has received considerable attention in the decision-making literature is related to people's risk-taking behavior. A relevant question is whether there exist systematic differences in behavior when people decide for others. Individuals could arguably assume that the other person has a different level of risk attitude than they have or could make decisions to achieve different goals under the two circumstances. Hsee and Weber (1997) find that there is no difference between self and other perceived risk attitude whether the other person is concrete (i.e. vivid to the individual) while, whether the other is abstract (i.e., somebody described generically as being somewhere in the USA) participants associate higher risk

seeking to others than to themselves. Larrick (1993) suggests that, when making decisions, the individual tries to maximize the expected outcome of the decision situation and to protect her self-image. Following this hypothesis, Stone et al. (2002) examine the role of regret and of the evaluation by others as factors that could modify individual behavior when one is deciding for another person. They find that regret concerns lead to greater risk avoidance both when participants make decisions for others as well as when they take choices for themselves. Probably this result is due to a large extent to the framing of their study: they ask participants to think the other as a friend similar to themselves. Moreover, in their second experiment, they test whether skill tasks would lead to a difference in self-other risk attitude, but they do not find a support for this hypothesis. In addition, they discover that neither the size of the probability level affects self-other differences. However, they observe that men are more risk seeking than women and that this gender difference is more pronounced when making decisions for other people. Pahlke et al. (2012) analyse risky choices affecting in a parallel way the payoffs of the decision-maker and the recipient and find that adding a justification requirement of their choices significantly reduces loss aversion. Other researches confirm the influence of an accountability mechanism: Charness and Jackson (2009), by studying the stag hunt game, find that, for one third of their subjects, a sense of responsibility for the welfare of others leads them to play a less risky strategy more often. Further, Eriksen and Kvaløy (2010) observe myopic loss aversion in decisions of salaried agents for their principals.

Polman (2012a), instead, conducting eight studies with undergraduate students, tests the hypothesis that making decisions for others involves less loss aversion than making decisions for oneself. Indeed, as he states in another research (2012b), people who choose for others are relatively "promotion" focused, whereas people who choose for themselves are relatively "prevention" focused. From his experiments it is clear that loss aversion significantly decreases among individuals choosing for others in contexts describing riskless choices, gambling and some social aspects of life. Indeed, considering five variables associated to loss aversion, that have been documented to vary between choices for others and choices for self (Polman, 2010, 2012a; Polman and Emich, 2011; Zikmund-Fisher et al., 2006), he finds that loss aversion is moderated when factors such as decision makers' construal level, regulatory focus, degree of information seeking, omission bias and power are taken into account. Also Sascha et al. (2017) study loss aversion and design three treatments: making risky decisions for oneself, for another subject, and for the decision maker and another person combined. They find clear evidence that loss aversion is lower when making decisions for others than making decisions

for themselves. However, they show that this is true when making decision for others only, and not when making decisions for both. Few studies examine self-other differences in risky choices considering other domains. With regard to the monetary domain, Stone et al. (2002) find that effects occurring in personal monetary decisions, in particular concerns with regret and greater risk taking for men than for women, hold equivalently when the decisions are made for another person. In contrast to these results, Beisswanger et al. (2003) discover large self-other differences when people are asked to make choices about relationship (i.e. introducing oneself or asking to dance); in particular, they find that individuals who decide for their friends typically make riskier choices than individuals do for themselves. Stone and Allgaier (2008) analyse self-other differences considering situations involving social values. In their experiments they show that low-impact relationship situations produce self-other differences, but high-impact relationship and monetary situations do not. They find that people make riskier decisions for others when risk taking is valued but not when risk is not valued. Moreover, they show that self-other differences occur even when there are no predictions for them and also for decisions made for a typical student as well as for a friend, confirming that decision making for others depends mostly on the perceived value placed on risk.

As we anticipated above, with our own experimental work, by considering choices involving risk attitude and loss aversion, we aim to investigate whether self-other differences exist among children when the other is an unknown child who has the same age as the decision maker.

3. Experimental Design

We run the experiment at five primary schools of the province of Vicenza[3], involving 301 students attending the forth and the fifth year[4]. In 12 classes children decide for themselves ("Self" Treatment) while in 4 classes students make choices for another, randomly chosen child, who attends another class and is the same age ("Other" Treatment). The different numerosity in the two treatments is due to a greater interest in research questions addressed through the "Self" Treatment. Before running the experiment, we made a pilot study in three classes of a

[3] All primary schools involved in the experiment belongs to the educational institute "Istituto Comprensivo Statale G. Ciscato", Malo, Vicenza.

[4] The Italian school system includes 5 years at primary school (6-11 years), three years at middle school (11-14 years) and five years at high school (14-19 years). The compulsory schooling is provided for up to 16 years.

primary school of Verona[5], that allowed us to test the understanding of the tasks and the timing of the entire activity.

The experiment consists of three parts and a final questionnaire. At the beginning of the experiment each child has 10 tokens and, by participating in the activity, she could win or lose further amounts. With the tokens she has at the end of the experiment she chooses some prizes among those available, shown from the beginning by the experimenter. Each part of the activity is described independently and after the explanation children make the task. Children do not receive paper instructions because they might have been a source of distraction; all rules are explained aloud and various examples are shown on an interactive whiteboard. After verifying the comprehension of the task, children receive the paper where they make their decisions. Then, papers are collected and a new part gets started. The order of the three parts is randomly chosen for each class. At the end of all tasks students fill out a final questionnaire and one decision is drawn for the calculation of final tokens. For more details about treatments, instructions and questionnaire see Appendices B.1, B.2, B.3.

One task of this experiment concerns intertemporal choices: this data is not analysed in this work. Another task is related to risk attitude: children have to choose between a sure gain and a positive expected gamble and between a sure loss and a negative expected gamble. The third task refers to loss aversion: children have to decide whether to accept or refuse the possibility to win or lose, by tossing a coin. Because of the possible difficulty of an immediate understanding of the tasks, teachers, before the experiment, explained and did exercises on probability concept.

We elicit the measure of attitude risk adapting standard choice list tasks, well-established and widely used in the economics literature (Holt and Laury, 2002, 2005). Besides writing the number of tokens won or lost and the corresponding percentage, we represent the faces of the die with which one wins or loses and a pie graph where the coloured area describes the percentage of winning or losing. This part consists of five decisions in a frame of gain and five in a frame of loss; the two frames are explained and carried out separately.

After illustrating some examples, children are asked various questions to verify their understanding of the task (i.e. “If you choose this option, what will happen? If the face of the die is 6, what happens?”) and the die is rolled a few times to discuss some possible situations by reviewing the concept of probability and the rules of the task. Two examples of this task are displayed in the following figures (Figures 1 and 2):

[5] The pilot study was run at primary school “Betteloni”, Montorio, Verona.

Figure 1. Risk Attitude Task: Winnings

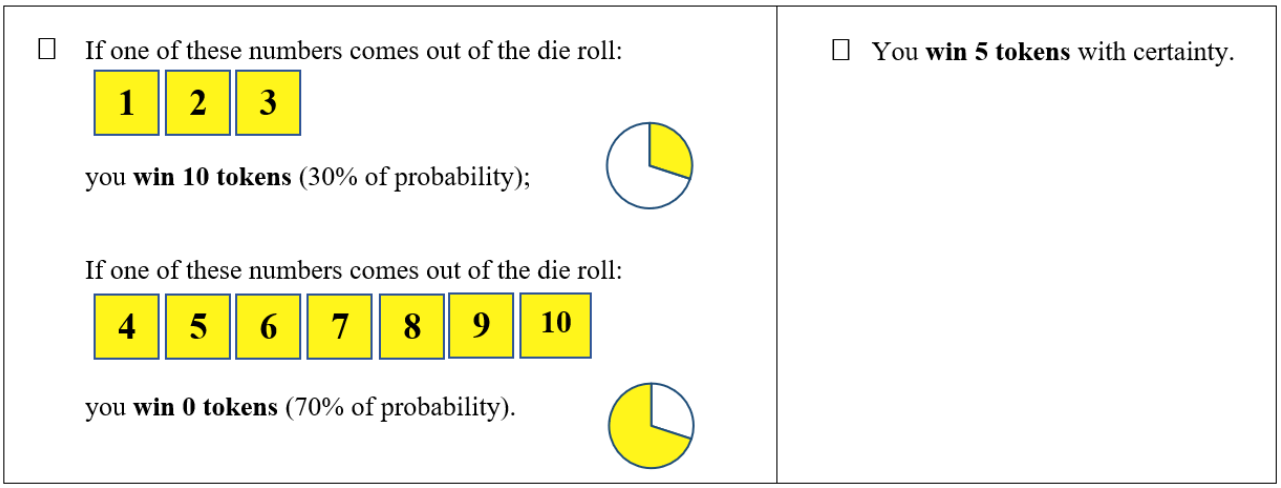
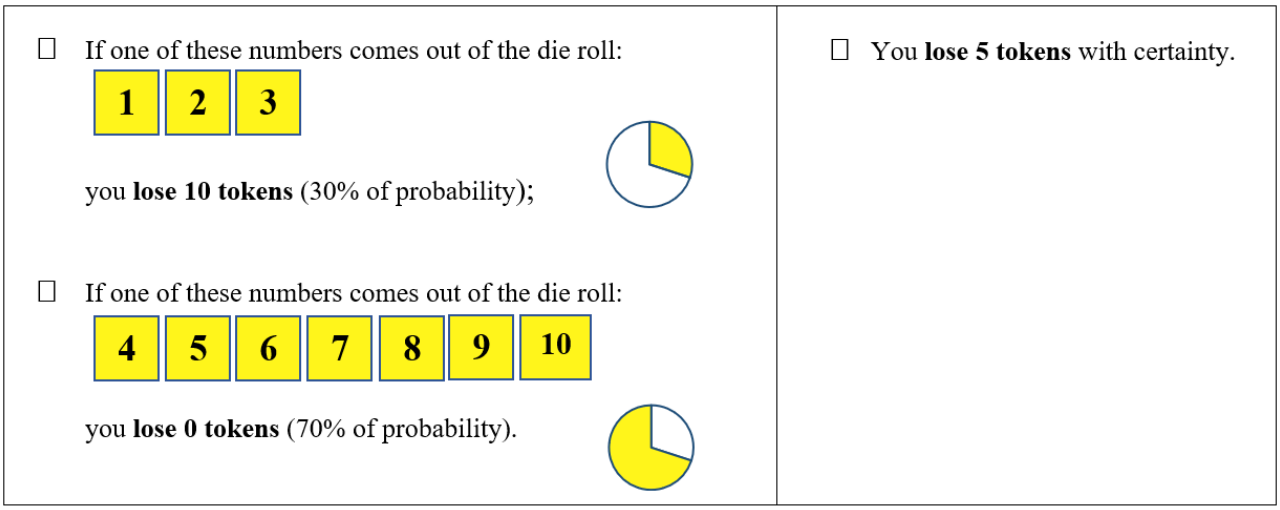


Figure 2. Risk Attitude Task: Losses



The activity is arranged such that only the probability of winning or losing tokens changes. The order of the choices they have to make varies: in some classes the probability increases, whereas in others it decreases. Table 1 reports the ten decisions children make and their expected values (EV).

Table 1. Risk Attitude

Frame	Gamble	EV Gamble	EV Sure Option
Win	0.10 prob of winning 10 0.90 prob of winning none	1	5
Win	0.30 prob of winning 10 0.70 prob of winning none	3	5
Win	0.50 prob of winning 10 0.50 prob of winning none	5	5
Win	0.70 prob of winning 10 0.30 prob of winning none	7	5
Win	0.90 prob of winning 10 0.10 prob of winning none	9	5
Loss	0.10 prob of losing 10 0.90 prob of losing none	-1	-5
Loss	0.30 prob of losing 10 0.70 prob of losing none	-3	-5
Loss	0.50 prob of losing 10 0.50 prob of losing none	-5	-5
Loss	0.70 prob of losing 10 0.30 prob of losing none	-7	-5
Loss	0.90 prob of losing 10 0.10 prob of losing none	-9	-5

In order to measure loss aversion in risky choices, we adapt a lottery choice task from Fehr and Goette (2007), used also in Gächter et al. (2010). In this decision task children have to choose for each of six lotteries whether to accept (that is playing it), or refuse it (receiving nothing). In each lottery the winning price is set at 6 and only the losing price changes, between 2 and 7. In order to simplify the understanding, in the paper sheet for each decision, besides writing the number of tokens won or lost, we draw a coin illustrating the various possible outcomes that may emerge. We repeat this task modifying the time horizon of the losses or the winnings; we consider (i) the present, (ii) a near future time (a week from the day of the experiment) and (iii) a relatively distant future time (a month from that day). In the first case the final prizes are given immediately while in the other two cases children have to respect the timing: if they win tokens, they have to wait for a week or a month; if they lose tokens, they receive the corresponding prizes immediately, but after a week or a month they have to give back the prizes they received.

This task is divided in three parts, one for each time horizon; each part is explained and carried out separately. As for the risk attitude task, the number of lost tokens is increasing in some classes and decreasing in others; the choice of the classes is random.

After doing some examples, children are asked various questions to verify their understanding of the task (i.e. "If you choose not to toss the coin, what will happen? If tossing the coin comes out cross, what happens?") and the coin is tossed a few times to discuss some possible situations. Some examples of this task are illustrated in the following figures (Figures 3, 4 and 5):

Figure 3. Loss Aversion Task: now

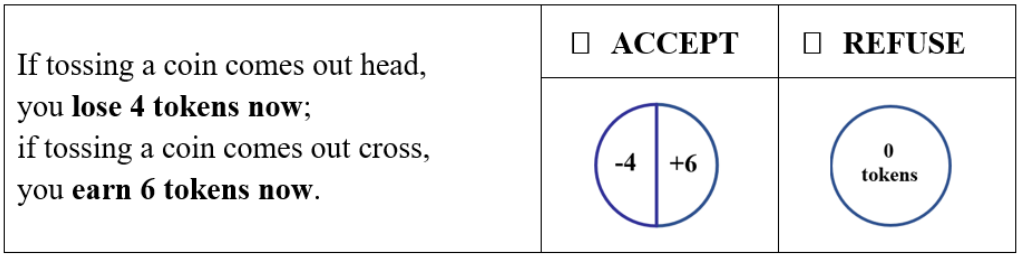


Figure 4. Loss Aversion Task: after a week

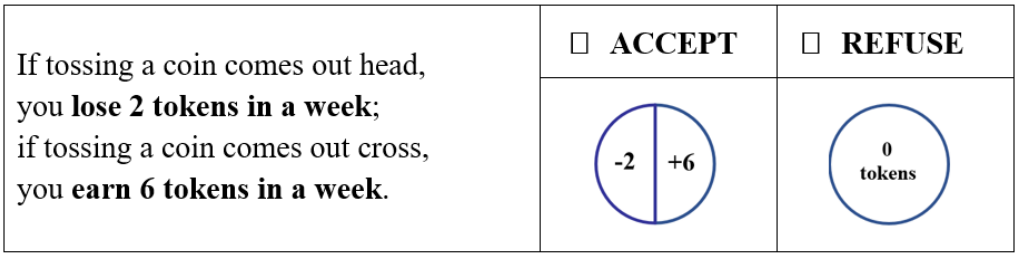
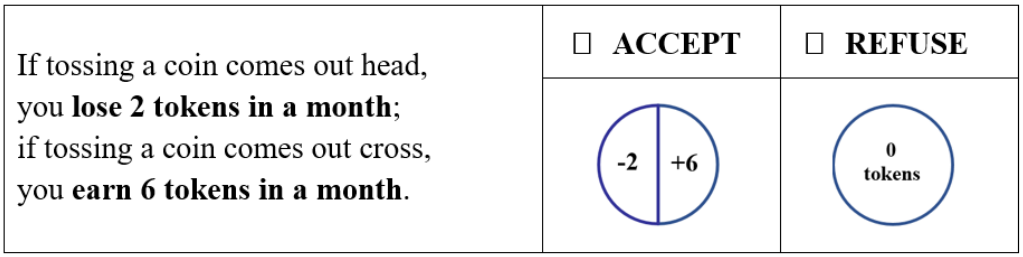


Figure 5. Loss Aversion Task: after a month



As Rabin (2000), Rabin and Thaler (2001), Wakker (2005), Köbberling and Wakker (2005) and Fehr and Goette (2007) suggest, this kind of task is aimed at measuring loss aversion, rather than risk attitude. Rabin (2000), for instance, argues that risk aversion cannot plausibly explain choice behavior in small-stake risky gambles like those in this work. Risk aversion (i.e., a concave utility function) indeed, in such small-stake lotteries, would imply an absurdly high level of risk aversion in high-stake gambles. Therefore, Rabin claims that, under expected utility, people in small-stakes gambles should be risk neutral. Then, considering our choices, children should accept losses until six tokens because it guarantees a positive expected value. If nevertheless children reject low-stakes gambles with a positive expected value, this might indicate loss aversion rather than risk aversion.

4. Data on Sample and Descriptive Statistics

We run the experiment in 16 classes at primary school: 8 with children attending the fourth year and 8 their fifth (and last) year. Our sample of 301 observations is, on average, 10 years old; 47% of children are females and 93% are Italian. In Table 2 we report summary statistics related to some characteristics of children, collected through the post-experiment questionnaire. Beyond the *control variables*, we consider some *social variables* to take into account the kind of relation that children have with others. The *ability variables* are used, instead, to take into account a possible correlation between the ability to do the tasks, their understanding and the collected answers. In Appendix B.4 we report how these variables are built and the reference questions.

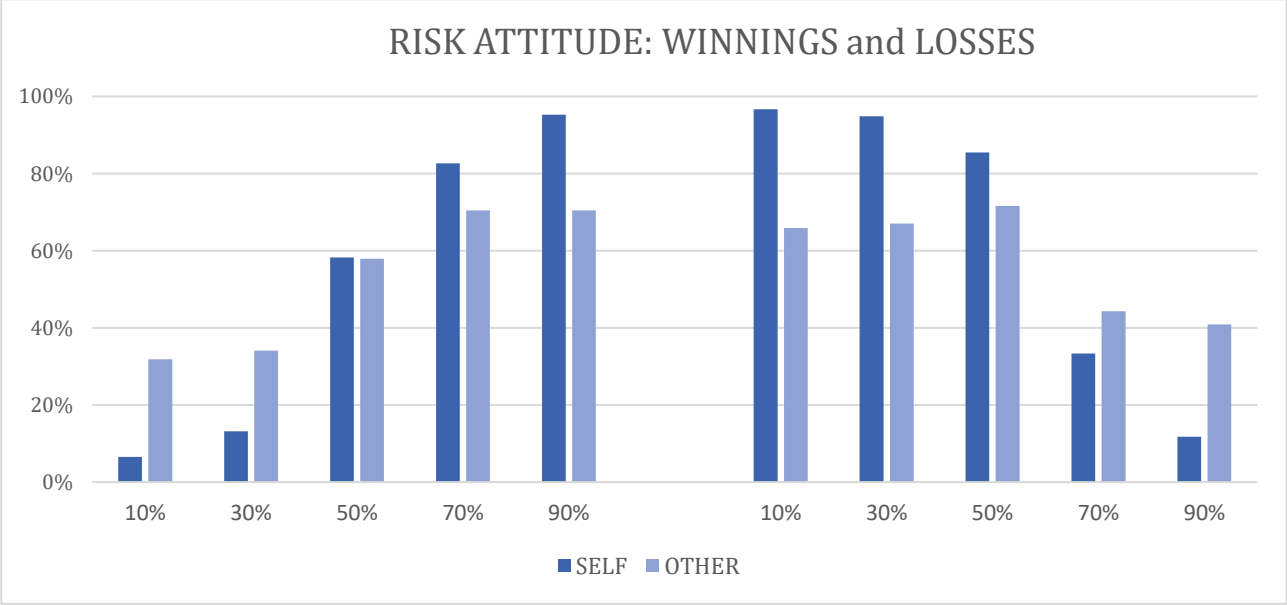
Table 2. Summary statistics (301 observations)

Variable	Mean	Std. Dev.	Min.	Max.
Control variables				
Age (in months)	123.61	7.44	112	149
Female	0.47	0.50	0	1
Italian	0.93	0.25	0	1
Italian Parents	1.30	0.65	1	3
Brothers	0.83	0.37	0	1

Social variables				
Long Time with Parents	0.69	0.46	0	1
Play with Friends	0.99	0.12	0	1
Homework with Friends	0.51	0.50	0	1
Work in group	2.76	0.49	1	3
Loan Material	0.60	0.49	0	1
Activity or Sports	0.86	0.35	0	1
Give Helping	0.87	0.34	0	1
Ability variables				
Math Mark	0.52	0.50	0	1
Mean Mark	0.54	0.50	0	1
Play cards	2.24	0.61	1	3
Pocket Money	1.88	0.82	1	3
Impatience	0.27	0.45	0	1
Mobile Phone	0.42	0.49	0	1
Free Internet	0.66	0.47	0	1

In the following we analyse all decisions made by children in each task. Figure 6 shows how many children decide to play the lottery rather than to win or lose 5 tokens with certainty, in both treatments. In particular, the first part of graph is related to the winnings gambles and the second to losses gambles. Each column represents the percentage of children who choose to risk in each decision; the probabilities of winning or losing 10 tokens versus 0 tokens are 10%, 30%, 50%, 70% and 90%, displayed in X axis.

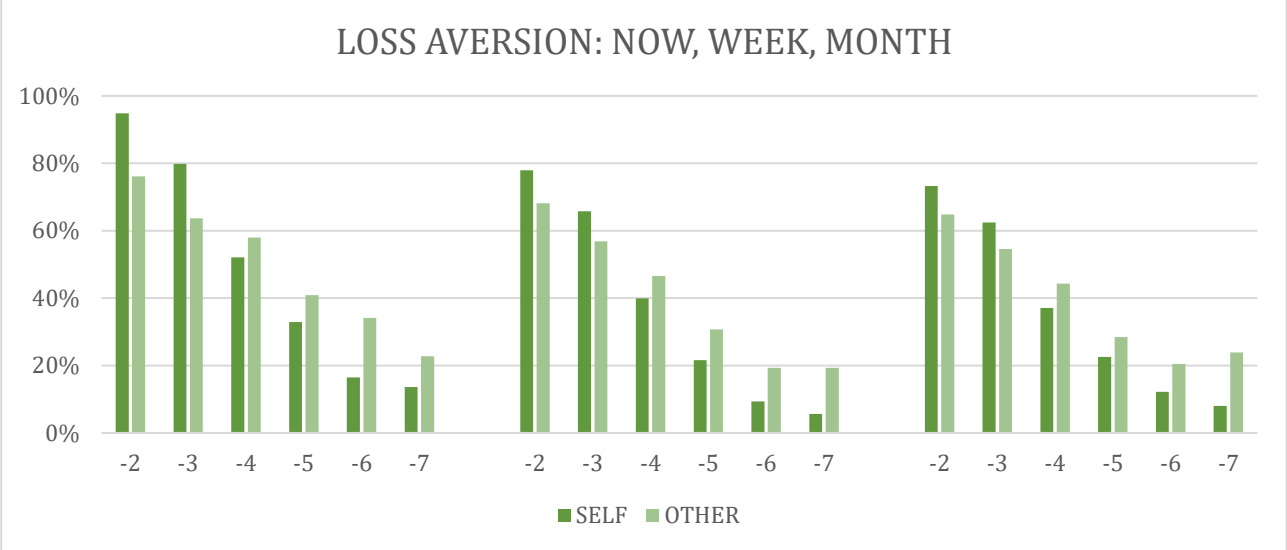
Figure 6. Distribution of answers in the Risk Attitude task



We can immediately observe a difference between the two treatments: children in the "Other" Treatment are more risk loving than those in the "Self" Treatment in both win and loss frames. Children who choose for others risk even when the probability of a favourable event is very low. We can see also that the evolution of their decisions does not display a clear increasing or decreasing pattern; this behavior is more evident in losses. With regard to "Self" Treatment, we note a more coherent growth in winnings and drop in losses, consistent with increasing and decreasing probabilities of winning. The graph shows that more than 50% of children in "Self" Treatment are risk neutral in the frame of winnings and that risk aversion decreases in the frame of losses.

Figure 7 shows how many children decide to accept the risk of winning or losing some tokens rather than to reject it by keeping unchanged the initial amount, in both treatments. In particular, the first histogram is related to a present risk, the other two to a future risk. Each column represents the percentage of children who choose to risk; the number of tokens that children could lose in each decision are displayed in the horizontal axis.

Figure 7. Distribution of answers in the Loss Aversion task



As we can observe from Figure 7, also in this task, there exists a difference between the two treatments. The behavior in "Self" Treatment seems to be coherent among decisions and over time. From the graph is clear that loss aversion increases: the number of children who risk decreases in the future, at the same probability of loss. In contrast, in "Other" Treatment we do not observe a common trend over time and the answers seems inconsistent with a fully rational, standard behaviour that we would expect to observe (i.e., we would expect only one switch

point in the choice of accepting or refusing the risk). Moreover, we note that the number of children who accept the risk is significantly high when the number of possible tokens lost is 7 versus those won that is 6.

From the previous results it seems that behavior depends on the treatment. In order to test whether there is a treatment effect, we run the classic non-parametric test of Mann-Whitney by considering each decision task. We run the test also on the variables related to the characteristics of children to verify that all characteristics are uniformity distributed and, therefore, that children's treatment assignment could be considered random. Hence, the hypothesis that we test is the following:

H0: variable ("Other" Treatment) = variable ("Self" Treatment)
H1: variable ("Other" Treatment) ≠ variable ("Self" Treatment)

The results are reported in Table 3.

Table 3. Mann-Whitney Test: Treatment Effect

Variable	Treatment
R.A. winnings 10%	0,00***
R.A. winnings 30%	0,00***
R.A. winnings 50%	0,97
R.A. winnings 70%	0,02**
R.A. winnings 90%	0,00***
R.A. losses 10%	0,00***
R.A. losses 30%	0,00***
R.A. losses 50%	0,68
R.A. losses 70%	0,07*
R.A. losses 90%	0,00***
L.A. now 2	0,00***
L.A. now 3	0,00***
L.A. now 4	0,36
L.A. now 5	0,18
L.A. now 6	0,00***
L.A. now 7	0,00***
L.A. week 2	0,08*
L.A. week 3	0,15
L.A. week 4	0,29
L.A. week 5	0,09*
L.A. week 6	0,02**

L.A. week 7	0,00***
L.A. month 2	0,14
L.A. month 3	0,20
L.A. month 4	0,32
L.A. month 5	0,28
L.A. month 6	0,07*
L.A. month 7	0,00***
Class	0,41
Gender	0,12
Age	0,43
Italian	0,56
Italian Parent	0,65
Brothers	0,74
Time with parents	0,37
Play with friends	0,85
Homework with friends	0,05*
Work in group	0,20
Loan material	0,17
Activity or Sports	0,88
Give Helping	0,89
Math Mark	0,87
Mean Mark	0,22
Play Cards	0,31
Pocket Money	0,06*
Impatience	0,03*
Mobile Phone	0,84
Free Internet	0,01***

*** p<0.01, ** p<0.05, * p<0.1
Note: R.A. means risk attitude; L.A. means loss aversion

As it is known in literature, inconsistent answers often occur among children. However, in our experiment their number is high and significantly different between treatments, as we can note from Table 3. The results show a treatment effect in particular for the decisions which are characterized by extremely probabilities. In contrast, we can observe a similar behavior among children for the intermediate choices that correspond to the neutrality situations. Regarding loss aversion tasks, the results evidence a similar tendency between treatments as time horizon widens. This could suggest that loss aversion increases regardless of the choice being made for oneself or others. An additional confirmation of the treatment effect is given whether we consider only the coherent answers: running the Mann-Whitney test we find that treatment has not a significant effect on neither task.

Moreover, the results reported in Table 3 confirm that children have on average the same characteristics in each treatment. We note a difference for some aspects, plausibly due to a class effect. For instance, whether a child can use internet, others in the same class could be influenced and then they could start to use it.

Therefore, it is clear that children behavior depends on treatment. It seems that children who choose for others do not care about them. More specifically, analysing the single choices, child by child, we find that some participants in "Other" Treatment behaved in an opposite way with respect to a more standard behavior observed in "Self" Treatment. It seems that some children expose others to an excessive risk or even aim at having the other incur a loss. We observe this behavior in both risk attitude and loss aversion tasks. 21.31% of children behave in an opposite way in the risk task in losses frame and 18.03% of children in risk task in winnings frame. Regarding loss aversion, instead, we observe a contrary behavior in 11.11% of children who risk losing in the present and in 6.67% of children who risk losing in the future. Moreover, analysing the single answers of these children, related to social variables, we can note that these students do not like doing homework with friends or loaning material. Nevertheless, because of the small number of observations, it is difficult to conclude that this difference is statistically significant.

Table 4 and Figure 8 describe the distribution of the inconsistent answers in both treatments. We can see the strong difference both numerically and graphically. If we consider the coherent answers in all task simultaneously, those related to "Other" Treatment are half of those in "Self" Treatment.

Table 4. Inconsistent Answers

INCONSISTENT ANSWERS		
	OTHER	SELF
Risk Attitude	30.68%	8.45%
Risk Attitude Winnings	13.64%	2.82%
Risk Attitude Losses	9.09%	3.76%
Loss Aversion	48.86%	21.60%
Loss Aversion Now	26.14%	6.57%
Loss Aversion Week	22.73%	5.63%
Loss Aversion Month	26.14%	5.63%
All	63.64%	33.80%

Figure 8. Inconsistent Answers

In order to better understand which aspects beyond treatment could influence the consistency of the answers, we run the Mann-Whitney test between consistent and inconsistent answers considering all characteristics of children. Moreover, we run a probit regression in which the dependent variable takes value 1 if the answer is coherent and 0 otherwise. Table 5 and Table 6 report the results for the first and the second case, respectively.

Table 5. Mann-Whitney Test: Variables that influence coherent answers

Variable	***Risk***	***Loss Aversion***	***All tasks***
Treatment	4,91***	4,71***	4,75***
Class	2,22**	-0,19	1,18
Gender	1,74*	1,95*	2,30**
Age	-2,12**	0,66	-1,38
Italian	-0,024	-3,12***	-2,15**
Italian Parent	1,14	2,26**	3,30***
Brothers	1,14	2,51**	1,80*
Time with parents	0,51	0,82	0,90
Play with friends	0,83	1,29	1,70*
Homework with friends	-2,10**	-0,54	-1,63
Work in group	-0,67	1,19	0,53
Loan material	-1,56	-0,80	-0,81
Activity or Sports	-0,29	-1,23	-1,02
Give helping	-0,15	0,52	0,44
Math mark	-2,17**	-0,48	-0,04
Mean mark	-1,39	-1,00	-0,32

Play cards	0,93	0,54	0,65
Pocket money	0,51*	0,95	0,59
Impatience	1,18	0,11	-0,20
Mobile phone	0,79	-0,31	-0,68
Free internet	-0,39	1,27	1,62

*** p<0.01, ** p<0.05, * p<0.1

Table 6. Probit regression: marginal effects on coherent answers

VARIABLES	(1) Coherence Risk Attitude	(2) Coherence Loss Aversion	(3) Coherence All tasks
Treatment	-0.222***	-0.299***	-0.344***
	(0.044)	(0.063)	(0.086)
Gender	-0.070**	-0.196***	-0.202***
	(0.028)	(0.054)	(0.044)
Age	0.008**	-0.002	0.006
	(0.003)	(0.005)	(0.006)
Italian	-0.006	0.363***	0.257**
	(0.082)	(0.122)	(0.123)
Brothers	0.028	-0.162***	-0.092
	(0.052)	(0.058)	(0.091)
Math	0.101**	-0.049	-0.047
	(0.042)	(0.072)	(0.081)
Pocket Money	0.012	-0.019	-0.011
	(0.028)	(0.032)	(0.053)
Impatience	-0.014	0.057	0.090
	(0.050)	(0.044)	(0.076)
Phone	-0.018	0.040	0.037
	(0.032)	(0.059)	(0.061)
Internet	-0.010	-0.166**	-0.209***
	(0.028)	(0.067)	(0.066)
Observations	269	269	269

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The results reported in Table 5 and Table 6 show that the consistency in risk tasks is greater in "Self" Treatment, for older boys and for children who have better grade in mathematics and receive pocket money. Also the consistency in loss aversion task is linked to

treatment and gender. Moreover, Italian children with Italian parents and those who have some brothers and cannot use Internet alone tend to answer in a more consistent way.

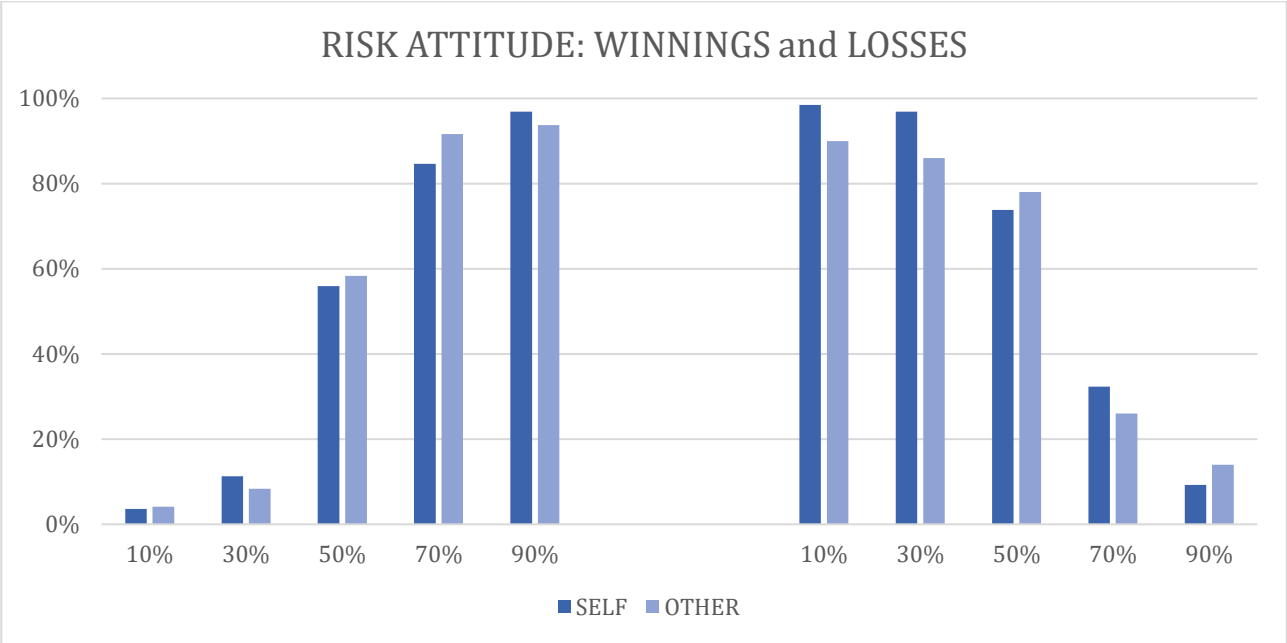
All these considerations confirm a treatment effect: as we have seen in Section 2, differences in self-other decisions making have been observed in various domains (Lu et al., 2012; Polman, 2012; Pahlke et al., 2011; Stone and Allgaier, 2008; Kray and Gonzalez, 1999; Hsee and Weber, 1997); our findings confirm that a difference in children preferences arises when the decision context is related to risk attitude and loss aversion. Further, by observing how they made choices, we can think that this behavior is associated with a careless attitude when the recipient of the decision is the other and not herself.

4.1. Risk Attitude Measure

Another aim of this analysis is to study the degree of risk attitude and loss aversion in children aged between 9 and 12 years old, so that it will be possible to broadly compare their choices with the behavior of adults as shown by the existing literature on the theme. In order to do it we consider only the coherent answers in the two tasks. We eliminate also the answers of those who show an opposite behavior with respect to the standard, rational one; in this case, indeed, the switch point between risk and riskless situations does not indicate a measure of risk attitude or loss aversion because of the aim of children to make others lose. Therefore, we end up having 256 observations for risk attitude and 212 for loss aversion.

The next graphs are related to consistent answers only. Figure 9 shows how many children decide to play the lottery rather than to win or lose 5 tokens with certainty, in both treatments. Each column represents the percentage of children who choose to risk in each decision.

Figure 9. Risk Attitude with coherent answers



WINNINGS	SELF	OTHER
10%	3.59%	4.17%
30%	11.28%	8.33%
50%	55.90%	58.33%
70%	84.62%	91.67%
90%	96.92%	93.75%

LOSSES	SELF	OTHER
10%	98.46%	90.00%
30%	96.92%	86.00%
50%	73.85%	78.00%
70%	32.31%	26.00%
90%	9.23%	14.00%

From Figure 9, we can immediately see that, eliminating inconsistent answers, the difference in treatment is not more evident as it is in Figure 6. These results confirm a risk-neutral behavior in winnings and a more risk-loving tendency in losses.

Analysing our data, we find also that some children choose for each decision to behave in the same way (6.67% in "Self" Treatment and 8.20% in "Other" Treatment with a frame of winnings; 10.77% in "Self" Treatment and 19.67% in "Other" Treatment with a frame of losses). In particular in "Self" Treatment these children risk more when they could win rather than lose while in "Other" Treatment the number of children who always refuse or always accept is similar in both situations of risk.

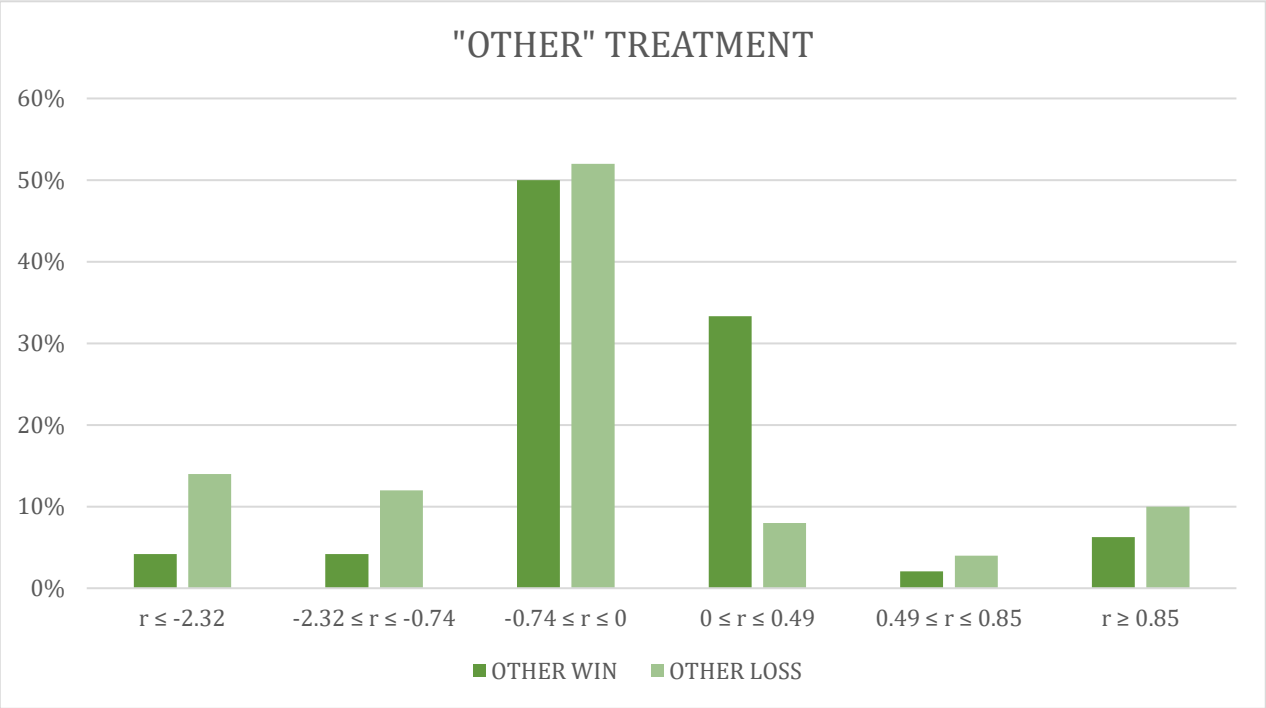
Considering the subgroup of observations coherent in both risk frames and consistent with each other, we could find the index of attitude risk r in winnings and in losses and, therefore, compare the behavior in the two situations. We calculate these indexes considering

the utility function CRRA[6]. We find six ranges of r, one for each possible switch point in the decision tasks: r equal to zero corresponds to neutrality, greater values to risk aversion and smaller values to risk love. For instance, if r is between -2.32 and 0.74 in win frame means that the child accepts to risk since the probability of winning 10 tokens is equal to 30% while if we consider the loss frame it means that the child accepts to risk until the probability of losing 10 tokens is equal to 70%. Figure 10 shows the risk attitude level in "Self" Treatment while Figure 11 shows that in "Other" Treatment.

Figure 10. Risk Attitude Index in the "Self" Treatment

[6] Appendix B.5 reports function and calculations.

Figure 11. Risk Attitude Index in the "Other" Treatment

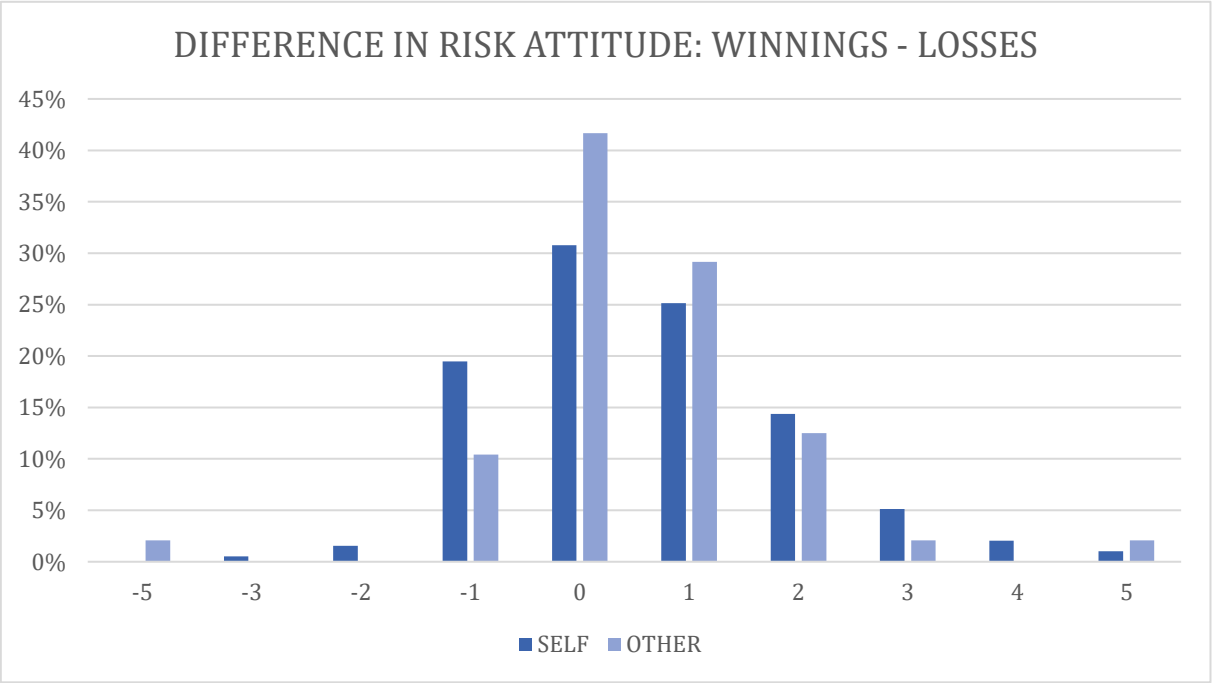


As we can observe from Figure 10 and Figure 11, 50% of children participating in "Other" Treatment show a neutral behavior towards risk in both winnings and losses frames. Our data evidence also that they are more risk loving in frame of losses with respect to winnings. With regard to behavior in "Self" Treatment, we note that our sample is equally allocated around the neutrality (-0.737 ≤ r ≤ 0) in the frame of losses while most switch points in the frame of winnings are near the neutrality, but towards risk aversion (-0.737 ≤ r ≤ 0.485) and a significantly smaller number of children is risk lover. This different behavior in winnings and losses frames is confirmed by running the Chi-square test (X^2 = 73.20 with p-value = 0.00 for "Self" Treatment; X^2 = 45.69 with p-value = 0.01 for "Other" Treatment).

Moreover, comparing the two treatments, we can observe a similar behavior when they could win whereas a different distribution when they could lose. Indeed, we note a more normal trend for "Self" Treatment while a greater concentration in neutrality and in the two extremes for "Other" Treatment. A particular result is related to the group of children who refuse most times the risk of throwing the die: from the graphs it is clear that risk aversion is prevalent in "Other" Treatment in the frame of losses and in "Self" Treatment in the frame of winnings. Despite these observations, the Kolmogorov-Smirnov test does not reject the hypothesis of similarity of the distributions in the two treatments (K-S = 0.07 with p-value = 0.98 for winnings; K-S = 0.08 with p-value = 0.97 for losses).

Previous considerations are confirmed considering the difference between winnings and losses. As we can note in Figure 12, most children are risk neutral in both frames, children who participate in "Other" Treatment tend to be more risk loving and those who participate in "Self" Treatment more risk averse.

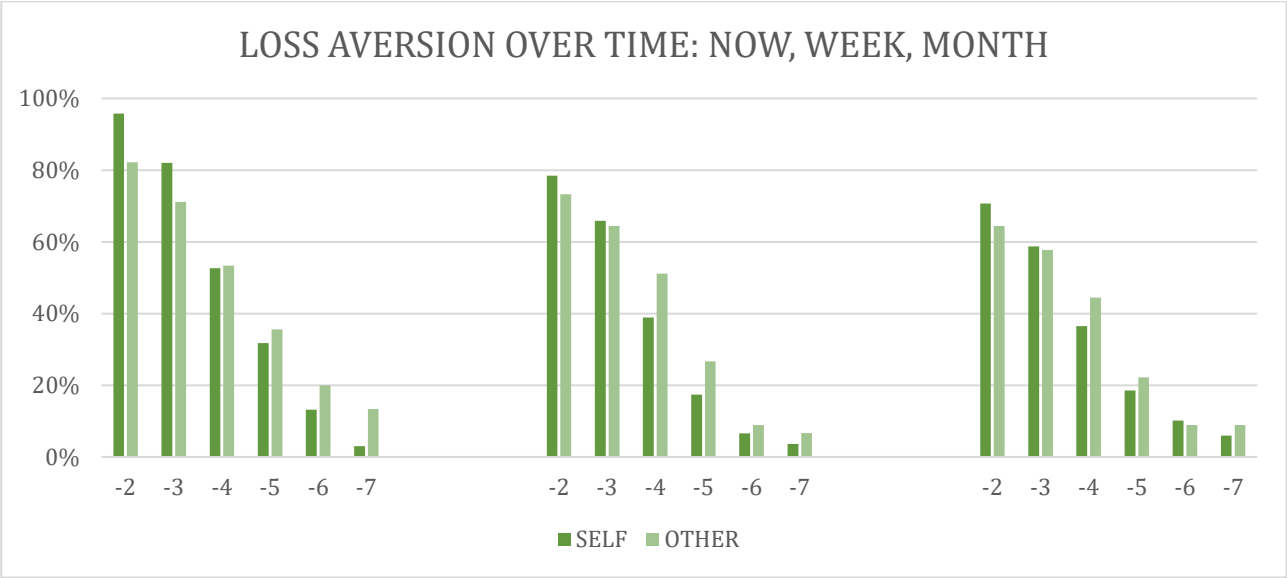
Figure 12. Risk Attitude Difference



4.2. Loss Aversion Measure

The next graphs are related to the loss aversion measure, considering consistent answers only. Figure 13 shows how many children decide to accept the risk of winning or losing some tokens rather than to reject it keeping unchanged the initial situation, in both treatments. As in Figure 7, the first histogram is related to a present risk, the other two to a future risk. Each column represents the percentage of children who choose to risk; the number of tokens that children could lose in each decision are displayed in the horizontal axis.

Figure 13. Loss Aversion coherent answers



NOW		
	SELF	OTHER
-2	95.81%	82.22%
-3	82.04%	71.11%
-4	52.69%	53.33%
-5	31.74%	35.56%
-6	13.17%	20.00%
-7	2.99%	13.33%

WEEK		
	SELF	OTHER
-2	78.44%	73.30%
-3	65.87%	64.44%
-4	38.92%	51.11%
-5	17.37%	26.67%
-6	6.59%	8.89%
-7	3.59%	6.67%

MONTH		
	SELF	OTHER
-2	70.66%	64.44%
-3	58.68%	57.78%
-4	36.53%	44.44%
-5	18.56%	22.22%
-6	10.18%	8.89%
-7	5.99%	8.89%

As we can note from Figure 13, children who decide for others are more risk loving than those who decide for themselves in all three time frames. Moreover, as we found previously, loss aversion increases over time in both treatments and this tendency is more evident in "Self" Treatment. In addition, analysing our data, we find a group of children that always choose to refuse the risk to lose, clearer in "Self" Treatment and for future losses. When the possible loss, instead, is a present risk, the rate of children totally risk averse is similar between the two treatments.

As we calculated the level of risk attitude for each child, we can find the loss aversion index for each time frame. We determine it by applying cumulative prospect theory (Tversky and Kahneman, 1992): an individual is indifferent between accepting or refusing a gamble if $w^{+}(0.5)\, u(G) = w^{-}(0.5)\, \lambda\, u(L)$ where L denotes the loss and G the gain; $u(x)$ is the utility of the outcome $x \in \{G, L\}$, λ indicates the coefficient of loss aversion and $w^{+}(0.5)$ and $w^{-}(0.5)$ denote the probability weights for the 0.5-chance of gaining G or losing L, respectively. If we assume that $w^{+}(0.5) = w^{-}(0.5)$ as it is implied by the probability weighting function proposed by Prelec

(1998), only the ratio $u(G) / u(L) = \lambda$ defines an implied measure of loss aversion. Moreover, for small amounts, a frequent assumption on $u(x)$ is linearity, $u(x) = x$, which gives us a very simple measure of loss aversion: $\lambda = G / L$.

Figure 14 shows the level of loss aversion in "Self" Treatment while Figure 15 shows that in "Other" Treatment.

Figure 14. Loss Aversion Index in the "Self" Treatment

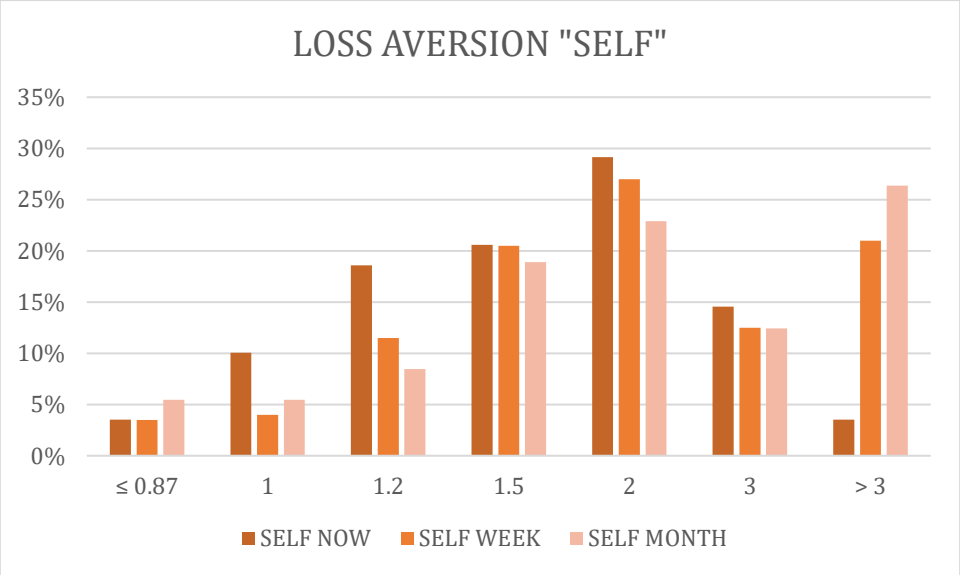
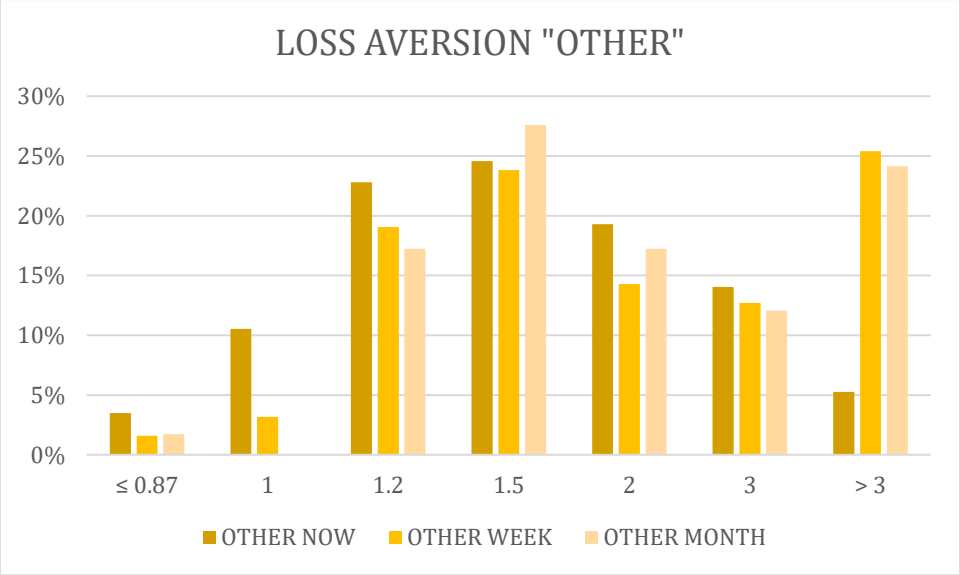


Figure 15. Loss Aversion Index in the "Other" Treatment



From Figure 14 it is clear that loss aversion increases over time. About 30% of children have a measure of loss aversion equal to 2 (the gain is twice the loss) for losses in short time and greater than 3 (losses are refused) for losses in long time. This confirms that there exists a significant difference between immediate and future losses.

Observing Figure 15 we note that children who decide for others accept greater losses in the present than those who choose for themselves. Most children have an index of loss aversion smaller than 2 for present losses and greater than 1.5 for future losses. Also in this treatment we find an evident divergence between immediate and future losses.

Although we can note some differences between Self and Other choices, the Kolmogorov-Smirnov test does not reject the hypothesis of similarity of distributions in all time frames (K-S = 0.097 with p-value = 0.83 for loss aversion now, K-S = 0.081 with p-value = 0.91 for loss aversion in a week, K-S = 0.10 with p-value = 0.79 for loss aversion in a month). The different behavior over time, instead, is confirmed for both treatments running the Chi-square test (X^2 = 220.97 with p-value = 0.00 comparing loss aversion now and in a week; X^2 = 149.46 with p-value = 0.00 comparing loss aversion now and in a month; X^2 = 546.55 with p-value = 0.00 comparing loss aversion in a week and in a month).

In order to study how each child changes loss aversion over time we consider the difference between the possibility to lose now and to lose in a week. We observe that, for "Self" Treatment, 48.96% of children prefer to lose now while 12.38% in a week and the remaining 38.66% do not change level of loss aversion in short time. With regard to "Other" Treatment, instead, we find that 39.62% prefer to risk more now whereas 18.87% in a week and the remaining 41.51% do not modify the degree of loss aversion in a short time. Analysing the difference of loss aversion in a longer time, we observe, in "Self" and "Other" Treatments respectively, similar results: 48.45% and 38.00% prefer to risk more now, 16.50% and 20.00% in a month, 35.05% and 42.00% do not modify loss aversion in long time.

From this first descriptive analysis we can conclude not only that there is a difference in making decisions for oneself or for others, but also (more generally) – even though we have no data about adults in our experiment – that the behavior related to risk attitude and loss aversion seems to be different comparing children and adults. As we have seen in Section 2, the literature on these topics confirms that children are more risk seeking than adults. We can speculatively argue that this tendency develops with age and with an increasing influence of external conditioning.

Next regressions aim to analyse which factors affect the greater or lower risk attitude and loss aversion in children. In order to do it we divide the possible risk levels in 4 categories and the possible loss aversion degree in 3 ranks.

5. Empirical Analysis

5.1. Risk Attitude Analysis

In order to study the variables that influence the measure of risk attitude, we consider three dependent variables: one related to risk in a frame of winnings, one in a frame of losses and the other built as difference between winnings and losses. All are category variables; in particular we divide the level of risk attitude in 4 categories that take values between 1 and 4, where the greater value corresponds to a higher risk aversion. In Table 7 we report the frequency of each category, for both frames of winnings and losses. It is evident that children tend to be more risk lovers with a frame of losses and more risk averse with a frame of winnings. Considering our subdivision in categories, the mean of the risk attitude level in a frame of winnings is 2.48 for "Self" Treatment and 2.42 for "Other" Treatment while the mean in a frame of losses is 1.97 and 2.1 respectively.

Table 7. Risk Attitude: Frequency

Categories	Frequency in Winnings Frame	Frequency in Losses Frame
1: Risk Love ($r \leq -0.74$)	10.70%	31.02%
2: Risk Neutrality ($-0.74 < r \leq 0$)	45.68%	43.67%
3: Low Risk Aversion ($0 < r \leq 0.49$)	29.63%	20.00%
4: High Risk Aversion ($r > 0.49$)	13.99%	5.31%

We carry out an ordered logit analysis with standard errors clustered at the class level to take into account possible correlations across observations from the same group class. Table 8 reports the logit coefficients for both frames.

Table 8. Risk Attitude: Logit Coefficients

	(1)	(2)
Dependent Variable	Risk Attitude: Winnings	Risk Attitude: Losses
Method	Ordered Logit	Ordered Logit
Treatment	-0.0751	-0.0117
	(0.218)	(0.315)
Age	-0.0343*	0.0305
	(0.0200)	(0.0202)
Female	-0.151	0.677***
	(0.258)	(0.147)
Italian	-1.323*	-0.137
	(0.782)	(0.581)
Brothers	-0.395	-0.261
	(0.301)	(0.413)
Long Time with Parents	-0.539**	-0.367
	(0.239)	(0.256)
High Math Grade	0.274	0.658**
	(0.234)	(0.261)
cut 1	-8.458***	3.093
	(2.865)	(2.645)
cut 2	-5.937**	5.117*
	(2.792)	(2.648)
cut 3	-4.257	7.070***
	(2.719)	(2.650)
Observations	225	225

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

As we can observe from Column 1 in Table 8, the risk aversion in the frame of winnings increases significantly in foreign children and in those who stay little time with parents. It seems that also age has a small effect in the measure of risk attitude even if the range of age considered is limited. We note also that the subdivisions across those who are risk lover, risk neutral and low risk adverse have an evident relevance while it seems that there is not a significant difference between children that have low and high risk aversion. From Column 2, Table 8, we can see the variables that influence risk attitude in a frame of losses. It is evident a gender effect: females are more risk averse than males. Moreover, risk aversion increases also for children who are better in math; probably, these children have a deeper understanding of the numbers and their significance, could be more rational and then give a different value to numbers and losses. In this frame it seems that there is not a relevant division between the categories of risk lover and risk neutral, probably because most children show a measure of risk attitude intermediate between these two levels.

In order to better understand and measure the effects of these variables on the risk attitude, we calculate the marginal effects on each category. The results related to the frame of winnings are reported in Table 9.

Table 9. Risk Attitude Winnings: Marginal Effects

VARIABLES	(1) Category 1	(2) Category 2	(3) Category 3	(4) Category 4
Treatment	0.006	0.013	-0.010	-0.009
	(0.018)	(0.037)	(0.029)	(0.026)
Age	0.003*	0.006	-0.005	-0.004*
	(0.002)	(0.004)	(0.003)	(0.002)
Female	0.012	0.025	-0.020	-0.017
	(0.021)	(0.043)	(0.034)	(0.031)
Italian	0.107*	0.220	-0.175	-0.152*
	(0.058)	(0.141)	(0.115)	(0.084)
Brothers	0.032	0.066	-0.052	-0.045
	(0.027)	(0.050)	(0.041)	(0.035)
Long Time with Parents	0.044**	0.090**	-0.071**	-0.062**
	(0.018)	(0.044)	(0.033)	(0.029)
High Math Grade	-0.022	-0.046	0.036	0.032
	(0.019)	(0.039)	(0.033)	(0.025)
Observations	225	225	225	225

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

As we can observe from Table 9, Italian children are 10.70% more likely to be risk lovers and 15.2% less likely to be risk averse than foreign students, probably because of a different culture. We note also that for children who stay with parents for long time during the day the probability of being risk lover increases by 4.40% and of being risk neutral raises by 9.00% while the probability to be low and high risk averse decreases by 7.10% and 6.20% respectively. We might think that a meaningful presence of the parents makes children feel a greater sense of protection, care and self-confidence that allows them to risk more because in case of difficulties they are sure to find a secure-base in their parents.

In Table 10 we report the predicted probability of each specific level of risk attitude, given all independent variables at their mean values. We can observe that the probability to be risk lover is equal to 8.90% and that to be risk neutral is equal to 46.00% while the likelihood of low risk aversion is equal to 31.80% and high risk aversion is equal to 13.30%.

Table 10. Risk Attitude Winnings: Predicted Probabilities

	Predict Probability	95% Confidence Interval
P(risk love|x)	0.089	[0.051 , 0.127]
P(risk neutrality|x)	0.460	[0.354 , 0.566]
P(low risk aversion|x)	0.318	[0.234 , 0.402]
P(high risk aversion|x)	0.133	[0.084 , 0.182]

Table 11 shows the difference of predicted probabilities for the four risk attitude categories considering the change of one variable at a time. We observe the main divergence between Italian and non-Italian children, between those who are attending the fourth and the last year of primary school and between children that stay long and short time with their parents. For the other groups the differences are not so evident, as we can see from Table 12.

Table 11. Risk Attitude Winnings: Differences in Probability

	"Self" Treatment	"Other" Treatment	Change	95% Confidence Interval
P(risk love|x)	0.088	0.094	-0.006	[-0.030 , 0.042]
P(risk neutrality|x)	0.456	0.470	-0.014	[-0.058 , 0.083]
P(low risk aversion|x)	0.320	0.310	0.010	[-0.068 , 0.048]
P(high risk aversion|x)	0.136	0.126	0.010	[-0.057 , 0.040]
	Fourth year	Fifth year	Change	95% Confidence Interval
P(risk love|x)	0.069	0.117	-0.048	[-0.092 , -0.005]
P(risk neutrality|x)	0.411	0.506	-0.095	[-0.201 , 0.010]
P(low risk aversion|x)	0.347	0.272	0.075	[-0.003 , 0.153]
P(high risk aversion|x)	0.173	0.105	0.068	[-0.004 , 0.141]
	Female	Male	Change	95% Confidence Interval
P(risk love|x)	0.096	0.084	0.012	[-0.029 , 0.054]
P(risk neutrality|x)	0.473	0.448	0.025	[-0.059 , 0.109]
P(low risk aversion|x)	0.307	0.327	-0.020	[-0.086 , 0.046]
P(high risk aversion|x)	0.124	0.141	-0.017	[-0.077 , 0.042]
	Italian	Non-Italian	Change	95% Confidence Interval
P(risk love|x)	0.095	0.027	0.068	[0.026 , 0.110]
P(risk neutrality|x)	0.472	0.231	0.241	[-0.026 , 0.507]
P(low risk aversion|x)	0.308	0.393	-0.085	[-0.149 , -0.020]
P(high risk aversion|x)	0.125	0.349	-0.224	[-0.547 , 0.099]

	No brother	Brothers	Change	95% Confidence Interval
P(risk love|x)	0.066	0.095	-0.029	[-0.014 , 0.072]
P(risk neutrality|x)	0.401	0.471	-0.070	[-0.037 , 0.176]
P(low risk aversion|x)	0.358	0.309	0.049	[-0.116 , 0.019]
P(high risk aversion|x)	0.175	0.125	0.050	[-0.133 , 0.032]
	Long time with Parents	Little time with Parents	Change	95% Confidence Interval
P(risk love|x)	0.104	0.064	0.040	[0.010 , 0.071]
P(risk neutrality|x)	0.488	0.395	0.093	[0.003 , 0.183]
P(low risk aversion|x)	0.294	0.361	-0.067	[-0.123 , -0.011]
P(high risk aversion|x)	0.114	0.180	-0.066	[-0.132 , -0.001]
	Math Mark > 8	Math Mark ≤ 8	Change	95% Confidence Interval
P(risk love|x)	0.079	0.102	-0.023	[-0.061 , 0.016]
P(risk neutrality|x)	0.438	0.483	-0.045	[-0.121 , 0.031]
P(low risk aversion|x)	0.334	0.298	0.036	[-0.029 , 0.101]
P(high risk aversion|x)	0.149	0.117	0.032	[-0.018 , 0.081]

In Table 12 we report the marginal effects on each category considering the frame of the losses.

Table 12. Risk Attitude Losses: Marginal Effects

VARIABLES	(1) Category 1	(2) Category 2	(3) Category 3	(4) Category 4
Treatment	0.003	-0.001	-0.002	-0.000
	(0.068)	(0.014)	(0.043)	(0.012)
Age	-0.007	0.001	0.004	0.001
	(0.004)	(0.001)	(0.003)	(0.001)
Female	-0.147***	0.030	0.092***	0.025**
	(0.032)	(0.021)	(0.024)	(0.011)
Italian	0.030	-0.006	-0.019	-0.005
	(0.125)	(0.025)	(0.079)	(0.022)
Brothers	0.056	-0.011	-0.035	-0.010
	(0.091)	(0.022)	(0.057)	(0.013)
Long Time with Parents	0.079	-0.016	-0.050	-0.014
	(0.054)	(0.014)	(0.036)	(0.011)
High Math Grade	-0.142**	0.029	0.089**	0.025**
	(0.060)	(0.026)	(0.038)	(0.010)
Observations	225	225	225	225

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

From Table 12 it is clear that gender has a relevant effect on the choices in case of losses, as other researches has found (Stone et al., 2002; Gächter et al., 2010; Sutter et al., 2013). Females are 14.70% less likely to be risk lovers while they are respectively 9.20% and 2.50% more likely to be low and high risk averse than males. We can note also an influence of the ability in math: children who have a higher grade in math are 14.20% less likely to be risk lovers while they are 8.90% and 2.50% more likely to be low and high risk averse. Finally, we observe that all variables do not have any effects on being risk neutral, probably because in this domain there is no clear distinction between those who we classified as risk lovers and those who are risk neutrals, showing then a similar behavior.

In Table 13 we report the predicted probability for each category of risk attitude, considering all explanatory variables at their mean values. We can observe that the probability of being risk lover is equal to 31.70% and the likelihood of being risk neutral is equal to 46.10%. The probabilities to be low and high risk averse are much lower: they are 18.30% and 3.90% respectively.

Table 13. Risk Attitude Winnings: Predicted Probabilities

	Predict Probability	95% Confidence Interval
P(risk love|x)	0.317	[0.227 , 0.407]
P(risk neutrality|x)	0.461	[0.388 , 0.535]
P(low risk aversion|x)	0.183	[0.122 , 0.244]
P(high risk aversion|x)	0.039	[0.011 , 0.067]

Table 14 shows the difference of predicted probabilities for the four risk attitude categories considering the change of one variable at a time. We observe the main divergence between females and males, between those who are attending the fourth and the last year of primary school and between children that stay long and short time with their parents. For the other groups the differences are not so evident, as we can see from Table 15.

Table 14. Risk Attitude Losses: Differences in Probability

	"Self" Treatment	"Other" Treatment	Change	95% Confidence Interval
P(risk love|x)	0.317	0.318	-0.001	[-0.132 , 0.137]
P(risk neutrality|x)	0.461	0.461	0.000	[-0.028 , 0.027]
P(low risk aversion|x)	0.183	0.182	0.001	[-0.085 , 0.082]
P(high risk aversion|x)	0.039	0.039	0.000	[-0.023 , 0.022]

	Fourth year	Fifth year	Change	95% Confidence Interval
P(risk love|x)	0.385	0.262	0.123	[-0.021 , 0.268]
P(risk neutrality|x)	0.434	0.458	-0.024	[-0.063 , 0.016]
P(low risk aversion|x)	0.147	0.222	-0.075	[-0.169 , 0.019]
P(high risk aversion|x)	0.034	0.058	-0.024	[-0.059 , 0.010]
	Female	Male	Change	95% Confidence Interval
P(risk love|x)	0.245	0.390	-0.145	[-0.206 , -0.084]
P(risk neutrality|x)	0.466	0.439	0.027	[-0.013 , 0.067]
P(low risk aversion|x)	0.235	0.143	0.092	[0.046 , 0.138]
P(high risk aversion|x)	0.054	0.028	0.026	[0.004 , 0.048]
	Italian	Non-Italian	Change	95% Confidence Interval
P(risk love|x)	0.311	0.259	0.052	[-0.146 , 0.250]
P(risk neutrality|x)	0.453	0.456	-0.003	[-0.024 , 0.018]
P(low risk aversion|x)	0.192	0.229	-0.037	[-0.194 , 0.120]
P(high risk aversion|x)	0.044	0.056	-0.012	[-0.068 , 0.044]
	No brother	Brothers	Change	95% Confidence Interval
P(risk love|x)	0.272	0.326	-0.054	[-0.220 , 0.111]
P(risk neutrality|x)	0.467	0.459	0.008	[-0.014 , 0.028]
P(low risk aversion|x)	0.214	0.178	0.036	[-0.084 , 0.157]
P(high risk aversion|x)	0.047	0.037	0.010	[-0.021 , 0.042]
	Long time with Parents	Little time with Parents	Change	95% Confidence Interval
P(risk love|x)	0.344	0.266	0.078	[-0.178 , 0.023]
P(risk neutrality|x)	0.455	0.467	-0.012	[-0.011 , 0.035]
P(low risk aversion|x)	0.167	0.218	-0.051	[-0.022 , 0.124]
P(high risk aversion|x)	0.034	0.049	-0.015	[-0.009 , 0.039]
	Math Mark > 8	Math Mark ≤ 8	Change	95% Confidence Interval
P(risk love|x)	0.255	0.398	-0.143	[0.025 , 0.261]
P(risk neutrality|x)	0.466	0.435	0.031	[-0.083 , 0.021]
P(low risk aversion|x)	0.226	0.139	0.087	[-0.159 , -0.016]
P(high risk aversion|x)	0.053	0.028	0.025	[-0.044 , -0.005]

In order to study the relationship between the behavior in the two frames, we consider a third measure of risk attitude, that is the difference between risk attitude in winnings and risk attitude in losses. Then, also this variable is a category variable; in particular, for our study we divide children's behavior in three levels of preferences: greater risk aversion in losses, same degree of risk aversion in winnings and in losses, greater risk aversion in winnings. Analysing

our data, we find that 19.75% of children risk more in a frame of winnings than in a frame of losses, 32.92% show the same risk attitude in both frames and 47.33% are more risk lovers in losses than in winnings. Table 15 reports the logit coefficients and the marginal effects of this ordered logit regression.

Table 15. Difference in Risk Attitude: Winnings - Losses

VARIABLES	(1) Logit Coeff.	(2) Category 1	(3) Category 2	(4) Category 3
Treatment	0.205	-0.028	-0.023	0.051
	(0.316)	(0.045)	(0.034)	(0.079)
Age	-0.059***	0.008***	0.007**	-0.015***
	(0.0228)	(0.003)	(0.003)	(0.006)
Female	-0.803***	0.111***	0.089***	-0.201***
	(0.206)	(0.031)	(0.029)	(0.052)
Italian	-0.290	0.040	0.032	-0.072
	(0.569)	(0.078)	(0.065)	(0.142)
Brothers	-0.197	0.027	0.022	-0.049
	(0.364)	(0.050)	(0.041)	(0.091)
Long Time with Parents	-0.243	0.034	0.027	-0.061
	(0.236)	(0.032)	(0.028)	(0.059)
High Math Grade	-0.166	0.023	0.019	-0.042
	(0.251)	(0.035)	(0.028)	(0.063)
Cut 1	-9.924***			
	(3.031)			
Cut 2	-8.252***			
	(2.917)			
Observations	225	225	225	225

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

As we can observe from Column 1 in Table 15, the difference in risk aversion is strongly related to gender and age. In particular, considering the marginal effects reporting in Columns 2, 3, 4, we find that females are 11.10% more likely to be more risk lover in winnings than in losses, 8.90% more likely to maintain the same risk attitude and 20.10% less likely to be more risk lover in losses than in winnings with respect to males. These results show a gender difference on risk attitude, clear not only for adults as a wide literature has found (Byrnes et al., 1999; Weber et al., 2002; Johnson et al., 2004; Harris et al., 2006), but also for children. Moreover, for older children the probability of being more risk lovers in winnings than in losses increases by 0.80% and of being more risk lover in losses than in winnings decreases by 1.50% while the likelihood to show the same level of risk aversion raises by 0.70%. Although the age

range considered is limited, from these results it seems that children have a greater awareness of losses with age.

Calculating the predicted probabilities for each category, we find that the likelihood of being more risk lover in winnings than in losses is equal to 16.59% while the likelihood of being more risk lover in losses than in winnings is equal to 48.57%. Instead, the probability to show the same behavior in both frames is equal to 34.84%.

5.2. Loss Aversion Analysis

In order to study the measure of loss aversion over time, we consider three dependent variables related to the three different time frames: loss aversion at present moment, after a week and after a month. As for the risk attitude measure, all are category variables; in particular we divide the levels of loss aversion in 3 categories that take values between 1 and 3, where the greater value corresponds to a higher loss aversion and, therefore, a lower propensity to risk. We consider only three categories because of different tendencies of loss aversion in the three periods considered, as we can see from Figures 14 and 15. Indeed, the most evident changes of loss aversion in the three periods of time correspond to different levels of risk; those who are more marked are in correspondence with no risk of loss, risk up to a maximum loss of 4 and a gain of 6, high risk up to a maximum loss of 7 and a gain of 6.

In Table 16 we report the frequency of each category, for all periods of time. It is evident that loss aversion increases over time. Indeed, the mean of loss aversion considering present losses is 1.71 while that considering future losses is 2.02 and 2.07, for a week and a month time distance respectively.

Table 16. Loss Aversion: Frequency

Categories	Now	In a week	In a month
1: Low Loss Aversion ($\lambda \leq 1$)	33.20%	20.15%	19.31%
2: Medium Loss Aversion ($1.2 \leq \lambda \leq 3$)	62.89%	57.79%	54.83%
3: High Loss Aversion ($\lambda \geq 3$)	3.91%	22.05%	25.87%

Also for this analysis, we carry out an ordered logit regression with standard errors clustered at the class level to take into account possible correlations across observations from the same group class. In the following analyses we include in the model also the two dependent variables related to the measures of risk attitude and, for future losses, a dummy variable

indicating whether children are impatient. The last variable is built considering the question number 19 in the post-experiment questionnaire. Table 17 reports the logit coefficients for each time periods.

Table 17. Loss Aversion: Logit Coefficients

	(1)	(2)	(3)
Dependent Variable	Loss Aversion: Now	Loss Aversion: Week	Loss Aversion: Month
Method	Ordered Logit	Ordered Logit	Ordered Logit
Treatment	-0.292	-0.190	-0.044
	(0.307)	(0.281)	(0.299)
Age	-0.023	-0.006	0.013
	(0.0156)	(0.0241)	(0.0251)
Female	0.114	0.232	-0.113
	(0.387)	(0.268)	(0.303)
Italian	-0.079	0.544	0.515
	(0.651)	(0.350)	(0.392)
Brothers	-0.088	0.252	0.423
	(0.444)	(0.354)	(0.306)
Long Time with Parents	-0.563*	-0.224	0.107
	(0.334)	(0.340)	(0.296)
High Math Grade	0.606**	-0.209	-0.407*
	(0.261)	(0.338)	(0.224)
Risk Averse Winnings	0.697***	0.664***	0.614***
	(0.203)	(0.194)	(0.173)
Risk Averse Losses	0.191	0.389**	0.027
	(0.224)	(0.190)	(0.181)
Impatience		-0.566**	-0.401
		(0.308)	(0.290)
cut 1	-1.697	0.539	2.290
	(2.065)	(3.101)	(2.887)
cut 2	2.804	3.587	4.850**
	(2.201)	(3.067)	(2.860)
Observations	211	211	211

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

As we can note from Column 1 in Table 17, the measure of loss aversion at present time increases significantly for children who are more risk averse in a frame of winnings and are better in math while it decreases for those who stay long time with parents; all these results are coherent with previous findings. From Column 2, Table 17, we can observe the variables that influence loss aversion in a time distance of one week. It is evident a strong relation with risk attitude: children who are more risk averse, both in winnings and in losses, are more loss

averse. Moreover, children who are more impatient show a lower loss aversion for losses in near future. As we can see from Column 3 in Table 17, also for loss aversion in far future, it is clear the interconnection with risk attitude. In addition, it seems that children with higher grade in math are less loss averse, maybe because of the greater importance given to the time distance.

It seems also that the subdivisions across the three levels of loss aversion are not significantly relevant, except for the time horizon of a month; in this case, indeed, we note a significant difference between the two categories corresponding to medium and high loss aversion. Children, indeed, imagine the month extremely far in time and they do not want to wait for winning the prize or to loss the prize after a month. Instead, for a shorter time horizon there probably exists a clear division only between the choices of "no losses" and "accept some losses".

In order to study the actual influence of these variables on the measure of loss aversion, we calculate the marginal effects on each category. Table 18 reports the results related to present losses while Table 19 and Table 20 those related to future losses.

Table 18. Loss Aversion Now: Marginal Effects

VARIABLES	(1) Category 1	(2) Category 2	(3) Category 3
Treatment	0.062	-0.055	-0.007
	(0.064)	(0.057)	(0.007)
Age	0.005	-0.004	-0.001
	(0.003)	(0.003)	(0.000)
Female	-0.024	0.022	0.003
	(0.083)	(0.074)	(0.009)
Italian	0.017	-0.015	-0.002
	(0.138)	(0.123)	(0.015)
Brothers	0.019	-0.017	-0.002
	(0.095)	(0.084)	(0.011)
Long Time with Parents	0.120*	-0.107	-0.013*
	(0.073)	(0.067)	(0.007)
High Math Grade	-0.129**	0.115**	0.014*
	(0.057)	(0.051)	(0.008)
Risk Averse Winnings	-0.149***	0.132***	0.017***
	(0.040)	(0.037)	(0.006)
Risk Averse Losses	-0.041	0.036	0.005
	(0.046)	(0.041)	(0.006)
Observations	211	211	211

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

As we can note from Table 18, the level of risk aversion in a frame of winnings has a relevant effect on the measure of loss aversion. Children more risk averse are 14.90% less likely to show low loss aversion while they are 13.20% and 1.70% more likely to show medium and high loss aversion, respectively. Moreover, we observe an influence of the ability in math: children who have a higher grade in math are 12.90% less likely to have a low level of loss aversion while they are 11.50% and 1.40% more likely to have a medium level and a high level of loss aversion, respectively. Finally, we can see a weak significance of the variable representing the time spent with parents: as we found in risk aversion analysis, children who stay with their parents more time accept to risk showing a lower level of loss aversion than children who stay little with them.

Table 19. Loss Aversion Week: Marginal Effects

VARIABLES	(1) Category 1	(2) Category 2	(3) Category 3
Treatment	0.028	-0.000	-0.028
	(0.040)	(0.007)	(0.044)
Age	0.001	-0.000	-0.001
	(0.004)	(0.000)	(0.003)
Female	-0.034	0.000	0.034
	(0.039)	(0.008)	(0.039)
Italian	-0.080	0.000	0.080
	(0.049)	(0.020)	(0.055)
Brothers	-0.037	0.000	0.037
	(0.050)	(0.009)	(0.052)
Long Time with Parents	0.033	-0.000	-0.033
	(0.048)	(0.008)	(0.050)
High Math Grade	0.031	-0.000	-0.031
	(0.050)	(0.008)	(0.050)
Risk Averse Winnings	-0.098***	0.000	0.097***
	(0.028)	(0.024)	(0.037)
Risk Averse Losses	-0.057**	0.000	0.057**
	(0.028)	(0.014)	(0.027)
Impatience	0.083**	-0.000	-0.083
	(0.041)	(0.021)	(0.051)
Observations	211	211	211

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

As we can observe from Table 19, there are no significant effects for the medium level of loss aversion considering a short future time. For the other two categories we find a relevant

influence of the two measures of risk attitude, result coherent with the previous analysis. Indeed, children who are more risk averse in winnings are 9.80% less likely to show low loss aversion and those who are more risk averse in losses are 5.70% less likely to show low loss aversion. Moreover, it seems that children who are impatient are 8.30% more likely to reveal low loss aversion. This result could be explained remembering that, in the activity of the coin considering a future time, a loss implies to receive the prize immediately and to give back it after a week. Children who always accept to risk, play in a frame where the probability to lose is greater than the probability to win, and this means to receive a prize immediately with higher probability. This hypothesis is coherent also with the others results related to this variable: being impatient, indeed, is not more significant when the level of loss aversion is higher, and therefore when the probability of winning is greater than the probability of losing. In addition, during the activity, children were surprized and annoyed by having to wait one week; for them one week is a long time.

Table 20. Loss Aversion Month: Marginal Effects

VARIABLES	(1) Category 1	(2) Category 2	(3) Category 3
Treatment	0.007	0.001	-0.008
	(0.047)	(0.009)	(0.055)
Age	-0.002	-0.000	0.002
	(0.004)	(0.001)	(0.005)
Female	0.018	0.003	-0.021
	(0.048)	(0.009)	(0.056)
Italian	-0.081	-0.013	0.094
	(0.059)	(0.023)	(0.073)
Brothers	-0.067	-0.011	0.077
	(0.048)	(0.017)	(0.055)
Long Time with Parents	-0.017	-0.003	0.020
	(0.047)	(0.007)	(0.054)
High Math Grade	0.064*	0.010	-0.074*
	(0.037)	(0.016)	(0.043)
Risk Averse Winnings	-0.097***	-0.015	0.112***
	(0.028)	(0.024)	(0.038)
Risk Averse Losses	-0.004	-0.001	0.005
	(0.029)	(0.005)	(0.033)
Impatience	0.063	0.010	-0.073
	(0.042)	(0.020)	(0.058)
Observations	211	211	211

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

As we can observe from Table 20, children who are more risk averse are 9.70% less likely to show low loss aversion and 11.20% more likely to show high loss aversion. Moreover, we find a weak significance of the variable related to the ability in math: children who have a higher grade in math are 6.40% more likely to reveal low loss aversion and 7.40% less likely to show high loss aversion.

Unlike the time period of a week, in this case children do not want to lose a prize in their possession for a month. The comments during the activity were "A month is a very long time! We do not want to give back a prize whether we have won it! Now it has become ours!" Therefore, it seems that, considering a longer future time, children give more importance to the sense of possession rather than impatience.

In Tables 21, 22 and 23 we report the predicted probabilities for each category of loss aversion, in the different time horizons, considering all explanatory variables at their mean values. From Table 21 we can observe that the probabilities of showing low, medium and high loss aversion at the present time are equal to 30.80%, 66.80% and 2.40%, respectively. From Table 22 we can see that the likelihoods of revealing low, medium and high loss aversion in short future time are equal to 17.90%, 64.20% and 17.90%, respectively. Finally, from Table 23, we note that the probabilities of showing low, medium and high loss aversion in long future time are equal to 19.60%, 56.30% and 24.10%, respectively.

Table 21. Loss Aversion Now: Predicted Probabilities

	Predict Probability	95% Confidence Interval
P(low loss aversion|x)	0.308	[0.244 , 0.373]
P(medium loss aversion|x)	0.668	[0.605 , 0.731]
P(high loss aversion|x)	0.024	[0.011 , 0.038]

Table 22. Loss Aversion Week: Predicted Probabilities

	Predict Probability	95% Confidence Interval
P(low loss aversion|x)	0.179	[0.133 , 0.225]
P(medium loss aversion|x)	0.642	[0.558 , 0.727]
P(high loss aversion|x)	0.179	[0.092 , 0.266]

Table 23 Loss Aversion Month: Predicted Probabilities

	Predict Probability	95% Confidence Interval
P(low loss aversion|x)	0.196	[0.135 , 0.257]
P(medium loss aversion|x)	0.563	[0.492 , 0.634]
P(high loss aversion|x)	0.241	[0.154 , 0.328]

6. Conclusion

The present research aimed to study risk preferences and loss aversion in children by means of incentivized experiments. Even though our data only regarded children attending primary school, our study allows us to draw some broad comparisons with prior work focusing on adults' decision making in these domains. We also investigated whether children's loss aversion changes over time, considering different time horizons (present, after a week, after a month). Moreover, the experiment aimed to test whether there exists self-other decision-making difference also when considering children's risk-taking choices. To this aim, we introduced two treatments that differ with regard to the individual for which the participant takes decisions: in "Self" Treatment children chose for themselves while in "Other" Treatment they decided for another child who attends a different class and has the same age.

We ran the experiment at five primary schools of the province of Vicenza, involving 301 students attending the forth and the fifth year. The activity consisted of three parts and a final questionnaire; children were incentivized to participate in it by winning some prizes.

Analysing our data, we clearly found a treatment effect, confirmed by running the non-parametric test of Mann-Whitney: children participating in "Other" Treatment are more risk lovers than those who participated in "Self" Treatment. With regard to the task related to risk attitude, more than 50% of children in "Self" Treatment are risk neutral, considering the frame of winnings, while the degree of risk aversion decreases considering the frame of losses. Moreover, we found that their level of loss aversion increases over time: the number of children who risk by playing mixed gambles decreases considering future time horizons, at the same probability of loss. In contrast, in "Other" Treatment we did not observe a common trend over time and the number of inconsistent answers with respect to the standard, rational behavior is high and significantly different between treatments. Indeed, the number of inconsistent answers, considering all tasks simultaneously, results to be equal to 63.64% in "Other" Treatment and 33.80% in "Self" Treatment. Carrying out a probit regression, we found that consistency is significantly greater in "Self" Treatment, for older boys and for children who have better grade in maths and receive a pocket money. This evidence reveals that children who choose for others do not care about them. Further, it seems that some children expose others to an exaggerated risk, making them lose. Other studies suggest that other-regarding preferences develop with age: intentional fairness considerations emerge after 11 years old (Güroğlu et al., 2009), altruism increases with age and becomes more important in adolescence

(Fehr et al., 2013; Engel, 2011), trust grows almost linearly from early childhood to early adulthood (Sutter and Kocher, 2007). Then, the careless attitude that we observe could arise in children when the consequences of some choices involve others and could disappear with age.

In the second part of our analysis, we considered only the coherent answers. We calculated the index of risk attitude using the utility function CRRA. We found that 50% of children participating in "Other" Treatment display a neutral behavior towards risk in both winnings and losses frames. With regard to behavior in "Self" Treatment, instead, we noted that our sample is equally allocated around the neutrality ($-0.737 \leq r \leq 0$) in the frame of losses whereas it is more risk averse ($-0.737 \leq r \leq 0.485$) in the frame of winnings. This different behavior in winnings and losses is confirmed by running the Chi-square test. We measured the index of loss aversion following Fehr and Goette (2007) and Gächter et al. (2010). Our data confirms that exists a significant difference between immediate and future losses, in both treatments. The mean of loss aversion considering present losses is 1.71 while considering future losses is 2.02 and 2.07, for a week and a month time distance respectively. In addition, from our results it seems clear that children are more risk seeking than adults, as the literature on these topics highlines. Then, we can presume that risk and loss aversion develop with age and with an increasing influence of external conditioning.

In order to study the variables that influence the two measures, we carried out an ordered logit analysis building some categorical dependent variables. In particular, we divided the possible risk levels in 4 categories and the possible loss aversion degree in 3 ranks. Our data evidences that the degree of risk aversion in the frame of winnings is significantly higher for foreign children and for those who stay little time with parents while we observed a strong gender effect in the frame of losses: females, indeed, are more risk averse than males. Considering the dependent variable built as difference between winnings and losses, we found that 19.75% of children risk more in a frame of winnings than in a frame of losses, 32.92% show the same risk attitude in both frames and 47.33% are more risk lover in losses than in winnings. The results related to loss aversion analysis reveal that it increases significantly for children who are more risk averse and are better in maths while it decreases for those who stay long time with parents. Moreover, children who are more impatient show a lower loss aversion when losses are in near future while it seems that, considering a longer future time, children give more importance to the sense of possession rather than impatience, increasing their loss aversion. This result is coherent with the existing literature on children presented as delay-averse (Sutter et al., 2013; Bettinger and Slonim, 2007). In our experiment, indeed, a loss

implies to receive the prize immediately and the greater is the probability to lose, the higher is the probability to obtain the prize without waiting a week. Furthermore, by making this choice, the loss is a future consequence confirming for children the importance of the present time and of an immediate gratification.

This research could be improved extending the range of age of our participants. The results of the logit regression, indeed, reveal an age effect. Involving in our experiment younger and older children, we could strengthen our findings and better understand the relation and the evolution of risk and loss attitude at different stages of life. Moreover, it could be interesting to involve in the experiment also the parents of the children and study, in addition to their levels of risk attitude and loss aversion, their influence on children behavior. Indeed, as Levin and Hart (2003) found, risk proneness of parent might predict risk proneness of child.

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Chapter 3

Preference for Giving: the Influence of Similar and Dissimilar Dictators

Abstract

By collecting data among students at the University of Verona, we investigate whether subjects' giving choices in a Dictator Game are affected by information over the allocation of a similar Dictator in terms of demographic characteristics, hobbies and beliefs. We introduce three treatments which differ in the way information is provided. When participants receive the desired Dictator information and pay for it, they tend to choose a fair sharing, while when participants receive group information and cannot choose it, they tend to act selfishly. Our data indicate also that, when a cost has to be incurred, only 50% of Dictators choose to receive information, while when it is costless about 90% of individuals decide to receive it. More importantly, our results highlight little importance for hobbies' information and a clear preference for beliefs' information. Carrying out an OLS regression, we find that feeling similar to other individuals leads to behave in line with them. Moreover, our findings indicate that Dictators who search for approval and others' appreciation, who are more easily influenced and more agreeable tend to align their choices with others. Finally, those who receive random information focus their attention on the allocation distribution while the individuals who receive desired information give more importance to it.

1. Introduction

The following experiment focuses on the link between giving in the Dictator Game (hereafter, DG) and the influence of both similar and dissimilar people. This hypothetical relationship arises from the idea that people love and search for similar persons in many situations.

"Similarity begets friendship" (Plato, 1968). People generally have significant contact with others like themselves. This evidence has driven to coin the term *homophily* - literally, "love of the same"- to highlight the propensity to associate with similar people with respect to dissimilar ones. The result is that people's personal networks are often homogeneous with regard to many sociodemographic, behavioural and other characteristics. Homophily in race and ethnicity creates the strongest differences in our personal environments, with age, religion, education, occupation, and gender following in roughly that order (McPherson et al., 2001; Kalmijn, 1998; Marsden, 1987; Ibarra, 1995). Lazarsfeld and Merton (1954) draw a distinction between two types of homophily: *status homophily* which captures the observed tendency of people to associate with other people possessing similar characteristics (such as race, gender, and religion) and *value homophily* which reflects people's tendency to affiliate with those holding similar values, attitudes and beliefs (see on this also Golman et al., 2016).

Considering this context there exists a strand of literature focusing on the preference for belief consonance and the consequence behavior and motivational mechanisms that underline it. There are many evidences that highlight people care about what others believe (Alford et al., 2011; Huber and Malhotra, 2013; Kranton et al., 2013). The prevalent explanation is associated with the idea of group membership. As Golman et al. (2016) write "people join, and identify with, groups because of the material, and possibly psychological, benefits that group membership confers. The preference for belief consonance then stems from a desire to enhance one's connection to the group. A second reason why people might want others to have similar views is because they want to hold certain beliefs, and the presence of other people with different beliefs poses a threat to their own beliefs".

When others have discrepant beliefs, people could choose to change their beliefs and conform to them. This occurs mainly when an individual regularly has different beliefs than a large group of people who share common ideas and in particular when these people play an important role for the individual (Asch, 1951). Furthermore, Pool et al. (1998) find that whether the group is considered highly self-relevant, individuals change the interpretations of questions in order to follow the majority group or to distance from the minority group position.

In their studies they show also different effects on participants' self-esteem: it decreases both when individuals who desire to align themselves with a particular group recognize to have different beliefs with respect to this group and when individuals who desire to differentiate themselves from a group discover to share common beliefs with it. Moreover, other studies point out that people who are more likely to be insecure about their identity and show an intermediate level of confidence in their beliefs, should have the strongest preference for belief consonance (Babad et al., 1987; Visser et al., 2003). Therefore, when a subject is exposed to socially relevant information that may lead her to revise her beliefs, her choice could change.

As noted by Golman et al. (2016), the preference for belief consonance has received little attention from economists although its relevance for a wide range of implications in economic and noneconomic behaviors. By focusing our attention on giving, we choose to run the Dictator Game because of its simplicity and its clear and reliable experimental procedure in lab. DG, indeed, is the most well-known experimental game involving donations and many studies have been carried out on it (Kahneman et al., 1986; Forsythe et al., 1994; Fehr and Schmidt, 1999; Camerer, 2003; by explaining behavior in DG, more recent literature regards the difference between intrinsic moral motivation and extrinsic social motivation: Cappelen et al., 2017; Dana et al., 2006; Brobeng et al., 2007; Andreoni and Bernheim, 2009; Lazear et al., 2012). This experiment aims to test the broad conjecture that information on behavior of similar and dissimilar people (with special regard to personal beliefs) could affect also one's *giving* behavior and, in particular, may lead individuals to revise the amount given away in a DG in the lab. More specifically, since on the whole the existing literature focuses on different kinds of homophily, we aim to investigate whether subjects' giving choices are affected by information over the allocation of a similar Dictator in terms of *socio-demographic characteristics* (gender, age, nationality), *hobbies* (musical preference, favourite sport, kind of movie) and *beliefs* (political, religious and moral values). Moreover, we wonder whether being informed about the allocation of a *group* of Dictators has the same, less or more importance compared to being informed about the decision of *one* single Dictator only. Beyond testing the relevance of a preference for homophily, this experiment, by also introducing a cost for obtaining others' allocation, aims to study whether subjects search for this information. Through our design it is not possible to shed light on the motivations driving this behavior directly; we may speculatively argue that this choice could be made in order to generate self-esteem and self-approval in dictators.

Finally, this study differs from previous research concerning the DG not only for adding a cost to obtain information and then for capturing the willingness to pay for different type of information, but also for considering information related to the characteristics of Dictators, instead of *Recipients*. Indeed, not only the features of Recipients could influence the amount given away, as many studies convincingly documented (Ben-Ner et al., 2004; Van Der Merwe and Burns, 2008; Ben-Ner et al., 2009; Ben-Ner and Kramer, 2011; Aguiar et al., 2008; Bohnet and Frey, 1999; Cason and Mui, 1998), but also different kind of information about Dictators and, in particular, about their being perceived as similar or dissimilar along some potentially relevant dimensions.

The remainder of the chapter is structured as follows. Section 2 contains a literature review on motivations and preferences for belief consonance. In Section 3 we present the design of the experiment while Section 4 describes data we collected. Section 5 contains the main findings of our analysis and Section 6 concludes. Appendices provide details on instructions and questionnaires, show some allocations' distribution graphs, describe the construction of some key variables and report data on Recipients.

2. Literature Review

2.1. Non-Selfish Behavior in Dictator Game Experiments

The DG has been widely studied in behavioral economics and, in contrast to the traditional economic theory for which human being acts selfishly and then would keep the entire endowment, the majority of experiments shows that dictators give a positive amount, on average about the 20% of the sum (Camerer, 2003; Fehr and Schmidt, 1999; Engel, 2011). Recent researches investigate what motivates this seemingly altruistic behavior. The most common interpretation is that this generosity reflects intrinsic motivations. Recent works, on the other hand, suggest the existence of extrinsic motivations: dictators could act in an apparently generous way because their choices are observed by an anonymous recipient. Therefore, the spontaneous question is the following: do people give up part of their resources because they want or because they feel obliged to do so in certain contexts? Cappelen et al. (2017) examining the relative importance of intrinsic moral motivation and extrinsic social motivation, find that without obvious moral argument for sharing most participants do not give anything to recipient while they give away a substantial share when a moral argument is

introduced. Moreover, they show that extrinsic social motivation matters: dictators are uncertain on whether to give information or not to recipients, which is consistent with some participants being motivated by guilt and shame and others by social esteem and pride. Also Koch and Normann (2008) study whether fair behavior is inspired by regard for others or by regard by others. They compare two treatments: one in which recipients know the dictator game instructions and one in which no information about the source of dictator offers is provided to recipients. They find that half of dictators is internally motivated and the other half is driven by external factors, such as experimenter observability or regard by recipients.

Other papers have shown that the results of the DG change considerably depending on the type of information provided to dictators. For instance, when dictators make the decision in absolute privacy and anonymity, without receiving information on recipients, nearly no one gives anything. Donations tend to be very low, around 10% of the amount on average (Hoffman et al., 1994; Hoffman et al., 1996). However, when reliable information about recipient is given to dictators, donations increase. Burnham (2003) finds that, when shown pictures of recipients, 25% of dictators give as much as half of the total amount; Eckel and Grossman (1996) studying the behavior of dictators who are told that their donations would be given to the Red Cross, discover that 31% of the dictators give part of the money, 17% give half of the amount and 10% give the full amount. Aguiar et al. (2008) investigating the decisions of dictators who have to choose to give or not to give an amount of money to poor people in the Third World, find that the majority gives money for reasons of consequentialist nature. Offers also increase when the recipient is a fellow classmate (Frohlich and Oppenheimer, 2001) or when the dictators are told the recipient's surname (Charness and Gneezy, 2003). The study of Van Der Merwe and Burns (2008) reveals that racial identity has a significant and positive impact on the amount shared. In particular, while Black participants do not vary their offers knowing the racial identity of their recipients, White participants are more generous towards White partners than Black partners. Therefore, as previous results make clear, dictators' behavior, deviating systematically from the selfishness assumption in economic models, can be interpreted in terms of moral distance, defined as the emotional closeness between dictator and recipient (Abelson, 2005) or social distance, defined as the degree of reciprocity that subjects believe exists within a social interaction (Hoffman et al., 1996).

2.2. The Preference for Belief Consonance

It has been widely noted that individuals engage in more favorable behaviors towards people who share with them some relevant identity attributes than towards people who are different from them. Homophily is the principle for which a relation between similar people occurs at a higher rate than among dissimilar people. As Aristotle states in Rhetoric and Nichomachean Ethics, "people love those who are like themselves". The earliest studies show considerable homophily by demographic characteristics such as age, gender, race and education (Bott, 1928; Loomis, 1946) and by psychological characteristics such as intelligence, attitudes and aspirations (Almack, 1922; Richardson, 1940). For instance, social scientists who have begun to observe group formation, note that school children make friends and play with people who have similar demographic features (Bott, 1928; Wellman, 1929). Other researchers find strongly homophilous associations among adolescents: teenagers tend to relate with others who share their behavior patterns, either of achievement or delinquency (Cohen, 1977; Kandel, 1978). Currarini et al. (2009), examining friendship patterns in some high schools, build a model of friendship formation and show that the model can generate the observed patterns of homophily. They note that larger groups form a greater fraction of their friendships with individuals of their same type, that larger groups form significantly more ties per capita and that the inbreeding is very strong for groups coming from middle-sized fraction of their schools. Behavior homophily has been studied also among adults; for example, Verbrugge (1977) observe a mover-stayer pattern in German friendships, with residential stability predicting friendship formation about as strongly as do gender, nationality or religion.

One strand of experimental literature identifies preference for belief consonance: people should be attracted and should interact with others who share their beliefs. Lazarsfeld and Merton (1954) provide evidence for clustering based on political affinity: studying the behavior in two small towns, they find that liberals disproportionately select other liberals as close friends, and conservatives do the same. The Pew Research Center (2014) report documented that we observe a similar pattern in social media space: 52% of consistent liberals and 66% of consistent conservatives on Facebook declare that most of their close friends share their own political view. Other researches have shown that the desire for beliefs consonance influence people choose to date and marry with. Alford et al. (2011) find that political attitudes display extremely strong interspousal correlations while physical and personality characteristics do not result significantly positive correlated. In addition, analysing 28 individual items they discover high correlations concerning school prayer, abortion, homosexual rights and party

affiliation. Huber and Malhotra (2013), studying a group of individuals registered in a national online dating community, show that subjects prefer those who have similar political views among potential relationship partners. There is also significant evidence that the desire for belief consonance affects where people choose to locate geographically (Bishop, 2008; Molloy et al., 2011) beyond the economic associations that workers enter into (Bhuyan, 2007; Craig et al., 1995).

A large empirical literature has shown that beliefs drive also intra-group favouritism and out-group hostility. In one study, Kranton et al. (2013) divide undergraduate students into groups which are based either on preferences for poetry and art or on political affiliation. They find that more than half of the subjects are neither fair nor social welfare maximizing when allocating to out-group individuals. In particular, about 21% are dominance-seeking and 35% are selfish. These results reveal systematic heterogeneity in social preferences, which depends on the social context. In another experiment studying redistribution, Klor and Shayo (2010) divide subjects into two groups according to their university fields of study and ask them to vote on different redistributive schemes. They observe that individuals vote more often for the tax rate that favors in-group members. Ben-Ner et al. (2009) instead, investigate the existence of preferences for in-group versus out-group along different identity categories (body type, political views, nationality, religion and more) in various contexts, including the DG. They find that those that belong to the in-group are treated more favourably than those who belong to the out-group in nearly all identity attributes considered. In particular, they observe that family and kinship are the most powerful source of differentiation, followed by political views, religion, sport-team and music preferences.

In addition, people may change their behavior upon observing how others behave in similar situations, as the classic study of conformism conducted by Asch (1951) shows. In his experiment subjects are first shown a straight line and then three for comparison. Subjects are asked to indicate which line is the closest to the first one in length and an incorrect answer is provided to them. A significant number of individuals conforms to the wrong answer, probably because they want to be accepted by the majority or to avoid the discomfort for disagreeing with the majority. Fatas (2018) makes an experiment to test whether people's preferences change to become more alike considering different type of decisions (choices over objects, allocation decisions, lottery decisions). In their treatments people are informed about another person's choice from own or other group. They find evidence of a peer effect on behavior: individuals are more likely to choose an object when they know a member of their own group

has done so in the past. Subjects also are more likely to follow own signals than other group signals even though do not avoid other group signals. Moreover, this experiment shows that following own signal is more likely in decisions where the options can be ranked. Egebark and Ekström (2017) show that both group size and social proximity matter in explaining the level of conformity. Using the social network Facebook, they set up a natural field experiment to test whether users are more prone to support content if someone else has done so before. Their results show that one Like from a single stranger has no impact. However, increasing the size of the influencing group double the probability that subjects express positive support. Friendship ties are also crucial. People are, on average, four times more likely to press the Like button if a friend, rather than a stranger, has done so before them. They discuss the different reasons of this behavior: one strand of literature supports the "rational herding" hypothesis, i.e., individuals imitate those who are believed to be better informed (Bikhchandani et al., 1992, 1998); another line of research assumes that people are motivated by *social* factors, such as the desire for prestige, esteem, popularity, or acceptance (Akerlof, 1980; Jones, 1984; Bernheim, 1994); finally, the psychological literature suggests that larger groups and in-group members could put more pressure on individuals (Asch, 1952; Tajfel, 1981). Also Cason and Mui (1998) running the sequential DG, examine how social influence may affect subjects' choices. In their experiment Dictators decide how to share their amount before and after learning the allocation decision made by another Dictator in the Relevant Information treatment or the birthday of another Dictator in the Irrelevant Information treatment. They find that subjects on average become more self-regarding in the Irrelevant Information treatment, but not in the Relevant one. Therefore, it is evident that people often follow the behavior of others and the motivations could be various depending on the kind of information dictators received. With this research we aim to test whether the levels of conformism and giving could be affected by providing information related to similar and dissimilar Dictators, concerning demographic characteristics, hobbies and beliefs.

3. Experimental Design and Procedure

The participants in the experiment are recruited among students enrolled at the University of Verona, attending bachelor and master degrees in different majors. Half of them are randomly assigned the role of Dictator and half to the role of Recipient. For each decision one Recipient is randomly paired with one Dictator, and nobody plays more than once together.

The following experiment is a variant of the standard DG with a finite number of allocation decisions. Dictators maintain this role throughout the entire experiment; indeed, this work aims to study whether the amount shared changes after learning the allocation of other dictators with specific characteristics and whether the choice made by more dictators versus one dictator could influence in a different way the behavior of the decider. Moreover, the Recipient changes in correspondence with each Dictator's choice; this permits Dictator to feel more free and not conditioned by previous choices. Then, she could choose to change her choice both increasing and decreasing the given amount without worrying about what the Recipient might believe. We run separate sessions for Dictators and Recipients.

At the beginning of the experiment, all participants are informed about the rules of the game and are given a description of how the experiment would proceed. The experiment consists of three phases; it starts with an *Initial Phase* and it proceeds with a *Dictator Information Phase* and a *Group Information Phase*. In the Initial Phase each Dictator is informed about the allocation chosen by an individual participating in a DG played in an online questionnaire, and then decides her allocation. In the other two phases, instead, Dictator chooses whether to receive additional information; in the case she receives information she plays another time the DG, otherwise she proceeds to the next phase.

We use a between-subjects design and introduce three treatments that differ in the way information about allocations and characteristics of other dictators is provided. In particular, in the *Random Treatment* this information is given to Dictators for free and randomly; in the *First Choice Treatment* information is costless and Dictators can choose which kind of information to receive: they rank the different types of information on the basis of the relevance they attach to them and they receive the one they considered the most important; finally, the *Cost Treatment* differs from the others due to the presence of a cost for obtaining this information. In particular, if Dictators accept to incur the cost, they are asked how much they are willing to pay for each kind of information and then, based on the BDM method (Becker et al., 1964) they receive or not the information. By comparing Random Treatment to First Choice Treatment, we can study whether any information could influence the Dictator's allocation or whether the possibility to choose the category has a stronger effect on the Dictator's decision. Moreover, the First Choice Treatment permits to understand which kind of information is considered more important by Dictators. By comparing these two treatments to Cost Treatment, we can analyse whether the introduction of a cost reduces the number of individuals who get information.

The information given to Dictators is collected through an incentivized questionnaire submitted online to other individuals, before the experiment to be run in the lab. The questionnaire consists of 9 closed questions and in the standard Dictator Game. Each Dictator participating in the experiment was paired with different individuals who previously filled in the online questionnaire; one for the *Initial Phase*, one for the *Dictator Phase* and more for the *Group Phase*[7]. Moreover, at the beginning of the experiment, each Dictator answers the same questions in order to allow us to create a measure of similarity between individuals and Dictators.

This piece of information belongs to three specific categories: socio-demographic information (gender, age, nationality); hobbies' information (music, sports, movies); beliefs' information (politics, religion, morality). In the two *Information Phases*, each Dictator, if wants information, receives the same kind of information, belonging to one of the previous categories. Therefore, through a between-subject design, this study wants to discover whether and which category of information has more influence in the Dictators' allocation choice.

Each of the three treatments consists of three phases; each phase is played by all Dictators. In the *Initial Phase*, equal for everyone, each Dictator plays the DG knowing the allocation of an individual who filled in the questionnaire. We consider this phase our control phase because it permits to isolate the effect of learning information about the characteristics of the individual in the second phase. A growing number of studies sheds light on the influence of others' allocation choices on dictators' allocation decisions (Cason and Mui, 1998; Weimann, 1994). We aim to understand whether information about individuals' characteristics other than allocations could affect the decision in the DG. Then, in the *Dictator Information Phase* Dictators are asked if they want to receive information about how another individual with three particular characteristics, related to one of the previous categories, shared her earning. In the *Group Information Phase*, instead, Dictators can decide whether to receive information over the allocations' distribution of a group of individuals, that shares the same characteristics as the individual in the *Dictator Information Phase*. Dictators play the DG, not only in the *Initial Phase*, but also every time they receive information about allocation and characteristics of other individuals. Therefore, they could play the DG once, twice or three times. In particular, in all treatments, whenever the Dictator plays the DG, she has to decide how much, out of 20 ECU (Experimental Currency Unit) to transfer to the Recipient.

[7] The number of individuals considered for the *Group Phase* depends on the category of information that Dictator gets and on the combination of the three characteristics of individuals participating in the online questionnaire.

In the final part of the experiment, the Dictators were asked background questions about their education, volunteering experiences, social behaviors and the motivations about some choices made during the experiment. For more details about treatments, instructions and questionnaires see Appendix C.1 – C.7.

At the end of the experiment only one, randomly chosen phase is paid. All participants received a show-up fee of 2,50€ and the total payment for each pair Dictator-Recipient was 15,50€. The duration of the sessions was about 75 minutes for Dictators and 30 minutes for Recipients.

4. Data on Sample and Descriptive Statistics

4.1. Online Questionnaire

In order to collect pre-experimental data, transmitted as information to Dictators participating in the experiment, we submitted an incentivized questionnaire using Prolific (https://prolific.ac), an online platform for the recruitment of participants for researches, in which it is possible to upload a questionnaire and choose the characteristics of the respondents. For the aim of our analysis and in order to rely on a sample that is as heterogenous and balanced as possible, we exogenously imposed some demographic restrictions: half sample female, half sample Italian and all individuals aged between 18 and 60 years old. In addition, using this platform, we avoid an experimenter selection bias since individuals from all over the world are registered choosing to answer freely. Table 1 shows summary statistics on the characteristics of individuals who filled in the questionnaire, divided in three groups corresponding to the three categories of information given to Dictators. In Appendix C.8 we report all allocations' distribution graphs that we showed during the Group Information Phase to the participants in the lab experiment; they are divided based on all possible combinations of characteristics of individuals who filled in the questionnaire.

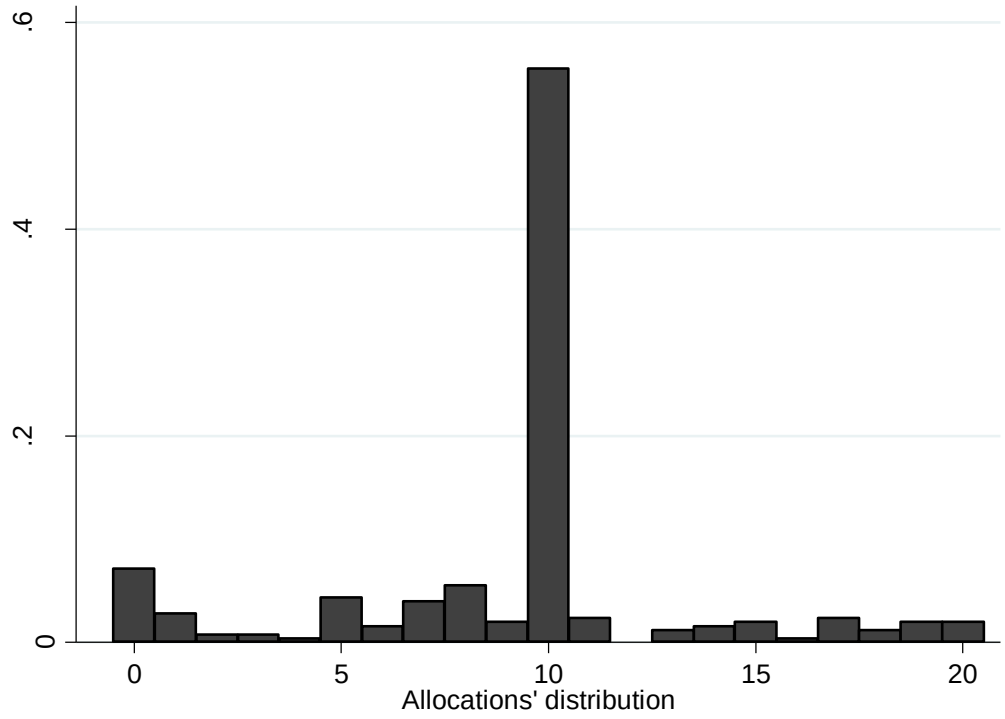
Table 1. Summary statistics online questionnaire (210 observations)

Online Questionnaire Data	Mean	Std. Dev.	Min.	Max.
Demographic Information				
Female	0.512	0.501	0	1
Age	34.174	11.341	18	60
Italian	0.456	0.499	0	1
Hobbies' Information				
Classic Music (vs Country Music)	0.619	0.487	0	1
Action Movie (vs Romance/Comedy Movie)	0.667	0.472	0	1
Preference for Swimming	2.778	1.048	1	4
Beliefs' Information				
Political Preference	0.793	0.786	0	2
Religious Person / Believer	0.401	0.491	0	1
In favour of Civil Union	0.817	0.287	0	1

Note: Preference for Swimming takes value 1 when the answer is not at all and 4 when the answer is a lot; in Political Preference 0 means extreme left, 1 moderate, 2 extreme right.

In addition to these characteristics, we also collect the individuals' choice in the standard DG, converting in pounds the chosen amount. Figure 1 displays how individuals who filled in the questionnaire allocate the 20 ECU available. We can see that the majority of them (55.56%) chooses to equally share the amount with the Recipient. It is not common that such a large number of individuals allocates a high amount. In addition to the hypothesis that people care about fairness, we could consider an alternative explanation: as Andreoni and Bernheim (2009) observed, people like to be perceived as fair. In this experiment social image could play an important role: individuals participating in the online questionnaire, indeed, knew that their choices would be transmitted to others. Supporting this idea, also other studies suggest that image concerns based on the desire not to appear unfair, either to oneself or to others, drive an altruistic behavior (Bénabou and Tirole, 2006; Dana et al., 2007; Ariely et al., 2009).

Figure 1. Allocations' distribution (online questionnaire respondents)



4.2. Lab Experiment

We run nine sessions, three for each treatment, involving 252 Dictators; each session lasted about 75 minutes for dictators and 30 minutes for recipients and took place at the VELE lab of the University of Verona in March 2018. Individuals were randomly allocated to treatments and each subject participated in only one session. The average amount for recipients was 5,50€ and for dictators was 9,50€. Our sample is, on average, 21 years old, 75% are females, 95% are Italian, 32% have a scientific education (Engineering, Economics, Medicine, Dentistry, Physics, Mathematics and Computer Science) and 51% are attending foreign languages and literatures. In the following we describe the data collected from the lab experiment, related to allocation choices, received information and main variables.

4.2.1. Allocation choices

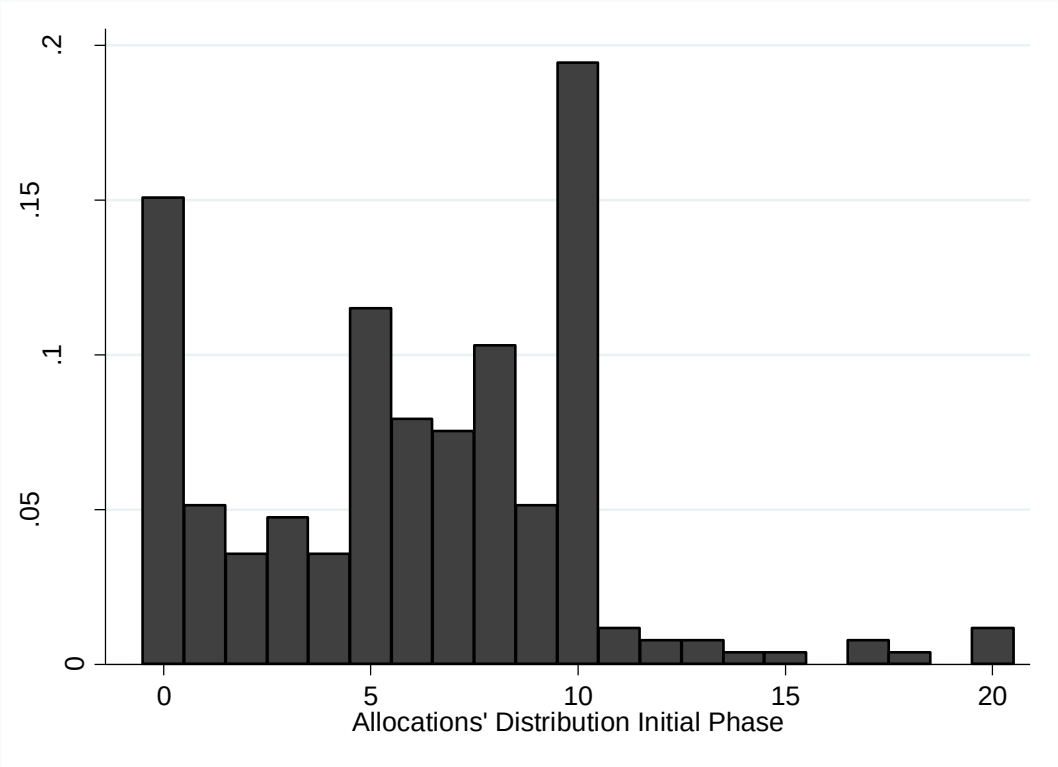
Table 2 shows an overall picture of Dictators' giving, reporting mean and modal value for each phase, for all treatments.

Table 2. Dictators' Giving

	Cost Treatment		First Choice Treatment		Random Treatment	
	Mean	Mode	Mean	Mode	Mean	Mode
Initial Phase	5.77	10	6.19	10	6.37	10
Dictator Information Phase	5.52	10	5.32	0	5.75	0
Group Information Phase	3.93	0	5.09	0	4.62	0

With regard to the Initial Phase, on average, Dictators give Recipients 6.11 ECU (30.55% of endowment). Figure 2 illustrates the allocations' distribution knowing how another individual, randomly selected from those who filled in the questionnaire, shared her amount. We can note that the distribution is different from Figure 1: although the majority of them received information about a fair sharing, they behaved more selfishly. The motivations Dictators report justifying their choice are heterogeneous and can be summarized as follows: they believe their allocation the most fair (33.56%); they chose thinking about how they would like others to behave with them (31.57%); they are interested only in earning as much as possible (19.27%); they are not interested in appearing generous because the recipient would not choose, in turn, how sharing the amount of ECU (12.30%); they are not interested in appearing generous because the recipient will not know who they are (3.30%).

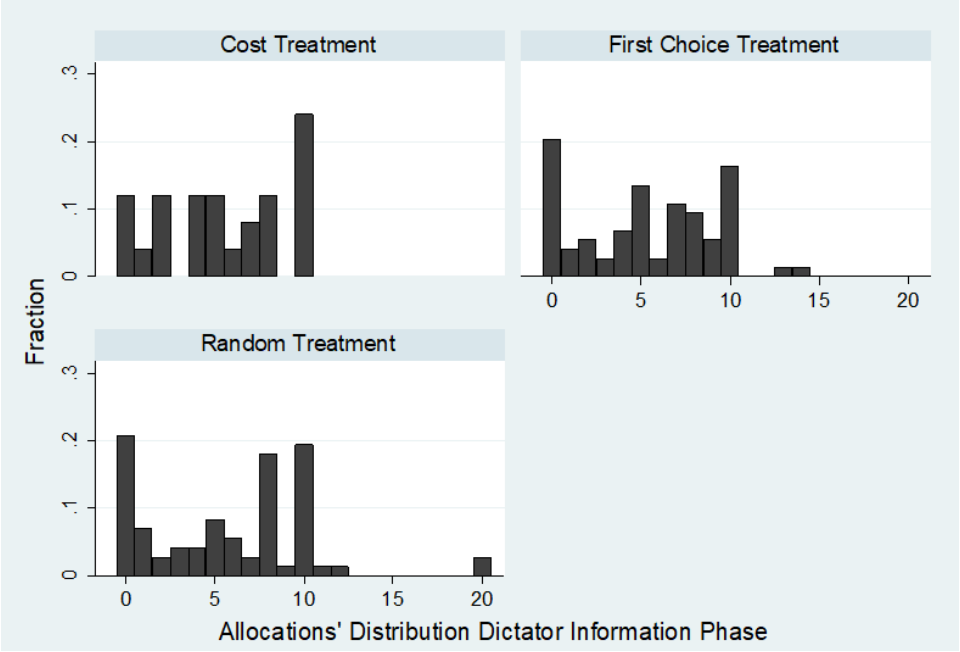
Figure 2. Allocations' distribution Initial Phase



Considering the Dictator Information Phase, Figure 3 shows the allocations' distribution analysing the three treatments separately. Although the average amount is about 5.53 ECU in each treatment, we can immediately note the variability of the frequency at each possible allocation and a high number of Dictators who choose the fair allocation. In order to interpret these results, we must remember that the majority of participants in the online questionnaire chooses the fair division: this information could influence the behavior of Dictators. In particular, we can observe that participants in the Cost Treatment choose to a greater extent a fair sharing; in this treatment we collect the smallest number of allocations equal to zero. These observations could be explained considering that Dictators who are willing to pay a cost to receive information are very interested in knowing the behavior of others, probably because of their lower self-confidence and higher influenceability. Therefore, they tend to conform to the other individual, choosing a similar or equal allocation. Another possible explanation for this behavior could be linked to the idea that since the dictator pays for a piece of information, that information can be supposed to be relevant for himself/herself, even if, in fact, it is not. Although the three distributions seem different, the Kolmogorov-Smirnov test for analysing the equality of distributions does not reject the hypothesis of similarity of distributions (K-S = 0.1066 with p-value = 0.378 comparing Random and First Choice Treatments; K-S = 0.1178 with p-value = 0.682 comparing Random and Cost Treatments; K-S =

0.0832 with p-value = 0.958 comparing First Choice and Cost Treatments). Moreover, also considering the ANOVA test comparing the variances of the three distributions, the means of allocations do not differ significantly among treatments (F = 0.20 with p-value = 0.8229 comparing the three treatments together; F = 0.75 with p-value = 0.3863 comparing Random and First Choice Treatments; F = 0.11 with p-value = 0.7451 comparing Random and Cost Treatments; F = 0.10 with p-value = 0.7494 comparing First Choice and Cost Treatments). Finally, running the Chi-square test we find that the expected frequencies are significantly different from the observed frequencies comparing the Random treatment with the other two (X^2 = 33.7259 with p-value = 0.004 comparing Random and First Choice Treatments; X^2 = 21.8066 with p-value = 0.058 comparing Random and Cost Treatments; X^2 = 12.4311 with p-value = 0.412 comparing First Choice and Cost Treatments). With regard to the last results we could suppose that the possibility to choose which kind of information to receive is relevant for the decision of the allocation.

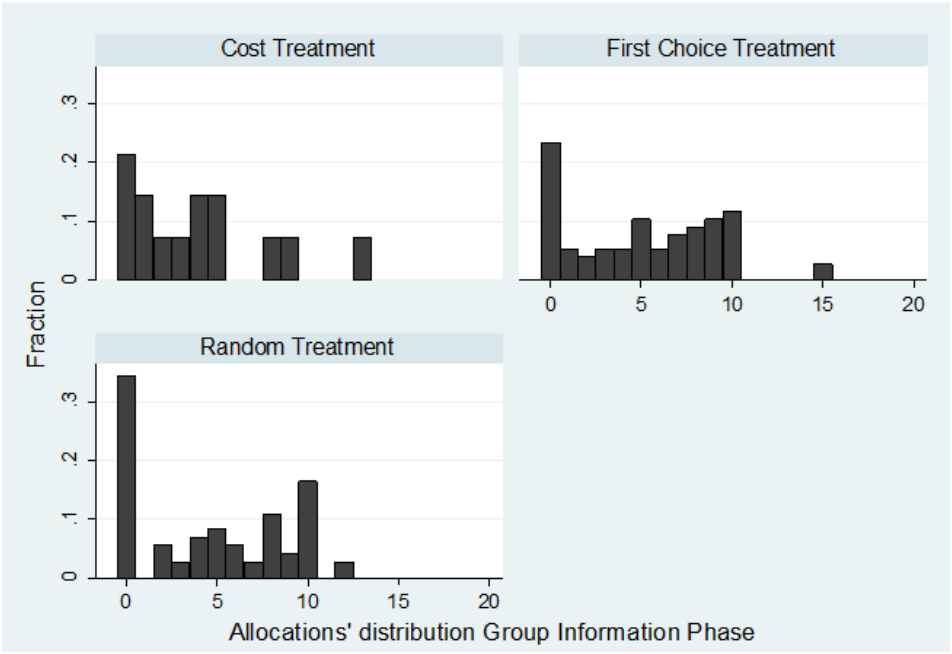
Figure 3. Allocations' distribution in the Dictator Information Phase



In the last phase, the Group Information Phase, Dictators can decide whether receive information about the allocations' choices of a group of individuals, that shares the same characteristics of individual in the Dictator Information Phase. Figure 4 illustrates the allocations' distribution of Dictators after this information. We note clearly the higher frequency of choices equal to zero for the Random treatment with respect the other two treatments; also in this case, probably, it is due to the lower importance attached to the received

information. The trend of distributions appears similar comparing the First Choice and the Random Treatments while it seems different considering the Cost Treatment and the other two. The average amounts are 3.93, 4.62 and 5.09 ECU for Cost, Random and First Choice treatments, respectively. In order to study the equality of distributions, we run the Kolmogorov-Smirnov test. We find a significant difference between the distributions of First Choice treatment and that of Cost treatment, due to the presence of the cost (K-S = 0.1087 with p-value = 0.339 comparing Random and First Choice Treatments; K-S = 0.2104 with p-value = 0.249 comparing Random and Cost Treatments; K-S = 0.2532 with p-value = 0.096 comparing First Choice and Cost Treatments). Running the ANOVA test, we do not find a difference in means among treatments (F = 1.23 with p-value = 0.2951 comparing the three treatments together; F = 1.05 with p-value = 0.3067 comparing Random and First Choice Treatments; F = 0.69 with p-value = 0.4078 comparing Random and Cost Treatments; F = 0.2.06 with p-value = 0.1531 comparing First Choice and Cost Treatments). Running the Chi-square test, instead, we find a significant difference between the expected and the observed frequencies comparing Random and Cost treatments (X^2 = 15.0179 with p-value = 0.240 comparing Random and First Choice Treatments; X^2 = 22.4732 with p-value = 0.033 comparing Random and Cost Treatments; X^2 = 13.0143 with p-value = 0.368 comparing First Choice and Cost Treatments).

Figure 4. Allocations' distribution in the Group Information Phase



4.2.2. Importance of Information

Focusing our attention on information that each Dictator chooses whether to receive, we note clearly a difference among treatments. As Figure 5 illustrates, when incurring a cost is necessary to get the information, only 50% of individuals choose to receive information and accept to incur the cost. When information is costless, in First Choice and Random treatments, instead, the percentage of those who wish to receive information increases considerably: in both Dictator and Group Information Phases about 90% of individuals decide to receive information. This treatment effect is confirmed also running the Kolmogorov-Smirnov test: the distribution of those who desire information in the Cost treatment is significantly different from that in the First Choice and Random treatments (Dictator Information Phase: K-S = 0.3452 with p-value = 0.00 comparing Random and Cost Treatments; K-S = 0.3690 with p-value = 0.00 comparing First Choice and Cost Treatments. Group Information Phase: K-S = 0.3571 with p-value = 0.00 comparing Random and Cost Treatments; K-S = 0.4048 with p-value = 0.00 comparing First Choice and Cost Treatments). Analysing the questionnaire and in particular the reported reason why most of the Dictators did not accept the cost even if they were interested in receiving information, it turned out that the interest was not so high as to lead them to spend money to know others' behavior.

Figure 5. Dictator Information and Group Information

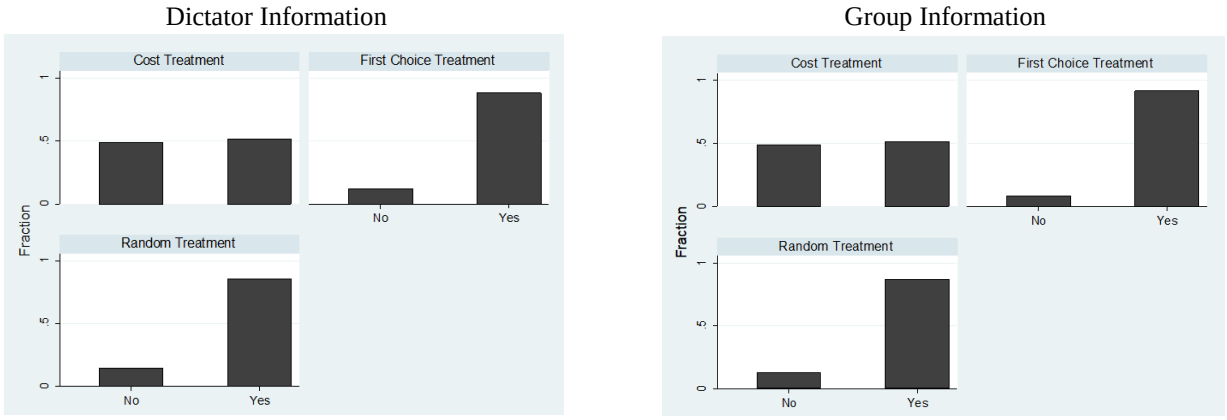


Table 3 and Figure 6 show which kind of information Dictators receive in each treatment. Observing the Cost and First Choice Treatments' graphs, it is evident that there exists a cost of information effect: when individuals can decide the type of information and are willing to pay for it, they have a marked preference for belief information. Moreover, from these graphs, it is clear that hobbies' information is considered the least important; we could suppose that

this domain, related to a more personal sphere, does not capture much attention because it is usually accepted that individuals have different and various preferences for leisure activities, i.e. they are known to be person-specific. Therefore, although this kind of information could be an important aspect to measure the level of similarity with other people, it could not be considered a relevant factor that influence the allocation choice, unlike demographic or beliefs' differences, linked more tightly to status and value homophily, respectively.

Figure 6. Information by Treatment

Table 3. Information by Treatment

	Cost Treatment	First Choice Treatment	Random Treatment
Demographic Information	7.50%	43.04%	35.06%
Hobbies' Information	7.50%	11.39%	24.68%
Beliefs' Information	85.00%	45.57%	40.26%

In our analysis we also wonder whether the type of information chosen by Dictators changes with gender. As we can observe in Figure 7, both females and males prefer to receive beliefs' information, as previous results underline. We can note a little difference in the preferences for demographic and hobbies' information: the 41.46% of males versus the 30.52% of females chooses to receive demographic information while the 9.76% of males versus the 17.53% of females chooses to receive hobbies' information. Overall, the distributions appear

quite similar: the Kolmogorov-Smirnov test confirms that there are not significant differences between males and females (K-S = 0.1094 with p-value = 0.420).

Figure 7. Information by Gender

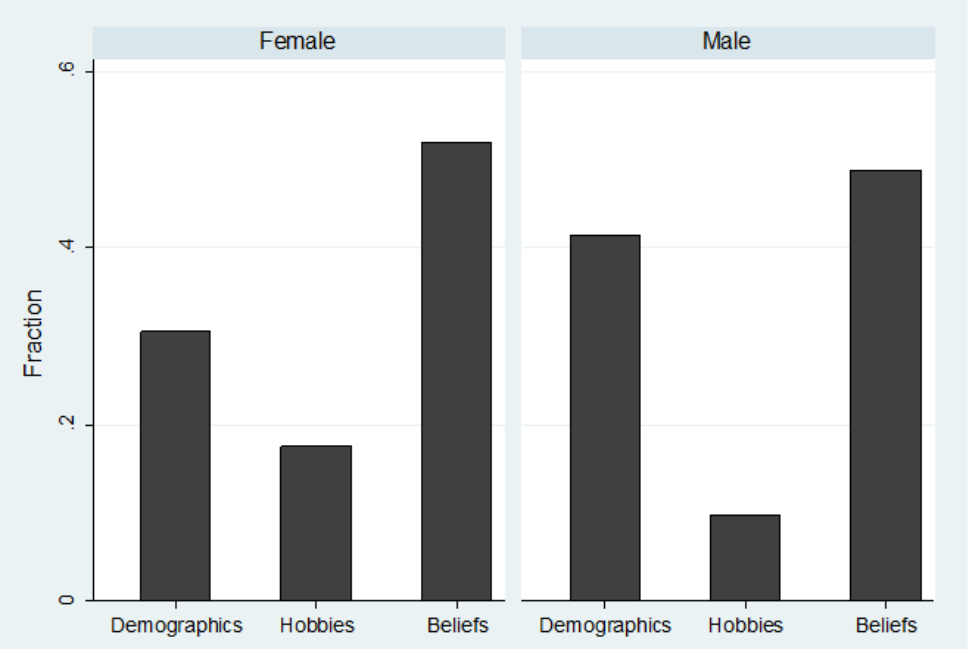


Table 4 provides more details related to the kind of information Dictators decide to receive. As we can see, 15.08% of Dictators choose to receive no information, neither in the Dictator Information Phase nor in the Group Information Phase. Participants explained their choices declaring various reasons: they are sure in their decisions (36.90%), they are not interested in the behavior of others (32.14%), they are aware that this information would influence their choice (19.04%), they are interested only in earning (9.54%), they do not consider relevant these kind of information for choosing the allocation (2.38%). Moreover, data suggests that most of these individuals choose to keep all the amount for themselves. This behavior could be explained considering that selfish individuals do not want to know how other people decided. Some studies suggest that sharing declines by about 40 to 50 percent when dictators can choose to opt out of the DG compared to the standard treatment (Dana et al., 2006; Lazear et al., 2012). Similarly, Dana et al. (2007) introduce in their experiment various kind of pretexts for selfish behavior, removing transparency, and find that half of dictators engage in strategic ignorance avoiding situations in which pro-social behavior is expected. Dictators may prefer not to know the consequences of their decisions in order to not feel compelled to give. The experiment designed by Larson and Capra (2009) provides support for this hypothesis:

modifying the possibility to reveal or not information about others' payoffs they create a "moral wiggle room" for dictators to behave self-interestedly and find that, when the consequences of the actions of dictators are not completely transparent, fair decisions diminish.

From Table 4, we can note also that the percentage of individuals who desire information is similar in both phases (75% in the Dictator Information Phase and 76.59% in the Group Information Phase). Dictators who actually received information represent the 77.38% of those who would like to receive information. The difference in the percentage between those who desire and those who actually receive information is due to the different willingness to pay for obtaining information in the Cost Treatment. Analysing the data we observe that who participates in Cost treatment receives information either in the Dictator Phase or in the Group Phase. Moreover, as we see graphically, information related to political, religious and moral beliefs is chosen more frequently. As a chi-square test confirms, the choice of receiving information is strongly related to treatment: the presence of the cost decreases the number of individuals who want to receive information. The decision of receiving information seems to be linked also to gender and to a small extent to the kind of education received. Analysing the questionnaires, various motivations lead Dictators to choose to receive information: curiosity (66.20%), the interest for some specific characteristics of other dictators (20.18%), the attempt to be reassured about the decision made in the Initial Phase (9.39%), the willingness to stand out themselves from others, in particular if others' preferences are different from theirs (2.82%), the desire to make the same decisions as other similar people (1.41%).

Considering only individuals who received information (195 individuals out of 252), we analyse whether the category of information chosen could depend on some demographic characteristics: running the chi-square test it does not seem that gender and age influence the kind of information received while the type of education affects to some extent the choice of category. Moreover, the results of chi-square test confirm a treatment effect, as previous graphs illustrated. This effect is a consequence of the presence of the cost: 85% of Dictators participating in Cost Treatment choose beliefs' information and, therefore, the difference with the other two information categories becomes relevant comparing the three treatments. We can observe, also, that the effect of treatment in hobbies' information is weaker than other information categories, probably because in all treatments few individuals choose to receive this kind of information. Moreover, whether we compare First Choice and Random treatments,

we can note the effect of the possibility to choose: Dictators who can choose which kind of information to receive avoid hobbies' information.

Finally, considering the absolute value of the difference between the allocation choice of Dictators participating in the experiment and that of individuals participating in the online questionnaire, it seems that the distance between allocation choices, in both information phases, are to a small extent influenced by receiving demographic or beliefs' information.

Table 4. Information Test

252 observations	**%**	**Test X^2**					
		Treatment (df=2)	**Gender** (df=1)	**Age** (df=10)	**Scientific Education** (df=1)	**$\|Y_2\|$** (df=17)	**$\|Y_3\|$** (df=14)
No information	15.08%	24.98***	3.35*	13.10	2.05		
Dictator Information	75.00%	38.22***	0.01	4.73	0.07		
Group Information	76.59%	45.85***	4.61**	6.27	1.69		
Actually Received Information	77.38%	67.10***	7.26***	15.32	3.39*		
195 observations							
Demographic Information	32.82%	15.09***	1.76	8.74	3.39*	27.06*	19.97**
Hobbies' Information	15.90%	7.60**	1.47	7.14	3.78*	8.92	8.94
Beliefs' Information	51.28%	22.12***	0.13	14.31	0.13	26.21*	9.83

*** p<0.01, ** p<0.05, * p<0.1

Note: "Dictator Information" indicates the group of dictators who desire to receive information in the second phase;
"Group Information" indicates the group of dictators who desire information in the third phase;
"Actually Received Information" indicates the group of dictators who actually receive information during the experiment (dictators who desire information in Random and in First Choice Treatments joint to dictators who desire information and are willing to pay a prize higher than the number randomly generated by computer in Cost Treatment).

In Table 5 we report the importance level of each sub-category of information. For all kinds of information most individuals consider all sub-categories with the same importance. Regarding demographic information Dictators give more relevance to age; considering hobbies' information, instead, the musical genre is believed the most significant information; finally, political preference is the most important characteristic for beliefs' information.

Table 5. Information Importance

	Most Important Sub-Categories of Information	
Demographic Information	Gender	11.48%
	Nationality	16.39%
	Age	34.43%
	All sub-categories with same importance	37.70%
Hobbies' Information	Kind of movie	0.00%
	Preference for swimming	14.29%
	Musical genre	35.71%
	All sub-categories with same importance	50.00%
Beliefs' Information	Religious Belief	13.43%
	Civil Union preference	20.90%
	Political preference	29.85%
	All sub-categories with same importance	35.82%

4.2.3. Main variables for the analysis

In order to study the influence of similar and dissimilar dictators we create two variables related to the level of similarity between individuals who filled in the questionnaire and Dictators who participated in the lab experiment. The *objective* measure is built counting the number of common characteristics between individual and Dictator, analysing the answers in the online and pre-experiment questionnaires. Since the considered questions are three for each category of information, the range of similarity is between 0 and 3. The *subjective* measure, instead, arises from the following question, submitted in the post-experiment questionnaire:

The information you received was related to a particular individual: (here appears the three characteristics given to Dictator, belonging to one category of information). How much did you feel like this individual?

We rescaled both measures to have the range between 0 and 1, where the greatest value corresponds to a larger level of similarity between individuals and Dictators. In Table 6 we report summary statistics on both objective and subjective measures, divided into the three categories of information. In addition, we run the chi-square test in order to study whether the gap between the two measures is statistically significant.

Table 6. Measure of Similarity

Measure of Similarity	Mean	Std. Dev.	Min.	Max.	Test X^2
Demographic Information					
Objective Similarity	0.448	0.246	0	1	
Subjective Similarity	0.313	0.251	0	1	
					59.639***
Hobbies' Information					
Objective Similarity	0.398	0.278	0	1	
Subjective Similarity	0.439	0.270	0	1	
					28.666
Beliefs' Information					
Objective Similarity	0.583	0.282	0	1	
Subjective Similarity	0.503	0.299	0	1	
					97.326***

*** p<0.01, ** p<0.05, * p<0.1

As we can observe from Table 7, the subjective measure is lower than the objective one for demographic and beliefs' information and their difference is statistically significant, as the chi-square test proved. The measures of similarity of hobbies' information, instead, are similar; this consideration is confirmed also running the test X^2 that does not reject the hypothesis of equality distribution between objective and subjective measures. These results underline that the subjective perception is different from the objective reality when information is related to demographic and beliefs characteristics, respectively more tightly linked to status and value homophily. Moreover, analysing our data, we find that the correlation between the two measures of similarity are highly positively correlated (0.610). In particular, the correlation between objective and subjective similarity for demographic, hobbies and beliefs information is 0.662, 0.474 and 0.558 respectively.

Other relevant variables for our aim are those related to social influence and personality traits. The first one regard some social attitudes and arise from the following statements:

- It is difficult to make choices if I am not sure that my friends will approve them;
- My results are worth more if others notice what I have done;
- When I have to choose among various alternatives for which I am uncertain, I try to understand how my friends would behave, they could give me good ideas.

The three variables created from the previous attitudes are *Others' Approval*, *Others' Appreciation* and *Others' Influence*; they take four values, from 1 to 4, where the greatest corresponds to a larger conformity with the attitudes described.

The other main variables are related to the Big Five personality traits, built as five indexes (openness, conscientiousness, extraversion, agreeableness, and neuroticism) from the answers to a question asking to report how well each of 26 adjectives fits the respondent. This procedure is taken from Smith et al. (2013). For more details about variables see Appendix C.9.

All dependent variables are related to the allocation choices made in the three phases. In particular, in the first analysis we consider the distance, in absolute value, between the Dictators' choice and the individual allocations' decision. This variable, called |Y|, aims to measure whether Dictators conform to individuals' behavior and the analysis aims to study the factors that influence the extent of this distance. In a second analysis we consider the same distance without calculating the absolute value. This variable, called Y, wants to study the level of pro-sociality of Dictators with respect to that of other individuals and the factors that influence it.

In Figures 8, 9, 10 we show the distribution of the first distance, representing a conformism measure. In particular, in the Initial Phase, we observe that the 17% of Dictators behave as individuals and that more than 50% of Dictators keep a small distance from the individual's choice. In the Dictator Information Phase, it seems to exist a treatment effect: the distributions in the Random and Cost Treatments are more concentrated on small distances while the allocation' choices in the First Choice Treatment are more equally distributed. This tendency could be explained taking into account that, probably, who is willing to pay a cost to receive information is also an individual more easily influenced and who receive random information could be not interested in it and therefore could conform to others easily. The hypothesis that the kind of information could affect the distance is supported by the Kolmogorov-Smirnov test; indeed, the distribution between Random and First Choice Treatment looks statistically different (K-S = 0.102 with p-value = 0.83 comparing Random and Cost Treatments; K-S = 0.189 with p-value = 0.011 comparing Random and First Choice Treatments; K-S = 0.177 with p-value = 0.191 comparing First Choice and Cost Treatments). Figure 10 shows the absolute value of the distance between the Dictators' choice and the median of the distribution observed in the Group Information Phase. We can note that the distribution of the First Choice treatment is quite uniform while the distributions of the

Random and the Cost treatments are different from the ones in the Dictator Information Phase: we observe the maximum frequency in correspondence with the maximum distance.

Figure 8. Conformism measure in the Initial Phase

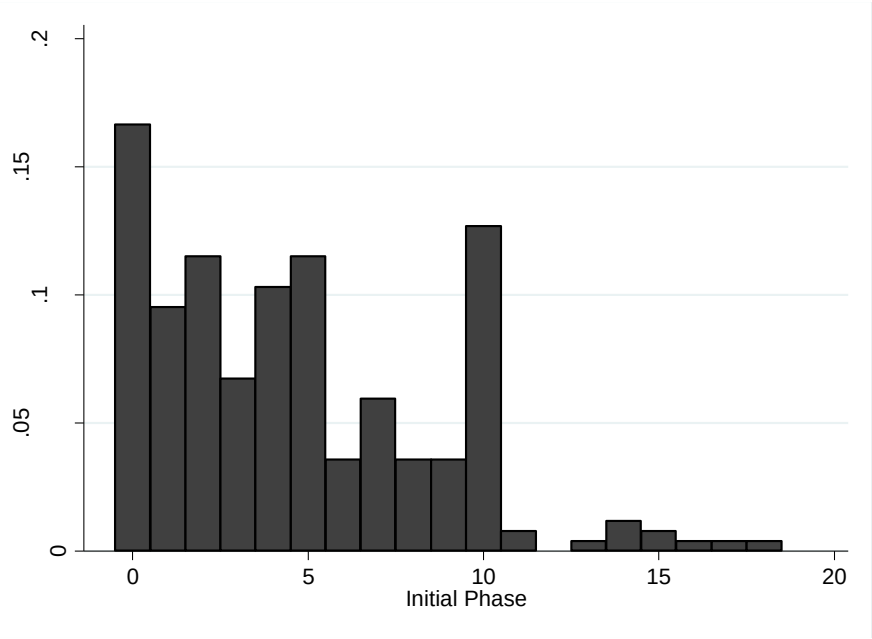


Figure 9. Conformism measure in the Dictator Information Phase

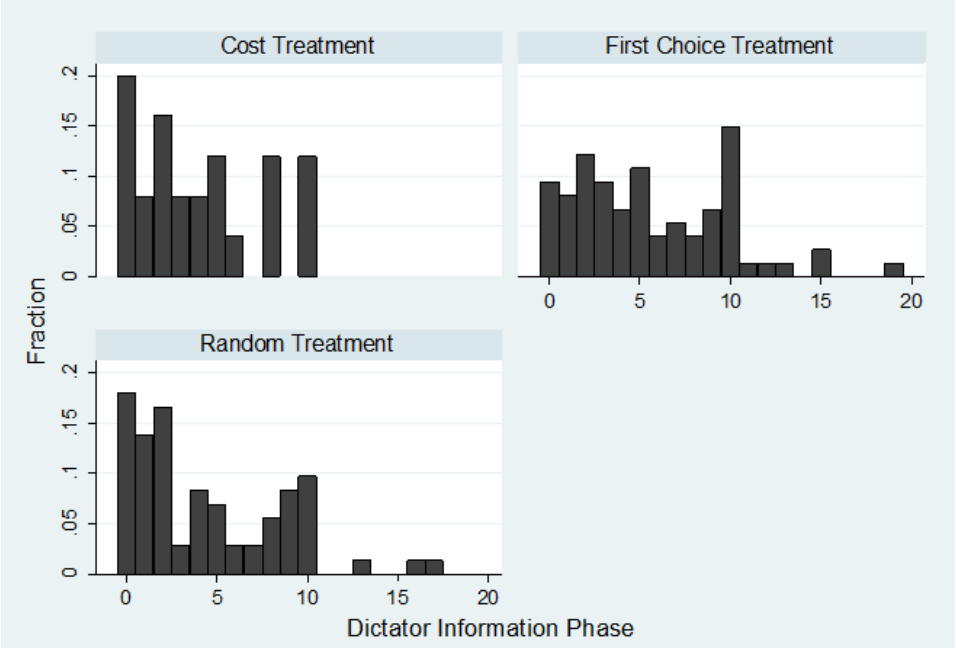


Figure 10. Conformism measure in the Group Information Phase

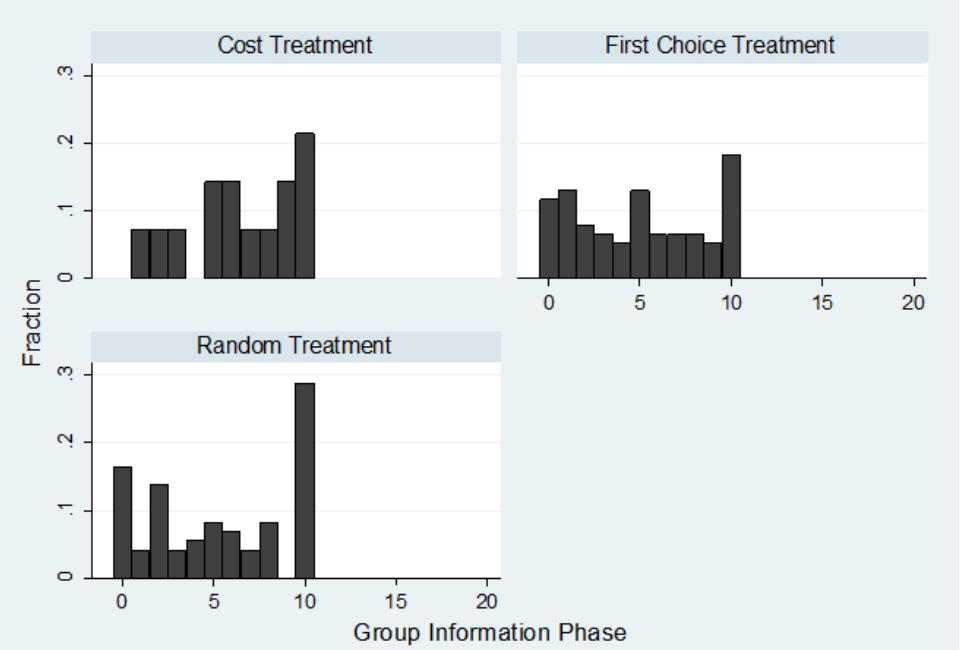


Table 7 reports summary statistics on the variables used in this analysis while Table 8 shows the polychoric correlation of each variable with the absolute distance between Dictators' choice and individuals' allocation. We can observe that the three variables related to the conformism measure are positively correlated among them and negatively correlated with the three variables related to the pro-sociality measure.

Table 7. Summary statistics

Variable	Mean	Std. Dev.	Min.	Max.	Obs.
Control variables					
Random Treatment	0.333	0.472	0	1	252
First Choice Treatment	0.333	0.472	0	1	252
Cost Treatment	0.333	0.472	0	1	252
Demographic Information	0.328	0.470	0	1	195
Hobbies' Information	0.159	0.366	0	1	195
Beliefs' Information	0.513	0.500	0	1	195
Age	20.989	1.991	18	32	252
Female	0.750	0.433	0	1	252
Scientific Education	0.321	0.468	0	1	252
Volunteering Importance	2.040	1.189	0	3	252
Brothers	0.849	0.358	0	1	252
Similarity variables					
Objective Similarity	0.509	0.279	0	1	195
Subjective Similarity	0.430	0.291	0	1	195
Similar Sub-Category	0.595	0.492	0	1	195
Social variables					
Others' Approval	1.730	0.757	1	4	252
Others' Appreciation	2.238	0.923	1	4	252
Others' Influence	2.381	0.807	1	4	252
Personality variables					
Openness	0.675	0.142	0	1	252
Conscientiousness	0.720	0.148	0	1	252
Extraversion	0.673	0.173	0	1	252
Agreeableness	0.794	0.156	0	1	252
Neuroticism	0.562	0.210	0	1	252
Dependent variables					
$\lvert Y_1 \rvert$	4.651	3.920	0	18	252
$\lvert Y_2 \rvert$	4.860	4.115	0	19	171
$\lvert Y_3 \rvert$	5.256	3.615	0	10	164
Y_1	-3.135	5.215	-18	10	252
Y_2	-3.620	5.241	-19	13	171
Y_3	-5.012	3.948	-10	5	164

Note: Volunteering Importance takes value 0 if subject has never volunteered, 1 if answered to question 5 of post-experiment questionnaire "A lot" or "Some" for one aspect, 2 for two aspects, 3 for three aspects.
Similar Sub-Category takes value 0 if subject gives more importance to a sub-category which represents an opposite characteristic to the subject, 1 if the characteristic is similar.
The subscript in dependent variables indicates the corresponding phase of the experiment.

Table 8. Correlations with conformism measures

Variable	Correlation with		
	$\|Y_1\|$	$\|Y_2\|$	$\|Y_3\|$
Control variables			
Random Treatment	-	-0.120	0.014
First Choice Treatment	-	0.199	-0.088
Cost Treatment	-	-0.154	0.199
Demographic Information	-	0.188	0.098
Hobbies' Information	-	-0.061	-0.073
Beliefs' Information	-	-0.139	-0.044
Age	0.231	0.063	0.138
Female	-0.247	0.002	-0.159
Scientific Education	0.277	0.135	0.195
Volunteering Importance	-0.082	-0.254	-0.150
Brothers	0.099	-0.005	-0.181
Similarity variables			
Objective Similarity	-	-0.234	-0.093
Subjective Similarity	-	-0.280	-0.230
Similar Sub-Category	-	-0.156	-0.001
Social variables			
Others' Approval	0.059	-0.146	-0.171
Others' Appreciation	0.179	0.100	0.160
Others' Influence	-0.028	-0.131	-0.267
Personality variables			
Openness	0.047	-0.067	-0.084
Conscientiousness	0.059	0.073	-0.058
Extraversion	-0.067	-0.039	0.087
Agreeableness	-0.085	-0.129	-0.102
Neuroticism	-0.016	-0.054	-0.005
Dependent variables			
$\|Y_1\|$	1	0.246	0.361
$\|Y_2\|$	0.246	1	0.366
$\|Y_3\|$	0.361	0.366	1
Y_1	-0.661	-0.214	-0.353
Y_2	-0.175	-0.657	-0.325
Y_3	-0.378	-0.376	-0.946

Analysing data on Recipients, we find a further evidence on the importance of making the situation actual, incentivizing it. Recipients, paired with Dictators randomly, are asked to answer some questions about hypothetical choices in DG. We observe that the allocations' distribution and some information decisions are significantly different comparing choices made in the lab experiment and those made considering hypothetical circumstances. Some graphs related to Recipients' choices are reported in Appendix C.10.

5. Empirical Analysis

The aim of the following analyses is to study the factors which influence two different behaviors in DG: one related to the level of others' influence, in particular considering similar and dissimilar dictators, and therefore the degree of conformism to others' allocation choices; the other one related to the level of pro-sociality. For these purposes we consider two different kind of dependent variable: the first represents the distance, in absolute value, between the Dictator's choice and the individual allocations' decision; the second, instead, represents the same distance without calculating the absolute value. In Section 5.1 we study the conformism measure in the three experimental phases, considering first only control variables and adding then social and personality variables. In Section 5.2 we keep the same structure changing the dependent variable in order to study the pro-sociality measure.

Because of the design, in particular of the treatment and the order of the three phases, we observe self-selection in the sample. For this reason, we try to estimate a Heckman model analysing in the first step the factors which lead to choose to receive individual or group information and in the second step, considering only Dictators who received information, the factors which influence conformism and pro-sociality measures. We find that the effect of the lambda of Heckman is not significant and, therefore, carrying out an OLS regression we obtain similar results. Then, in the following analyses we consider and report the OLS estimations.

5.1. Analysis of the Conformism Measure

In Table 9 we report results related to the factors that affect the conformism measure in the Initial Phase. The smaller relevance given to others' behavior by Dictators should correspond to a greater distance between the allocation choices.

Table 9. Conformism measure in the Initial Phase

Dependent Variable	(1) $\|Y_1\|$	(2) $\|Y_1\|$	(3) $\|Y_1\|$
Age	0.099	0.086	0.065
	(0.094)	(0.094)	(0.094)
Female	-1.466***	-1.131**	-1.322***
	(0.431)	(0.440)	(0.461)
Scientific Education	0.657	0.747*	0.582
	(0.415)	(0.415)	(0.420)
Volunteering Importance	0.060	0.050	0.036
	(0.150)	(0.149)	(0.150)
Brothers	0.804*	0.967**	0.917*
	(0.484)	(0.484)	(0.490)
Others' Approval		0.186	0.170
		(0.256)	(0.277)
Others' Appreciation		0.571***	0.589***
		(0.201)	(0.205)
Others' Influence		-0.258	-0.201
		(0.228)	(0.235)
Openness			-0.981
			(1.254)
Conscientiousness			2.721**
			(1.215)
Extraversion			-0.484
			(1.106)
Agreeableness			-2.029*
			(1.188)
Neuroticism			0.211
			(0.850)
Constant	2.651	1.542	2.618
	(2.151)	(2.269)	(2.625)
Observations	252	252	252
R-squared	0.052	0.072	0.088

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

We first consider only the control variables. As we can observe from Column 1, Table 9, females choose allocations similar to other individuals while males tend to distance their decisions from the others. Moreover, it results that having brothers induces to a minor level of conformism; this behavior could be explained thinking that living with other people help to develop more exchange of views and to accept different ideas, and this could lead to more conscious choices and to less adaption to standards. In Column 2, Table 9, we add the social variables and we find that others' appreciation has a strong and positive effect on the

conformism measure. The appreciation research translates into an allocation choice more different and distant from others' decision. In addition to the previous variables that have similar influence to the prior specification, we observe a small positive effect of the variable related to the education: individuals with a scientific background tend to distance themselves from others choosing more selfish allocations. Finally, in Column 3, Table 9, we add personality variables; as we can observe, most of the previous results are confirmed. Moreover, we find that individuals who are more conscientious distance their allocation from the others while those who are more agreeable tend to align their choices with others.

Table 10 reports the results on the conformism measure related to the Dictator Information Phase. Also in this analysis, the dependent variable is the absolute value of the difference between the Dictator's choice and the individual's allocation, both related to the second phase. Because of the design we consider only Dictators who choose to receive information and we add variables regarding treatment, kind of information and similarity measures. Moreover, we consider among explanatory variables the dependent variable of the Initial Phase because we think the past individual and Dictator choices could influence the present decision.

Table 10. Conformism measure in the Dictator Information Phase

	(1)	(2)	(3)
Dependent Variable	$\|Y_2\|$	$\|Y_2\|$	$\|Y_2\|$
Method	OLS	OLS	OLS
$\|Y_1\|$	0.247***	0.227***	0.225***
	(0.061)	(0.061)	(0.060)
Cost Treatment	-0.957	-1.077	-1.263*
	(0.662)	(0.675)	(0.678)
Random Treatment	-1.218***	-1.242***	-1.055**
	(0.454)	(0.455)	(0.457)
Demographic Information	0.211	0.016	0.070
	(0.649)	(0.648)	(0.657)
Beliefs' Information	-0.260	-0.267	-0.231
	(0.618)	(0.616)	(0.615)
Similar Sub-Category	0.172	0.202	0.390
	(0.490)	(0.488)	(0.494)
Subjective Similarity	-1.971**	-1.667*	-1.693*
	(0.983)	(0.983)	(0.979)
Objective Similarity	-0.976	-1.423	-1.410
	(1.085)	(1.091)	(1.084)

Age	-0.225*	-0.236**	-0.276**
	(0.119)	(0.119)	(0.120)
Female	0.682	0.736	0.968
	(0.529)	(0.543)	(0.575)
Scientific Education	0.496	0.471	0.466
	(0.509)	(0.507)	(0.510)
Volunteering Importance	-0.822***	-0.789***	-0.857***
	(0.182)	(0.181)	(0.182)
Brothers	-0.234	-0.044	-0.120
	(0.598)	(0.603)	(0.611)
Others' Approval		-0.645**	-0.743**
		(0.306)	(0.326)
Others' Appreciation		0.272	0.358
		(0.244)	(0.250)
Others' Influence		-0.325	-0.208
		(0.281)	(0.287)
Openness			0.718
			(1.539)
Conscientiousness			2.146
			(1.383)
Extraversion			-2.143
			(1.335)
Agreeableness			-2.847**
			(1.432)
Neuroticism			-1.277
			(1.003)
Constant	11.631***	13.183***	15.966***
	(2.740)	(2.865)	(3.240)
Observations	171	171	171
R-squared	0.189	0.210	0.237

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

As we can observe in Column 1 of Table 10, the distance between individual allocation and Dictator's choice strongly depends on the decision made in the Initial Phase. Dictators are coherent with the previous behavior: the level of conformism is greater the larger it was in the prior phase. We also find that there exists a treatment effect: Dictators who participate in the Random treatment tend to align with the individual allocation while those who participate in the First Choice treatment tend to distance their choices from others. This result could reflect the importance given to the received information: it seems that who received random information and therefore could not choose the kind of information and give value to it, decide to opt for a similar allocation to others. Moreover, we can note that the kind of information does not influence the level of conformism: Dictators are not affected by the category of information but by the importance level of it, captured, as we have seen, by the effect of the Random

treatment. Another relevant result is related to similarity measures: feeling similar to the other individual leads to behave in line with her. The effect of the objective measure, instead, does not result significant: the subjective component dominates on the objective one. In addition, this analysis shows that the measure of conformism increases for older Dictators and those who consider the volunteering very important. As we can see from Column 2, Table 10, these results are confirmed adding to the previous specification the social variables. Moreover, we find that searching for approvals increases the level of conformism: if in real situations individuals tend to research for others' approval, in this context of allocation decisions, tend to adapt to the choice of another individual. Finally, in Column 3, Table 10, we consider also personality variables. We note that both the sign and the significance of the effects of previous variables are similar also in this specification. We find that individuals who are more agreeable tend to align their choices with others, as we observed in the Initial Phase. Furthermore, we note a small effect of the presence of the cost: Dictators participating in Cost treatment show a greater level of conformism. In both First Choice and Cost treatments, individuals choose which information to receive; therefore, this information has a high level of importance for them. The difference is that individuals who receive information in Cost treatment are those who are willing to pay and, consequently, who strongly desire to know others' behavior and, seen the results, who probably are more easily influenced. Finally, we wonder whether the interaction between treatment and information could be relevant for our analysis; the same information, indeed, could have different effects on dictators depending on whether it is specifically chosen by them or not. These variables have no significant effects on the conformism measure: our results confirm the greater importance given to the possibility to choose whether to receive information than to the type of information.

Table 11 shows the results about the conformism measure related to the Group Information Phase. The dependent variable is the absolute value of the difference between the Dictator's choice related to the third phase and the median value of the group allocations' distribution that each Dictator sees. Among the explanatory variables we consider also the dependent variable of the second phase for taking into account the past choice. In addition, we consider the absolute value of the difference between the median value of the group allocations' distribution and the individual allocation seen in the second phase for taking into account the position of it in the group distribution.

In order to study the effect of receiving information about the group versus the single individual, beyond to give the same kind of previous information, we consider only Dictators that participated in the Dictator Information Phase and choose to receive also the group information. Because of this restriction, we have no observations for Cost Treatment. Indeed, individuals who accept the cost in the second phase do not accept it also in the third, and vice versa.

Table 11. Conformism measure in the Group Information Phase

	(1)	(2)	(3)
Dependent Variable	$\|Y_3\|$	$\|Y_3\|$	$\|Y_3\|$
Method	OLS	OLS	OLS
$\|Y_2\|$	0.283***	0.256***	0.260***
	(0.053)	(0.050)	(0.051)
$\|\text{Median} - \text{Allocation}_2\|$	-0.050	-0.076	-0.074
	(0.056)	(0.054)	(0.055)
Random Treatment	0.935**	0.985**	1.019**
	(0.412)	(0.396)	(0.398)
Demographic Information	0.153	-0.480	-0.481
	(0.597)	(0.574)	(0.588)
Beliefs' Information	0.442	0.221	0.253
	(0.575)	(0.548)	(0.555)
Similar Sub-Category	0.568	0.594	0.577
	(0.460)	(0.436)	(0.448)
Subjective Similarity	-2.908***	-2.572***	-2.372**
	(0.982)	(0.931)	(0.936)
Objective Similarity	0.489	-0.305	-0.161
	(1.104)	(1.055)	(1.055)
Age	0.184	0.084	0.123
	(0.125)	(0.121)	(0.123)
Female	-0.871*	-0.352	-0.575
	(0.483)	(0.483)	(0.521)
Scientific Education	0.740	0.876*	0.757*
	(0.477)	(0.453)	(0.458)
Volunteering Importance	-0.073	-0.045	-0.040
	(0.182)	(0.172)	(0.174)
Brothers	-0.676	-0.004	-0.081
	(0.602)	(0.587)	(0.594)
Others' Approval		-0.536*	-0.530*
		(0.275)	(0.302)
Others' Appreciation		0.588***	0.653***
		(0.224)	(0.232)
Others' Influence		-1.200***	-1.174***
		(0.272)	(0.279)
Openness			-2.317
			(1.421)

Conscientiousness			-1.652
			(1.260)
Extraversion			1.455
			(1.303)
Agreeableness			-0.751
			(1.307)
Neuroticism			0.451
			(0.920)
Constant	1.277	5.554*	6.650**
	(2.888)	(2.890)	(3.293)
Observations	140	140	140
R_squared	0.232	0.321	0.339

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

As we can observe from Table 11, Column 1, the Dictators' choice strongly and positively depends on the decision made in the Dictator Information Phase. The distance between their choice and the median, indeed, is affected by the previous distance between their choice and individual's allocation. Instead, it seems that the distance between the median of the group distribution and the prior individual allocation has not a significant effect. Moreover, we can observe that the influence of random information is opposite to that in the Dictator Information Phase: when Dictators see as a group of individuals behaves and receive random information about it tend to distance their decisions from those of the others while Dictators who receive the information they desire tend to conform with others' choices. Probably the random information is not of interest to Dictators and, consequently, they do not give relevance to the allocations' distribution and behave in a more personal way distancing their choices from those of the group. The point of view, instead, changes for Dictators who choose which information to receive: they are interested in that information and, consequently, giving importance to the group, they focus their attention on the allocations' distribution, conforming their choices to allocations near the median. Then, it seems that dictators in Random treatment do not give importance to the kind of information conforming their choices to that of individual in the first phase, even if it seems they feel the effect of the numerosity in the Group Information Phase distancing their choices from those of the group. In this regard we must remember that the majority of participants in the online questionnaire chooses the fair division and then, we cannot rule out the hypothesis that their greater distance is due to perceiving those allocations too high. On the other hand, we could suppose that dictators participating in First Choice treatment show greater sensitivity to the specific kind of information provided and, based on their own expectations, they could feel more or less similar to the individual or the group and

react giving more importance to information rather than the numerosity of individuals. Indeed, in Figure 9 and 10 we observe a similar behavior in the two phases.

Furthermore, we find that the measure of subjective similarity has a stronger effect than the previous phase highlighting the group effect: Dictators who feel similar to group's characteristics align their choices with those of others. Finally, we find a small effect of gender: females choose allocation similar to the group while males tend to distance from others.

Adding social variables, we find that all these variables are strongly correlated with the level of conformism with the allocations' distribution of the group. As we can see from Column 2, Table 11, the research for approval and the influence that others have on an individual lead to choose similar allocation to the individuals' group, near the median of the distribution. The research for others' appreciation, instead, has an opposite effect, as we observe in the Initial Phase: individuals who desire receive appreciations choose different allocation from the group. Moreover, the effects of the other variables are similar to the previous specification with two exceptions: the gender is no longer significant while the kind of education has a small influence.

The previous results are confirmed also when we add personality variables, as we can note from Column 3, Table 11. We observe no significant effects of personality variables, probably because of the stronger influence of social variables when we consider the allocations' distribution of a group of individuals rather than the allocation choice of a single individual.

5.2. Analysis of the Pro-sociality Measure

In Table 12 we report results related to the factors that affect the pro-sociality measure in the Initial Phase. The larger and positive is the distance between the Dictator's choice and the individual's allocation, the greater is the level of pro-sociality.

Table 12. Pro-sociality measure in the Initial Phase

	(1)	(2)	(3)
Dependent Variable	Y_1	Y_1	Y_1
Age	0.051	0.073	0.050
	(0.124)	(0.123)	(0.123)
Female	1.569***	1.087*	1.171*
	(0.570)	(0.578)	(0.602)
Scientific Education	-2.030***	-2.077***	-1.760***
	(0.548)	(0.545)	(0.548)

Volunteering Importance	-0.113	-0.111	-0.141
	(0.199)	(0.196)	(0.197)
Brothers	-0.592	-0.768	-0.571
	(0.640)	(0.637)	(0.640)
Others' Approval		0.188	0.328
		(0.337)	(0.362)
Others' Appreciation		-1.053***	-1.162***
		(0.264)	(0.268)
Others' Influence		0.103	0.000
		(0.300)	(0.307)
Openness			4.672***
			(1.639)
Conscientiousness			0.285
			(1.587)
Extraversion			0.403
			(1.446)
Agreeableness			2.679*
			(1.552)
Neuroticism			0.533
			(1.110)
Constant	-4.000	-2.150	-7.761**
	(2.843)	(2.984)	(3.431)
Observations	252	252	252
R-squared	0.063	0.093	0.120

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

As we can see from Column 1, Table 12, females and individuals who have a humanistic education give to Recipient a greater amount than the allocation chosen by another Dictator. Adding the social variables, these results are confirmed. Moreover, as Column 2, Table 12 reports, we find that the research for others' appreciation is negatively linked with the level of pro-sociality. This negative correlation could be explained thinking that whether an individual desires her results to be appreciated by others, might be ready to do anything in order to emerge, even actions that put aside pro-sociality. As we note from Column 3, Table 12, both the sign and the significance of all variables are similar also when we consider personality traits in the specification. We find that Dictators who are more open and agreeable are more pro-social.

Table 13 reports the results on the pro-sociality measure related to the Dictator Information Phase. The dependent variable is the difference between the Dictator's choice and the individual's allocation, both related to the second phase. As before, because of the design

we consider only Dictators who choose to receive individual information and we add variables regarding treatment, kind of information and similarity measures. Moreover, we consider among explanatory variables the dependent variable of the Initial Phase.

Table 13. Pro-sociality measure in the Dictator Information Phase

	(1)	(2)	(3)
Dependent Variable	Y_2	Y_2	Y_2
Method	OLS	OLS	OLS
Y_1	0.266***	0.236***	0.279***
	(0.055)	(0.056)	(0.057)
Cost Treatment	-0.349	-0.522	-0.517
	(0.836)	(0.848)	(0.849)
Random Treatment	1.555***	1.487**	1.610***
	(0.574)	(0.575)	(0.574)
Demographic Information	-0.735	-0.419	-0.411
	(0.806)	(0.802)	(0.812)
Beliefs' Information	-0.681	-0.534	-0.357
	(0.767)	(0.762)	(0.760)
Similar Sub-Category	-1.534**	-1.599***	-1.490**
	(0.608)	(0.604)	(0.611)
Subjective Similarity	2.401**	1.909	1.896
	(1.215)	(1.210)	(1.204)
Objective Similarity	1.597	2.113	2.235*
	(1.353)	(1.355)	(1.344)
Age	0.349**	0.399***	0.442***
	(0.148)	(0.147)	(0.148)
Female	-0.533	-0.928	-0.986
	(0.662)	(0.677)	(0.718)
Scientific Education	-1.110*	-1.225*	-1.320**
	(0.641)	(0.636)	(0.636)
Volunteering Importance	1.159***	1.114***	1.173***
	(0.227)	(0.225)	(0.227)
Brothers	0.838	0.414	-0.003
	(0.743)	(0.746)	(0.753)
Others' Approval		0.381	0.026
		(0.386)	(0.413)
Others' Appreciation		-0.733*	-0.440
		(0.307)	(0.318)
Others' Influence		0.760**	0.849**
		(0.349)	(0.356)
Openness			-4.072
			(1.934)
Conscientiousness			-4.190*
			(1.731)
Extraversion			-1.563
			(1.652)

Agreeableness			0.759
			(1.776)
Neuroticism			-0.903
			(1.243)
Constant	-13.502***	-14.802***	-9.134**
	(3.425)	(3.560)	(4.048)
Observations	171	171	171
R-squared	0.223	0.249	0.277

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

As we can note from Column 1, Table 13, the distance between the level of pro-sociality of Dictators and that of other individuals is strongly linked with the choices made in the Initial Phase. Also analysing the pro-sociality measure, we find a treatment effect: Dictators who participate in Random treatment rather than in First Choice give a greater amount than the allocation chosen by individuals paired with them. This larger level of pro-sociality could arise from a little importance given to information and, consequently, a greater attention on the individual allocation. Dictators participating in First Choice treatment, instead, consider relevant the information they receive and, on the basis of these, they compare the individual allocation and choose the amount to give to Recipient. We also observe that Dictators are not affected by the kind of information but by the level of similarity of the specific category of information: Dictators who give more relevance to information opposed to their characteristics show a greater level of pro-sociality than who give more importance to similar characteristics. With regard to the objective and subjective similarity measures, we find, as in the previous analyses, that feeling similar to the other individual leads to increase the level of pro-sociality. In addition, we observe that the measure of pro-sociality increases for older Dictators and those who have an humanistic education and consider the volunteering very important.

In Column 2, Table 13, we also consider social variables in the specification. As we can see, previous results are confirmed with the exception of the subjective similarity measure that loses significance. The effect of this variable is in part captured by the social variables related to others' appreciation and others' influence. Dictators who search for appreciations and are more easily influenced tend to be more pro-social than the others.

Column 3, Table 13, reports the results adding in the regression also personality variables. We can observe, beyond the previous variables' effects, a small influence of the objective similarity measure: Dictators who have a greater number of characteristics in

common with other individuals tend to be more pro-social than Dictators with smaller objective similarity measure. Moreover, we find that the level of pro-sociality is negatively correlated with the personality trait of conscientiousness: rational, thorough and careless individuals tend to be more selfish than others.

Table 14 shows the results about the pro-sociality measure related to the Group Information Phase. The dependent variable is the difference between the Dictator's choice related to the third phase and the median value of the group allocations' distribution that each Dictator sees. Among the explanatory variables we consider also the dependent variable of the second phase for taking into account the past choice. In addition, as before, we consider the difference between the median value of the group allocations' distribution and the individual allocation seen in the second phase for taking into account the position of it in the group distribution. As in the conformism analysis, we have no observations for Cost Treatment because we consider only Dictators that participated in the Dictator Information Phase and choose to receive also the group information.

Table 14. Pro-sociality measure in the Group Information Phase

	(1)	(2)	(3)
Dependent Variable	Y_3	Y_3	Y_3
Method:	OLS	OLS	OLS
Y_2	0.544***	0.475***	0.519***
	(0.055)	(0.055)	(0.054)
Median – Allocation$_2$	-0.576***	-0.510***	-0.550***
	(0.062)	(0.061)	(0.061)
Random Treatment	-0.720*	-0.780**	-1.003***
	(0.395)	(0.383)	(0.379)
Demographic Information	-1.185**	-0.546	-0.717
	(0.580)	(0.568)	(0.571)
Beliefs' Information	-0.475	-0.261	-0.515
	(0.550)	(0.531)	(0.527)
Similar Sub-Category	-0.203	-0.285	-0.297
	(0.442)	(0.426)	(0.427)
Subjective Similarity	1.443	1.311	0.907
	(0.946)	(0.906)	(0.894)
Objective Similarity	0.282	0.978	0.717
	(1.041)	(1.011)	(0.990)
Age	0.037	0.107	0.102
	(0.121)	(0.118)	(0.118)
Female	-0.373	-0.684	-0.713
	(0.481)	(0.485)	(0.510)

Scientific Education	-0.741	-0.888**	-0.720*
	(0.457)	(0.439)	(0.435)
Voluntary Importance	0.229	0.214	0.219
	(0.178)	(0.170)	(0.169)
Brothers	0.628	0.032	0.114
	(0.572)	(0.563)	(0.556)
Others' Approval		0.451*	0.382
		(0.272)	(0.293)
Others' Appreciation		-0.546*	-0.711**
		(0.217)	(0.218)
Others' Influence		1.065***	1.036***
		(0.261)	(0.263)
Openness			3.872***
			(1.348)
Conscientiousness			-0.314
			(1.197)
Extraversion			-1.112
			(1.232)
Agreeableness			2.488**
			(1.232)
Neuroticism			1.493
			(0.875)
Constant	-3.528	-7.122**	-10.235***
	(2.750)	(2.773)	(3.034)
Observations	140	140	140
R-squared	0.404	0.460	0.496

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

As we can observe from Table 14, Column 1, the Dictators' choice strongly and positively depends on the decision made in the Dictator Information Phase. The pro-sociality level distance between their choice and the median, indeed, is affected by the previous distance between their choice and individual's allocation. Moreover, the importance attached to the allocation seen in the second phase is emphasized by the strong and negative correlation with the variable that measure the difference between the median allocation of the group and the individual allocation seen in the Dictator Information Phase. Dictators seem to remember the individual allocation and, positioning it in the allocations' distribution of the group, consider it as a reference point and choose an amount coherent with prior individual allocation without giving more relevance to the median value. Moreover, we can observe a treatment effect. In particular, the influence of random information is opposite to that in the Dictator Information Phase: as we said before, probably the random information is not of interest to Dictators and, consequently, they focus their attention on the allocations' distribution of the group choosing amounts near to the prior individual allocation. The point of view, instead, changes for Dictators

who choose which information to receive: they are interested in that information and, consequently, they interpret the allocations' distribution focusing on the kind of information and this association leads to choose an amount greater than the median allocation. Therefore, they give more attention to received information rather than the frequency of each allocation. Finally, we note a further difference with previous results: considering characteristics and allocations of a group of individuals, the similarity measures are no longer significant while it seems the kind of information to have an influence on the level of pro-sociality. Dictators who receive demographic information rather than hobbies' information show a smaller level of pro-sociality.

Adding social variables to the specification, we find that all these variables have a relevant effect on the allocation choice. As we can observe from Column 2, Table 14, individuals who search for appreciations are more selfish while who search for others' approval and are more easily influenced are more pro-social, choosing an amount greater than the median value. Moreover, we note that beyond the similarity measures also the kind of information has no longer a significant influence. With regard to control variables, we observe that individuals who have a scientific education decide an allocation smaller than the median choice.

In Column 3, Table 14, we report the results adding personality variables to the specification. Previous effects are confirmed; moreover, we find that individuals more open and agreeable show a greater level of pro-sociality choosing an allocation bigger than the median choice.

The individual paired with the Dictator, of which are known allocation and characteristics, changes between the Initial and the Dictator Information phases. This could represent a limitation of this design because there is the possibility that in the second phase two different effects add up. Indeed, both allocation and characteristic information could affect the Dictator's choice decision. In order to go beyond this limitation and isolate the information effect, in the following regressions we consider only those Dictators who see the *same* allocation in both the first and the second phases. Considering only this subgroup of Dictators we can examine whether previous results are consistent despite the change of individual in the two phases. Table 15 reports the OLS estimations of both conformism and pro-sociality measures.

Table 15. Subgroup Dictator Information Phase

	(1)	(2)
Dependent Variable	$\|Y_2\|$	Y_2
Method	OLS	OLS
$\|Y_1\|$	0.634***	
	(0.099)	
Y_1		0.601***
		(0.094)
Cost Treatment	-0.559	-1.127
	(0.765)	(0.824)
Random Treatment	-0.123	-0.313
	(0.576)	(0.606)
Demographic Information	-1.547*	1.561
	(0.898)	(0.946)
Beliefs' Information	-0.624	0.411
	(0.775)	(0.805)
Similar Sub-Category	-0.191	-0.437
	(0.571)	(0.592)
Subjective Similarity	-1.655**	2.368*
	(1.369)	(1.448)
Objective Similarity	-0.491	1.460
	(1.446)	(1.494)
Age	-0.037	0.171
	(0.158)	(0.172)
Female	-1.439**	0.950
	(0.711)	(0.769)
Scientific Education	0.006	-0.452
	(0.582)	(0.599)
Volunteering Importance	-0.390*	0.307
	(0.217)	(0.228)
Brothers	0.365	-0.916
	(0.829)	(0.840)
Others' Approval	-0.750*	0.826*
	(0.379)	(0.421)
Others' Appreciation	-0.126	-0.238
	(0.324)	(0.339)
Others' Influence	-0.678*	0.971**
	(0.375)	(0.393)
Openness	0.484	-1.493
	(1.697)	(1.769)
Conscientiousness	-1.693	0.494
	(1.867)	(1.981)
Extraversion	-2.039	0.887
	(1.788)	(1.897)
Agreeableness	3.362	-6.333*
	(2.188)	(2.303)
Neuroticism	1.486	-2.111
	(1.404)	(1.455)

Constant	8.918**	-5.484
	(4.258)	(4.483)
Observations	63	63
R-squared	0.582	0.604

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

As we can observe from Column 1, Table 15, the effect of the decision made in the Initial Phase is stronger than the effect we find considering all Dictators participating in the Dictator Information Phase, probably due to seeing the same individual allocation. Another interest result is that it seems not to exist a treatment effect, linked to the level of importance of information, but we find a small influence of the kind of information. We observe, indeed, that receiving demographic information rather than hobbies' information leads to choose an allocation similar to the other individual. Furthermore, these results confirm the importance of the subjective similarity measure: individuals who feel more similar to the other individual tend to align their choice with her decision. With regard to the control variables, we note a significant effect of the gender rather than the age, and an influence, as in the whole group, of the volunteering importance. Finally, we find that others' influence and the research for others' approval affect the Dictators' decision conforming their choices with those of the others. Therefore, in order to explain the level of conformism with others' allocations decision, these results evidence the importance of the social variables and the marginal effect of those related to the personality traits.

In Column 2, Table 15, we report the effects of all variables on the level of pro-sociality considering the subgroup of individuals who see the same allocation choice in both Initial and Dictator Information Phases. As in the conformism phase, we note a stronger influence of the decision made in the Initial Phase. Relevant is also that the subjective similarity measure still affects the choice decision, leading to increase the level of pro-sociality the greater the level of similarity. Moreover, we find a significant effect of social variables: individuals who search for others' approval and are more easily influenced tend to give more than others. In this case, unlike what observed in the whole group, the research for others' appreciation is not significant. Finally, as we observe in the analysis of the conformism measure, we note a marginal effect of personality traits, maybe due to limited number of observations.

These results provide important evidences related to the relevance of social variables and similarity measures on conformism and pro-sociality levels. These observations are also confirmed by answers to some questions submitted in the post-experiment questionnaire. Dictators, indeed, declare they changed allocation decision after receiving information about the behavior of another individual because this individual with similar characteristics gave Recipient an amount greater than theirs (21.37%) or smaller than theirs (14.53%) or equal to theirs (5.13%); or because this individual with opposite characteristics gave Recipient an amount greater than theirs (12.82%) or smaller than theirs (11.11%%) or equal to theirs (5.13%). Moreover, Dictators state they changed allocation decision after receiving information about the allocations' distribution of a group of individuals because these individuals with similar characteristics gave Recipient an amount greater than theirs (16.67%) or smaller than theirs (14.44%) or equal to theirs (8.89%); or because these individuals with opposite characteristics gave Recipient an amount greater than theirs (13.33%) or smaller than theirs (11.11%%) or equal to theirs (4.44%).

6. Conclusion

This experiment intended to test the broad conjecture that receiving information in Dictator Game could affect and lead to revise the amount given away. More specifically, since a large interdisciplinary literature focuses on different kinds of homophily, we aimed to investigate whether subjects' giving choices are affected by information over the allocation of a similar Dictator in terms of socio-demographic characteristics, hobbies and beliefs. In particular, we were interested in testing the broad conjecture that individuals are sensitive to belief consonance when they have to decide over giving, in a DG context. Moreover, we wondered whether being informed about the allocation of a group of Dictators has the same, less or more importance compared to being informed about the decision of one single Dictator only. For these purposes, we used a between-subjects design and introduced three treatments that differ in the way information about allocations and characteristics of other Dictators is provided.

Collecting data among students enrolled at the University of Verona, we found significant variability in allocation's choices among treatments and experimental phases. In particular, in Dictator Information Phase we observed that participants in Cost treatment choose with a greater extend a fair sharing while in Group Information we noted the highest

number of selfish allocations among the participants in Random treatment. Moreover, our data evidenced clearly a difference in the decision of receiving information: when a cost is needed only 50% of Dictators choose to receive information while when information is costless about 90% of individuals decide to receive it. More importantly, our results make clear that subjects tend not to be sensitive to hobbies' information, whereas, in the Cost treatment, they are clearly interested in receiving information over beliefs, in line with our conjecture that the beliefs' dimension is a key one, with regard to individuals' similarity and dissimilarity.

For our analysis we considered two kinds of dependent variables, represented by the distance, in and without absolute value, between the Dictator's choice and the individual or group allocation's decision. Carrying out an OLS regression we found that social variables (such as others' approval and others' appreciation) have a stronger effect in explaining the conformism measure rather than the pro-sociality measure, while personality variables have a more relevant impact on pro-sociality rather than on conformity. In particular, Dictators who search for approval and who are more agreeable tend to align their choices with others in Dictator Information Phase. The results are similar also in Group Information phase: the search for approval and the others' influence lead to choose allocations near the median of the group while the search for others' appreciation has an opposite effect, as we observe in the Initial Phase. Another relevant result we found is that feeling similar to other individuals leads to behave in line with them. With regard to pro-sociality measure, instead, we found that Dictators who are more open and agreeable are more pro-social while those who are more conscious are more egoist, as previous studies evidenced. Unlike the conformism measure, in this case we did not observe a strong significant effect of the subjective similarity measure. However, we found that Dictators who give more relevance to information opposed to their characteristics show a greater level of pro-sociality than those who give more importance to similar features.

Moreover, for both measures we observed a treatment effect confirming that choosing the kind of information to receive matters. The results reveal that Dictators who receive information in Cost treatment show a greater level of conformism than those who participate in First Choice treatment. These individuals strongly desire to know others' behavior, probably because they are more easily influenced. In addition, it seems that Dictators who participate in Random treatment focus on the allocations, choosing amounts similar to those of individual paired with them or near the median value of the group distribution while those who participate in First Choice treatment give more importance to information and, consequently, attribute value to allocations on the basis of information received.

The analysis could be improved going beyond some design limitations: in the second phase, indeed, both different individual allocation and characteristic information could affect the Dictator's choice decision. We ran an OLS regression considering a subgroup of Dictators who see the same allocation in both first and second phases. We found a strong effect of the decision made in the Initial Phase and a small influence of demographic information. Moreover, the results confirmed that subjective similarity and social variables have a relevant impact on both conformism and pro-sociality measures. By increasing the number of these Dictators, we could verify whether the kind of information actually influence significantly the level of conformism and pro-sociality.

Furthermore, more accurate results could be reached taking into account the learning effect. We hypothesized that Dictators who did not want the information, would have chosen the same allocation in all three phases. However, asking them again to decide how sharing the amount, we could isolate the information influence, eliminating the possible learning effect, comparing their allocations with those of Dictators who participate in Information phases.

The classic approach for studying social influence in economics has been to conduct experiments on students in lab. The focus on students should not be seen as a weakness of this research approach: as Gächter (2010) argues, students often are the perfect starting point for this kind of researches. Students are typically cognitively sophisticated; therefore, they rather easily understand the mechanism of distributive decision problems, which reduces noise and enables the researchers to identify the underlying preference structure generating the observed choice patterns. However, it could be interesting to expand this research involving older individuals. Indeed, there are moments in life, marked by some events or personal experiences, that lead to change perspective over reality and could modify behaviors and choices in ones' life. Pro-sociality could be part of these behaviors that change over time, as Confucius said "we have two lives and the second begins the day when we realize that we have only one".

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Appendix A

Appendix A.1. Trauma Variables

The *Life trauma* score originates from the following question:

''*For each of the following events, please indicate whether the event occurred at any point in your life. If the event did happen, please indicate the year in which it happened most recently.*
[a] Has a child of yours ever died?
[b] Have you ever been in a major fire, flood, earthquake, or other natural disaster?
[c] Have you ever fired a weapon in combat or been fired upon in combat?
[d] Has your spouse, partner, or child ever been addicted to drugs or alcohol?
[e] Were you victim of a serious physical attack or assault in your life?
[f] Did you ever have a life-threatening illness or accident?
[g] Did your spouse or a child of yours ever have a life-threatening illness or accident?"

Possible answers to each item are: ''Yes" and ''No". Following Smith et al. (2013), the score is the sum of the events arisen divided by 7, the total number of events. The score is missing when more than half of the underlying items are missing.

The *Early life trauma* score originates from the following question:

''For the next set of events, please think about your childhood growing up, before you were 18 years old.
[a] Before you were 18 years old, did you have to do a year of school over again?
[b] Before you were 18 years old, did either of your parents drink or use drugs so often that it caused problems in the family?
[c] Before you were 18 years old, were you ever physically abused by either of your parents?"

Possible answers to each item are: ''Yes" and ''No". Following Smith et al. (2013), the score is the sum of the events arisen divided by 3, the total number of events. The score is missing when more than half of the underlying items are missing.

Appendix A.2. Personality Variables

Personality scores are constructed from the following question:

"Please indicate how well each of the following describes you.

[a] Outgoing
[b] Helpful
[c] Moody
[d] Organized
[e] Friendly
[f] Warm
[g] Worrying
[h] Responsible
[i] Lively
[j] Caring
[k] Nervous
[l] Creative
[m] Hardworking
[n] Imaginative
[o] Softhearted
[p] Calm
[q] Intelligent
[r] Curious
[s] Active
[t] Careless
[u] Broad-minded
[v] Sympathetic
[w] Talkative
[x] Sophisticated
[y] Adventurous
[z] Thorough"

Possible answers to each item are: "A lot", "Some", "A little" and "Not at all", to which we assign the value 1, 2, 3 or 4 respectively. We assign the reverse code to all items apart from [p] and [t]. Following Smith et al. (2013), scores are built as the average of the following items:
Openness: [l], [n], [q], [r], [u], [x], [y].
Conscientiousness: [d], [h], [m], [t], [z].
Extraversion: [a], [e], [i], [s], [w].
Agreeableness: [b], [f], [j], [o], [v].
Neuroticism: [c], [g], [k], [p].
Each score is missing when more than half of the underlying items are missing.

Appendix A.3. Approach of Lewbel for IV Regression

Let us define X a vector of observed exogenous explanatory variables and $\varepsilon = (\varepsilon_s, \varepsilon_o)$ two unobserved error processes, possibly correlated with each other. Consider a triangular structural model of the form:

(1) $$Y = X\beta_1 + W\gamma + \varepsilon_s$$
(2) $$W = X\beta_2 + \varepsilon_o.$$

Estimation of Eq. (1) may give rise to biased OLS results because W is an endogenous variable. The approach of Lewbel (2012) suggests to run the first stage regression of the endogenous variable on all exogenous variables, that is to estimate Eq. (2), and then generate instruments Z as the residuals e_0 from Eq. (2) multiplied by each exogenous regressor in mean-centered form,

(3) $$Z = (X - \bar{X})\, e_0.$$

Identification is achieved by imposing that $Cov\,(X, \varepsilon_o^2) \neq 0$ and $Cov\,(X, \varepsilon_s \varepsilon_o) = 0$. In the presence of heteroskedasticity in the error process, Z is correlated with W; the correlation is higher the greater the degree of heteroskedasticity. The estimator works well in simulations and empirical applications (Lewbel, 2012), although it is less precise than an IV estimator obtained from standard exclusion restrictions.

Appendix B

Appendix B.1. Instructions for the "Self" Treatment

Today we will do an activity that is divided in three parts. During this activity you can win tokens and at the end you can exchange them with small prizes. Now we will explain everything with precision. In this activity we will ask you to make some decisions. There is no right or wrong answer; we ask you to choose the answer thinking about how you would behave in reality. It is important that you think well about the answer to provide because the prizes you will win depend on what you choose.

We are interested in the behavior of groups of boys and girls. For this reason, we will not ask your name, but only some information that will never allow us to come back to you. We will give you a number that you will find on each paper sheet we will deliver to you; this number is necessary at the end of the activity in order to receive the prizes.

It is very important that you correctly understand the rules of this activity; we ask you to be careful and not to talk to your classmates because no one has to influence the choices of others. If you have any questions, just raise your hand and we will help you. If you do not respect the rules, you will not receive any prize.

If you behave correctly and if you stay in silence we will have time to carry out all three parts of the activity. Each part will be done once; at the end of the activity you can win tokens that will allow you to get some prizes.

In this activity you will have to make decisions alone.

On your desk there is a small bag with 10 tokens. Taking part in this activity you can win or lose other tokens. With the tokens you will have at the end of the activity you will choose the prizes among those available. (Examples follow).

During the three parts of this activity you will make some decisions. At the end of the activity, one of the decisions you have made will be drawn. Each decision you will make is written in a

slip of paper like this. In this box I have included all the slips of paper with the decisions that you will soon have to make. At the end of the activity, we draw a slip of paper and we read the decision we will use to count the total number of tokens you have.

The final number of tokens depends on the choice you made in the decision that is drawn; the tokens won or lost will be added or subtracted from the initial 10 tokens. With the tokens you have accumulated after this operation you will choose your prizes.

Before making each decision, you have to think that every time you have 10 tokens and that each of these decisions could be drawn for the win of the final prizes.

Now we explain to you which kind of decisions you have to take in every part and how you win the tokens by making some examples. At the end of the explanation of each part, we will provide you with these paper sheets in which you will make similar decisions. Each decision has two options; you will have to choose one. Think well about the decision you want to take because at the end it could be drawn and if it is drawn, we will give you the tokens corresponding to your choice.

Is that clear?
Do you have any questions?

FIRST PART

Now I explain which decisions you make in the first part of the activity. You will take 4 decisions and then other 4 very similar ones; therefore you have to make 8 decisions overall.
In the first part we will give you the possibility to have more tokens (in addition to the 10 we have just given you). You must choose WHEN you prefer to receive tokens. You must mark with a X the rectangle corresponding to your answer, remembering that there is no right or wrong answer. Now let's see an example.

☐ I prefer to receive 2 tokens in 1 week	☐ I prefer to receive 5 tokens in 3 weeks

If this decision will be drawn at the end of the activity:

• If you chose to receive 2 tokens in 1 week, you can choose your prizes that have a value corresponding to 2 tokens, but your teacher will deliver them to you in 1 week. With the 10 initial tokens, instead, you will choose other awards you can hold immediately.

• If you chose to receive 5 tokens in 3 weeks, you can choose your prizes which have a value of 5 tokens, but your teacher will deliver them to you in 3 weeks. With the 10 initial tokens, instead, you will choose other awards you can obtain immediately.

If in the day the teacher has to give you the prizes you will be absent, do not worry, you will receive them when you will be back.
Is that clear? Do you have any questions?

Let's make another example:

☐ I prefer to receive 1 token now	☐ I prefer to receive 3 tokens in 2 days

If this decision will be drawn at the end of the activity:

• If you chose to receive 1 token now, at the end of the activity what happens? You will have 11 tokens (10 initial tokens + 1 winning token). With these tokens you can choose your prizes and you can hold them immediately.

• If you chose to receive 3 tokens in 2 days, at the end of activity, what happens? You can choose your prizes which correspond to a value of 3 tokens, but your teacher will deliver them in 2 days. With the 10 initial tokens, instead, you can choose other prizes you can hold immediately.

Is everything clear? Do you have any questions?

The decisions you have to take now are similar to the examples we have just seen. In your case you have to choose between NOW and 2 WEEKS. Be careful that the number of tokens will change from one decision to another. Do you have any questions?
If you do not have questions, I deliver to you this paper sheet. You have to make 4 decisions.

Now you have to take 4 further decisions. The difference is that you will choose between "I prefer to receive the tokens in ONE MONTH" and "I prefer to receive the tokens in ONE MONTH

and TWO WEEKS". Therefore, compared to the previous decisions, WHEN you want to receive the tokens changes. Now you can read the first decision and mark your answer.

SECOND PART

We start now the second part of the activity. In this part you will make 5 decisions and then other 5 very similar ones.

As you see from this example, in the next decisions you can choose, as before, between two options. In one option (first rectangle) the number of tokens you can win depends on the roll of a die. In the other option (second rectangle) the number of tokens you can win is fixed.

Regarding the first option, read carefully in how many cases you can win 10 tokens and in how many cases you can win 0 tokens. The image can help you; the faces of the die point out with which numbers you win 10 or 0 tokens while the yellow area of the circle represents visibly how many possibilities you have to win 10 tokens (first circle) and how many possibilities you have to win 0 tokens (second circle).

Also in this case, you will have to mark with a X the rectangle corresponding to your answer, remembering that there is no right or wrong answer.

☐ If one of these numbers comes out of the die roll: **1** **2** **3** **4** you **win 10 tokens** (40% of probability)  If one of these numbers comes out of the die roll: **5** **6** **7** **8** **9** **10** you **win 0 tokens** (60% of probability). 	☐ You **win 5 tokens** with certainty.

If this decision will be drawn at the end of the activity, you throw the die and see the result.

• If you chose the first option, according to the number obtained by rolling the die you will win 10 tokens or 0 tokens. You will use these tokens, added to the initial 10, to choose your prizes that you will receive at the end of the activity. Then you can have 20 tokens (10 tokens

won + 10 initial tokens) or 10 tokens (0 tokens won + 10 starting tokens). [Throw 2/3 times the die]

• If you chose to receive 5 tokens with certainty, your 5 tokens will be delivered to you. You will then have 15 tokens (5 tokens won + 10 initial tokens); with these tokens you can choose your prizes you will receive at the end of the activity.

As before, now we deliver to you the paper sheets where you will make similar decisions to the example just seen. Be careful: the number of cases you can win changes.
Do you have any questions?

Let's make another example very similar to the previous one. The difference is that you lose tokens instead of winning them. In one option (first rectangle) the number of tokens you can lose depends on the roll of a die. In the other option (second rectangle) the number of tokens you can lose is fixed.

☐ If one of these numbers comes out of the die roll: **1** **2** **3** **4** you **lose 10 tokens** (40% of probability);  If one of these numbers comes out of the die roll: **5** **6** **7** **8** **9** **10** you **lose 0 tokens** (60% of probability). 	☐ You **lose 5 tokens** with certainty.

If this decision will be drawn at the end of the activity, you throw the die and you see the result.

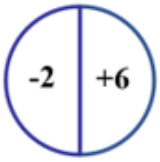
• If you chose the first option, according to the number obtained by rolling the die you will lose 10 tokens or 0 tokens. With the tokens that remain (10 initial tokens – lost tokens) you choose your prizes that you will receive at the end of the activity. [Throw 2/3 times the die]

• If you chose to lose 5 tokens with certainty, 5 tokens will be subtracted. Then, you will have 5 tokens (10 initial tokens - 5 lost tokens); with these tokens you can choose your prizes you will receive at the end of the activity.

As before, we deliver to you the paper sheets where you will make similar decisions to the example just seen. Be aware: the number of cases you can lose changes.
Do you have any questions?

THIRD PART

In the third part we propose you some decisions that are different from the previous ones. Now we present you a choice and you have to decide if accept or refuse it. Let's make an example.

	☐ **ACCEPT**	☐ **REFUSE**
If tossing a coin comes out head, you **lose 2 tokens in a month**; if tossing a coin comes out cross, you **earn 6 tokens in a month**.		

In this case,

• If you accept it, you can lose 2 tokens or earn 6 tokens depending on the outcome of a coin roll. Your decision must be made before you know whether the outcome is head or cross. Keep in mind that the probability that head comes out is equal to the probability that cross comes out. As the circle figure suggests under the column accept, you have the possibility in one case to lose 2 tokens and in the other case to earn 6 tokens.

• If you refuse it, you win 0 tokens as suggested by the circle image below the rejection column.

Also in this case, you will have to mark with a X the rectangle corresponding to your answer, remembering that there is no right or wrong decision.

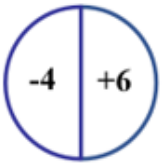
Now we imagine that this decision will be drawn at the end of the activity.

• If you choose to accept it, you still do not know the outcome of the coin. Then you will toss a coin and see if it comes out head or cross. Considering our example, if it comes out head you lose 2 tokens in 3 days. With your initial 10 tokens you can choose your prizes you will receive at the end of the activity, but in 3 days you will have to give your teacher a prize corresponding to the value of 2 tokens.

• If you choose to accept it and it comes out cross, you earn 6 tokens with which you can choose your prizes that the teacher will deliver to you in 3 days. With the 10 initial tokens, instead, you will choose other awards you can hold immediately.

• If you choose to reject it, you will receive 0 tokens. Then, you will have 10 tokens (0 tokens won + 10 initial tokens); with these tokens you can choose your prizes you will receive at the end of the activity.

Let's make another example.

	□ ACCEPT	□ REFUSE
If tossing a coin comes out head, you **lose 4 tokens now**; if tossing a coin comes out cross, you **earn 6 tokens now**.		

If this decision will be drawn at the end of the activity, you toss the coin:

• If you chose to accept it and it comes out head, you lose 4 tokens. Then you will have 6 tokens (10 initial tokens - 4 lost tokens); with these tokens you can choose your prizes you will receive at the end of the activity.

• If you chose to accept it and it comes out cross, you earn 6 tokens. What happens? You will have 16 tokens (6 tokens won + 10 initial tokens); with these tokens you can choose your prizes you will receive at the end of the activity.

• If you chose to reject it, what happens? You will receive 0 tokens. Then you will have 10 tokens (0 tokens won + 10 initial tokens); with these tokens you can choose your prizes you will receive at the end of the activity.

Do you have any questions?

In the paper sheets that now we deliver to you, you lose or earn tokens NOW – IN A WEEK – IN A MONTH. Be careful: the number of tokens you can lose changes.

Appendix B.2. Instructions for the "Other" Treatment

Today we will do an activity that is divided in three parts. During this activity you can win tokens and at the end you can exchange them with small prizes. Now we will explain everything with precision. In this activity we will ask you to make some decisions. There is no right or wrong answer; we ask you to choose the answer thinking about how you would behave in reality.

We are interested in the behavior of groups of boys and girls. For this reason, we will not ask your name, but only some information that will never allow us to come back to you.

It is very important that you correctly understand the rules of this activity; we ask you to be careful and not to talk to your classmates because no one has to influence the choices of others. If you have any questions, just raise your hand and we will help you. If you do not respect the rules, you will not receive any prize.

If you behave correctly and if you stay in silence we will have time to carry out all three parts of the activity. Each part will be done once; at the end of the activity you can win tokens that will allow you to get some prizes.

We make this activity in your class and in the other classes of your school. You are paired with a child attending another class and aged as you. You will make some decisions for this child and this child will make some decisions for you. You never know who is this child and she or he never knows who are you. We assign you a number that you will find on each paper sheet we will deliver to you; this number it is necessary to create the pairs and to give you the prizes at the end of the activity.

On your desk there is a small bag with 10 tokens that you will use to take decisions for the child paired with you. Taking part in this activity you will be able to win or lose other tokens to your partner. With the tokens that your partner will have at the end of the activity she/he will choose the prizes among those available. (Examples follow).

During the three parts of this activity you will make some decisions for the child paired with you. At the end of the activity, one of the decisions you have made will be drawn. Each decision you will make is written in a slip of paper like this. In this box I have included all the slips of paper with the decisions that you will soon have to make. At the end of the activity, we draw a

slip of paper and we read the decision we will use to count the total number of tokens that your partner will receive.

The final number of tokens of your partner depends on the choice you made in the decision that is drawn; the tokens won or lost will be added or subtracted from the initial 10 tokens. With the tokens your partner has accumulated after this operation she/he will choose her/his prizes.

Before making each decision, you have to think that every time your partner has 10 tokens and that each of these decisions could be drawn for the win of her/his final prizes.

Now we explain to you which kind of decisions you have to take in every part and how your partner wins the tokens by making some examples. At the end of explanation of each part, we will provide you with these paper sheets in which you will make similar decisions. Each decision has two options; you will have to choose ones. You will make the decisions thinking that you are choosing for a child of another class and aged as you. Think well about the decision you want to take because at the end it could be drawn and if it is drawn, we will give your partner the tokens corresponding to your choice.

Is that clear?
Do you have any questions?

FIRST PART

Now I explain which decisions you make in the first part of the activity. You will take 4 decisions and then other 4 very similar ones, therefore you have to make 8 decisions overall.
In the first part we will give your partner the possibility to have more tokens (in addition to the 10 we have just given her/him). You must choose WHEN you prefer your partner receives tokens. You must mark with a X the rectangle corresponding to your answer, remembering that there is no right or wrong answer. Now let's see an example.

☐ I prefer my partner receives 2 tokens in 1 week	☐ I prefer my partner receives 5 tokens in 3 weeks

If this decision will be drawn at the end of the activity:

• If you chose your partner receives 2 tokens in 1 week, she/he can choose her/his prizes that have a value corresponding to 2 tokens, but the teacher will deliver them to her/him in 1 week. With the 10 initial tokens, instead, your partner will choose other awards that can hold immediately.

• If you chose your partner receives 5 tokens in 3 weeks, she/he can choose her/his prizes which have a value of 5 tokens, but the teacher will deliver them to her/him in 3 weeks. With the 10 initial tokens, instead, your partner will choose other awards that can hold immediately.

If in the day the teacher has to give you the prizes you will be absent, do not worry, you will receive them when you will be back.
Is that clear? Do you have any questions?

Let's make another example:

☐ I prefer my partner receives 1 token now	☐ I prefer my partner receives 3 tokens in 2 days

If this decision will be drawn at the end of the activity:

• If you chose your partner receives 1 token now, at the end of the activity what happens? She/he will have 11 tokens (10 initial tokens + 1 winning token). With these tokens she/he can choose her/his prizes that can hold immediately.

• If you chose your partner receives 3 tokens in 2 days, at the end of activity what happens? Your partner can choose her/his prizes which correspond to a value of 3 tokens, but the teacher will deliver them in 2 days. With the 10 initial tokens, instead, your partner can choose other prizes that can hold them immediately.

Is everything clear? Do you have any questions?

The decisions you have to take now are similar to the examples we have just seen. In your case you have to choose between NOW and 2 WEEKS. Be careful that the number of tokens will change from one decision to another. Do you have any questions?
If you do not have questions, I deliver to you this paper sheet. You have to make 4 decisions for your partner.

Now you have to take 4 further decisions. The difference is that you will choose between "I prefer my partner receives the tokens in ONE MONTH" and "I prefer my partner receives the tokens in ONE MONTH and TWO WEEKS". Therefore, compared to the previous decisions, WHEN you want your partner receives the tokens changes. Now you can read the first decision and mark your answer.

SECOND PART

We start now the second part of the activity. In this part you will make 5 decisions and then other 5 very similar ones.

As you see from this example, in the next decisions you can choose, as before, between two options. In one option (first rectangle) the number of tokens your partner can win depends on the roll of a die. In the other option (second rectangle) the number of tokens your partner can win is fixed.

Regarding the first option, read carefully in how many cases your partner can win 10 tokens and in how many cases she/he can win 0 tokens. The image can help you; the faces of the die point out with which numbers she/he wins 10 or 0 tokens while the yellow area of the circle represents visibly how many possibilities your partner has to win 10 tokens (first circle) and how many possibilities she/he has to win 0 tokens (second circle).

Also in this case, you will have to mark with a X the rectangle corresponding to your answer, remembering that there is no right or wrong answer.

☐ If one of these numbers comes out of the die roll: **1** **2** **3** **4** your partner **wins 10 tokens** (40% of probability)  If one of these numbers comes out of the die roll: **5** **6** **7** **8** **9** **10** your partner **wins 0 tokens** (60% of probability) 	☐ Your partner **wins 5 tokens** with certainty

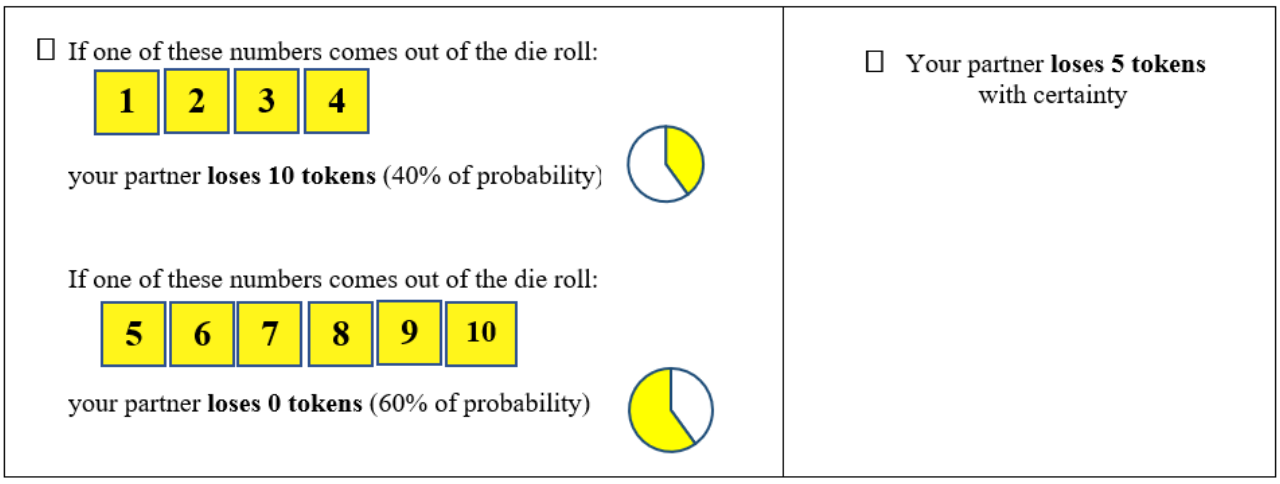
If this decision will be drawn at the end of the activity, you throw the die and you see the result.

• If you chose the first option, according to the number obtained by rolling the die your partner will win 10 tokens or 0 tokens. Your partner will use these tokens, added to the initial 10, to choose her/his prizes that will receive at the end of the activity. Then your partner can have 20 tokens (10 tokens won + 10 initial tokens) or 10 tokens (0 tokens won + 10 starting tokens). [Throw 2/3 times the die]

• If you chose that your partner receives 5 tokens with certainty, these tokens will be delivered to her/him. Your partner will then have 15 tokens (5 tokens won + 10 initial tokens); with these tokens she/he can choose the prizes that will receive at the end of the activity.

As before, now we deliver to you the paper sheets where you will make similar decisions to the example just seen. Be careful: the number of cases your partner can win changes.
Do you have any questions?

Let's make another example very similar to the previous one. The difference is that your partner loses tokens instead of winning them. In one option (first rectangle) the number of tokens she/he can lose depends on the roll of a die. In the other option (second rectangle) the number of tokens your partner can lose is fixed.



If this decision will be drawn at the end of the activity, you throw the die and you see the result.

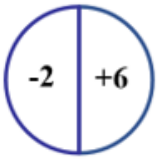
• If you chose the first option, according to the number obtained by rolling the die your partner will lose 10 tokens or 0 tokens. With the tokens that remain (10 initial tokens – lost tokens) your partner chooses the prizes that she/he will receive at the end of the activity. [Throw 2/3 times the die]

• If you chose that your partner loses 5 tokens with certainty, 5 tokens will be subtracted. Then, she/he will have 5 tokens (10 initial tokens - 5 lost tokens); with these tokens your partner can choose the prizes that will receive at the end of the activity.

As before, we deliver to you the paper sheets where you will make similar decisions to the example just seen. Be aware: the number of cases your partner can lose changes.
Do you have any questions?

THIRD PART

In the third part we propose you some decisions that are different from the previous ones. Now we present you a choice and you have to decide if accept or refuse it. Let's make an example.

	☐ **ACCEPT**	☐ **REFUSE**
If tossing a coin comes out head, your partner **loses 2 tokens in a month**; if tossing a coin comes out cross, your partner **earns 6 tokens in a month**.		

In this case,

• If you accept it, your partner can lose 2 tokens or earn 6 tokens depending on the outcome of a coin roll. Your decision must be made before you know whether the outcome is head or cross. Keep in mind that the probability that head comes out is equal to the probability that cross comes out. As the circle figure suggests under the column accept, your partner has the possibility in one case to lose 2 tokens and in the other case to earn 6 tokens.

• If you refuse it, your partner wins 0 tokens as suggested by the circle image below the rejection column.

Also in this case, you will have to mark with a X the rectangle corresponding to your answer, remembering that there is no right or wrong decision.

Now we imagine that this decision will be drawn at the end of the activity.

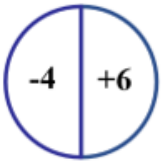
• If you chose to accept it, you still do not know the outcome of the coin. Then you will toss a coin and see if it comes out head or cross. Considering our example, if it comes out head your partner loses 2 tokens in 3 days. With your initial 10 tokens your partner can choose the prizes

that will receive at the end of the activity, but in 3 days she/he will have to give the teacher a prize corresponding to the value of 2 tokens.

• If you chose to accept it and it comes out cross, your partner earns 6 tokens with which she/he can choose the prizes that the teacher will deliver to her/him in 3 days. With the 10 initial tokens, instead, your partner will choose other awards that can hold immediately.

• If you chose to reject it, your partner will receive 0 tokens. Then, she/he will have 10 tokens (0 tokens won + 10 initial tokens); with these tokens your partner can choose the prizes that will receive at the end of the activity.

Let's make another example.

	□ ACCEPT	□ REFUSE
If tossing a coin comes out head, your partner **loses 4 tokens now**; if tossing a coin comes out cross, your partner **earns 6 tokens now**.		

If this decision will be drawn at the end of the activity, you toss the coin:

• If you chose to accept it and it comes out head, your partner loses 4 tokens. Then she/he will have 6 tokens (10 initial tokens - 4 lost tokens); with these tokens your partner can choose the prizes that will receive at the end of the activity.

• If you chose to accept it and it comes out cross, your partner earns 6 tokens. What happens? She/he will have 16 tokens (6 tokens won + 10 initial tokens); with these tokens your partner can choose the prizes that will receive at the end of the activity.

• If you chose to reject it, what happens? Your partner will receive 0 tokens. Then she/he will have 10 tokens (0 tokens won + 10 initial tokens); with these tokens your partner can choose the prizes that will receive at the end of the activity.

Do you have any questions?

In the paper sheets that now we deliver to you, your partner loses or earns tokens NOW – IN A WEEK – IN A MONTH. Be careful: the number of tokens your partner can lose changes.

Appendix B.3. Final Questionnaire

1) Gender:
   - □ Male
   - □ Female
2) Month and year of birth: ……
3) From how many years are you in Italy? ……..
4) From how many years are your parents in Italy? ……
5) What kind of work does your mother do? ……..
6) What kind of work does your father do? ……....
7) How many brothers do you have? ……..
8) How long do you stay without parents at home?
   a) One of my parents is almost always or always at home with me
   b) During the day it happens few times that both parents are not at home
   c) In the afternoon both parents are not at home, but in the evening at least one of them is with me
   d) Most of the time both parents are not at home
9) During the recreation time you prefer:
   - □ Play alone
   - □ Play with your friends
10) In general, you prefer:
   - □ Do homework alone
   - □ Do homework with your friends
11) What grade do you take most often at school? ……..
12) What was your math grade in report card this year? ……..
13) Do you do sports or recreational activities outside the school?
   - □ Yes
   - □ No
14) Do you have your personal mobile phone?
   - □ Yes
   - □ No
15) Do you have free Internet access?
   - □ Yes
   - □ No

16) Do you like working in a group?

- A lot
- Little
- Not at all

17) Do you receive a pocket money from your parents? A pocket money means a fixed amount received regularly.

- Yes
- Sometimes
- No

18) Do you play cards or board games?

- Often
- Few times
- Never

19) If you see a game you like:

- I want it immediately; I ask my parents to buy it
- My birthday is near; I ask for it as a present

20) If one of your classmates has not material (colors, book, pen ...) do you lend it gladly?

- Yes, always
- Sometimes
- No

21) Do you help your classmates if they are in difficulty in some exercises or tasks?

- Yes
- No

Appendix B.4. Variables

- *Italian Parents* takes values 1 if parents are born in Italy, 2 if parents are in Italy from more than 15 years, 3 if parents are in Italy from less than 15 years.
- *Time with Parents* takes values 1 if in Question 8 the answers are a or b, 0 otherwise.
- *Work in group* takes values 3 if children like working in group a lot, 2 a little and 1 not at all.
- *Math Mark* and *Mean Mark* take values 1 if mark is greater than 8, 0 otherwise.

- *Play cards* takes value 3 if children often play cards or board games, 2 if they play cards or board games few times, 1 if they never play cards or board games.
- *Pocket Money* takes value 3 if children receive pocket money, 2 if children receive pocket money sometimes, 1 if children do not receive pocket money.

Other variables are dummy variables referred to the remaining questions of post-experiment questionnaire.

Appendix B.5. Risk Attitude Ranges

We consider the utility function CRRA to calculate the indexes of attitude risk r: $U = \frac{T^{1-r}}{1-r}$ where T, in our case, indicates the number of tokens won or lost.
Here we report all inequalities set up for each switch point in the decision tasks. Their solutions were calculated by means of a mathematical software because they are transcendental inequalities.

- If child always accepts the risk:

  $0.1 \cdot \frac{10^{1-r}}{1-r} \geq \frac{5^{1-r}}{1-r}$ $\quad$ r ≤ -2.322
- If child accepts to risk since the probability of winning 10 tokens is equal to 30% or if she accepts to risk until the probability of losing 10 tokens is equal to 70%:

  $0.1 \cdot \frac{10^{1-r}}{1-r} \leq \frac{5^{1-r}}{1-r} \leq 0.3 \cdot \frac{10^{1-r}}{1-r}$ $\quad$ -2.322 ≤ r ≤ -0.737
- If child accepts to risk since the probability of winning 10 tokens is equal to 50% or if she accepts to risk until the probability of losing 10 tokens is equal to 50%:

  $0.3 \cdot \frac{10^{1-r}}{1-r} \leq \frac{5^{1-r}}{1-r} \leq 0.5 \cdot \frac{10^{1-r}}{1-r}$ $\quad$ -0.737 ≤ r ≤ 0
- If child accepts to risk since the probability of winning 10 tokens is equal to 70% or if she accepts to risk until the probability of losing 10 tokens is equal to 30%:

  $0.5 \cdot \frac{10^{1-r}}{1-r} \leq \frac{5^{1-r}}{1-r} \leq 0.7 \cdot \frac{10^{1-r}}{1-r}$ $\quad$ 0 ≤ r ≤ 0.485
- If child accepts to risk since the probability of winning 10 tokens is equal to 90% or if she accepts to risk until the probability of losing 10 tokens is equal to 10%:

  $0.7 \cdot \frac{10^{1-r}}{1-r} \leq \frac{5^{1-r}}{1-r} \leq 0.9 \cdot \frac{10^{1-r}}{1-r}$ $\quad$ 0.485 ≤ r ≤ 0.848

- If child never accepts to risk:

$$0.9 \cdot \frac{10^{1-r}}{1-r} \leq \frac{5^{1-r}}{1-r} \qquad r \geq 0.848$$

Appendix B.6. Pictures of the experiment

Appendix C

Appendix C.1. Online Questionnaire

Welcome!
Thank you for showing interest in this study and for taking the time to complete this survey.
Please read the following before starting:

Consent form
I consent to participate in this session which will involve nine questions on demographic characteristics, leisure interests and beliefs over value-related issues and one question in which I will make a decision.
I understand that all data will be kept entirely confidential and will be absolutely anonymous. My personal information will not be stored with the data.
I consent to the publication of study results as long as the information is anonymous so that no identification of participants can be made.

- o I have read and understood the explanations and I voluntarily consent to participate in this study.

Please enter your Prolific ID: _____

1) Gender:

- □ Male
- □ Female

2) Age: _____

3) Nationality: _____

4) Which musical genre do you prefer?

- □ Classic music
- □ Country music

5) Which kind of movie do you prefer?

- Action movie
- Romance / Comedy movie

6) How much do you like swimming? Consider a scale from 1 to 4 where 1 means not at all and 4 means a lot.

1	2	3	4
Not at all			A lot

7) In politics we usually identify "the right wing" and "the left wing". Considering a scale from 1 to 9 (1=far left, 5=center/moderate, 9=far right), where would you place yourself?

1	2	3	4	5	6	7	8	9
Extreme Left								Extreme Right

8) Do you consider yourself a religious person / believer?

- Yes
- No

9) Which of the following statements best reflects your opinion?

- In general, I am in favour of homosexual marriage.
- In general, I am not in favour of homosexual marriage.

10) In order to answer the next question, you are paired with another individual chosen randomly for this specific question among those who will participate in another phase of the research that will take place at the University of Verona (Italy).
The role assigned to you is that of *Giver*; the participant paired with you plays the role of *Recipient*. You will never know the identity of the Recipient and she will never know yours.
To answer this question, we introduce the ECU, the currency used in the experimental field.
1 ECU corresponds to € 0.30 and to £ 0.27.
You are asked to allocate **20 ECU**. In particular, you will have to choose the amount x to keep for yourself and the amount y to give to the Recipient paired with you. Therefore, you will have to choose one of the allocations (x, y) showed in the table.

Your amount x	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
The amount y for the Recipient	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

The Recipient paired with you accepts your choice, and makes no decision.
The amount x you choose for yourself, converted in pound, will be added to the participation fee you will receive for completing the questionnaire; the amount y, converted into euros, will be given to the Recipient at the end of the activity in which she will participate at the University of Verona.

At the end of the questionnaire you find a certificate that confirms the actual payment made to the Recipient. This certificate was signed by the administrative secretary of the Department of Economics of the University of Verona.

Appendix C.2. Instruction for Dictator – Random Treatment –

Welcome! Thank you for participating in this experiment. Each of you will receive € 2.50 for having shown up on time. From now on any kind of communication with other participants is forbidden. If you have any questions or concerns, please raise your hand; we will answer your questions individually.

Please read the following instructions carefully. These instructions are identical for all participants. This experiment allows you to earn a sum of money. How much you will earn is in part a fixed amount and in part depends on the decisions you will make. Your decisions will remain absolutely anonymous. There is no right or wrong answer. The show-up fee (€ 2.50) and any additional amount of money that you will earn during the experiment will be paid out to you in cash at the end of the experiment.

The experiment consists of 3 phases and a final questionnaire. In each phase you will be required to make some decisions. At the end of the experiment the computer will generate a random number between 1 and 3, equal for all participants. You can imagine the choice of this number as drawing a ball from an urn containing 3 balls numbered from 1 to 3, remembering that any number between 1 and 3 is equally likely.

- If the number 1 comes out, you will receive the sum of money you have earned in phase 1;
- If the number 2 comes out, you will receive the sum of money you have earned in phase 2;
- If the number 3 comes out, you will receive the sum of money you have earned in phase 3.

Then you will receive the sum earned in phase 1 or the sum earned in phase 2 or the sum earned in phase 3, and each phase has the same probability of being selected for the payment.

In each phase the unit of experimental money will be the ECU (Experimental Currency Unit), where 1 ECU = 0.30 €.

Before explaining to you which decisions you need to make at each phase, we ask you to answer some questions. By filling out the following questionnaire you will earn € 0.50 that you will receive at the end of the experiment in addition to the show-up fee and the sum earned in one of the three phases.

FIRST PHASE

Now we start the first phase of the experiment.

In each phase you are paired with another individual who will participate in this experiment during another session. The role assigned to you is that of *Giver*; the participant paired with you plays the role of *Recipient*. The individual paired with you will be randomly chosen by the computer.

You are paired with this participant only in this phase and you interact with her only once. You will never know her identity and she will never know yours.

Now we'll explain what you have to do. You are asked to allocate **20 ECU**. In particular, you will have to choose the amount *x* to keep for yourself and the amount *y* to give to the Recipient paired with you. Therefore, you will have to choose one of the following allocations (*x,y*) showed in the table.

Your amount x	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
The amount y for the Recipient	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

The Recipient paired with you accepts your choice and makes no decision.

At the end of the experiment if the number generated randomly by the computer will be the number 1, then you will receive the sum earned in this phase. In particular, you will receive the amount x converted into euros + the show-up fee + the amount earned by completing the questionnaire. The Recipient will earn the amount y converted into euros + the show-up fee + the amount earned by completing the questionnaire.

Before choosing how to allocate the 20 ECU you will be informed about the allocation (*x,y*) chosen by a Giver participating in another experiment. You will see the allocation (*x,y*) of a Giver chosen randomly among the participants in that experiment. Your decisions will be transmitted neither to individuals participating in this experiment, nor to individuals participating in other experiments.

On the desk of the researchers you can find a certificate that confirms the actual payment made to the Recipient. This certificate was signed by the administrative secretary of the Department of Economics of the University of Verona. At the end of the experiment, if you want, you can read this certificate.

SECOND PHASE

Now we start the second phase of the experiment.

In this phase you are paired with another *Recipient*, different from the previous one. Your role is still that of *Giver*.

As in the previous phase you are asked to allocate 20 ECU. You will have to choose the amount *x* to keep for yourself and the amount *y* to give to the new Recipient paired with you.

Before choosing how to allocate the 20 ECU you will be asked if you are interested in knowing the allocation (*x,y*) chosen by another Giver, different from the previous one and who has particular characteristics or preferences.

- If you answer *Yes* to this question, you will be given 3 information, selected randomly, about some characteristics or preferences of the Giver and you will be informed about the allocation (*x,y*) chosen by this Giver.
  Then you will have to choose how to allocate the 20 ECU with your Recipient.
- If you answer *No* to this question, you will proceed to the next phase.

At the end of the experiment if the number generated randomly by the computer will be the number 2, then you will receive the sum earned in this phase. In particular:

- If you answered *Yes* to the question, you will receive the amount *x* chosen in the phase 2 converted into euros + the show-up fee + the amount earned by completing the questionnaire. The Recipient will earn the amount *y* chosen in the phase 2 converted into euros + the show-up fee + the amount earned by completing the questionnaire;
- If you answered *No* to the question, you will receive the amount *x* chosen in the phase 1 converted into euros + the show-up fee + the amount earned by completing the questionnaire. The Recipient will earn the amount *y* chosen in the phase 1 converted into euros + the show-up fee + the amount earned by completing the questionnaire.

We remind you that on the desk of the researchers you can find a certificate that confirms the actual payment made to the Recipient. This certificate was signed by the administrative secretary of the Department of Economics of the University of Verona. At the end of the experiment, if you want, you can read this certificate.

THIRD PHASE

Now we start the third phase of the experiment.

In this phase you are paired with another *Recipient*, different from the previous ones. Your role is still that of *Giver*.

As in the previous phases you are asked to allocate 20 ECU. You will have to choose the amount *x* to keep for yourself and the amount *y* to give to the new Recipient paired with you.

Before choosing how to allocate the 20 ECU you will be asked if you are interested in knowing how a group of Givers with particular characteristics or preferences decided to allocate the amount of money available.

- If you answer *Yes* to this question and in the phase 2 you answered *No* moving directly to the phase 3, you will be given 3 information, selected randomly, about some characteristics or preferences of a group of Givers and you will be informed, by displaying a histogram, about the distribution of the amount *y* that each Giver gave to her Recipient.
  Then you have to choose how to allocate the 20 ECU with your new Recipient.
- If you answer *Yes* to this question and you answered *Yes* also in the phase 2, you will be given the same type of information as the phase 2, in this case related to the group of Givers. You will be revealed, by displaying a histogram, the distribution of the amount *y* that each Giver gave to her Recipient.
  Then you have to choose how to allocate the 20 ECU with your new Recipient.
- If you answer *No* to this question, you will proceed filling in a final questionnaire.

At the end of the experiment if the number generated randomly by the computer will be the number 3, then you will receive the sum earned in this phase. In particular:

- If you answered *Yes* to the question, you will receive the amount *x* chosen in the phase 3 converted into euros + the show-up fee + the amount earned by completing the questionnaire. The Recipient will earn the amount *y* chosen in the phase 3 converted into euros + the show-up fee + the amount earned by completing the questionnaire;
- If you answered *No* to the question, you will receive the amount *x* chosen in the phase 1 converted into euros + the show-up fee + the amount earned by completing the questionnaire. The Recipient will earn the amount *y* chosen in the phase 1 converted into euros + the show-up fee + the amount earned by completing the questionnaire.

We remind you that on the desk of the researchers you can find a certificate that confirms the actual payment made to the Recipient. This certificate was signed by the administrative

secretary of the Department of Economics of the University of Verona. At the end of the experiment, if you want, you can read this certificate.

[*Read aloud after the third phase*]
Finally, we ask you to answer other questions. By filling in this second questionnaire you will earn € 3.50 that you will receive at the end of the experiment in addition to the amount you have already earned previously.

Appendix C.3. Instruction for Dictator – First Choice Treatment –

Welcome! Thank you for participating in this experiment. Each of you will receive € 2.50 for having shown up on time. From now on any kind of communication with other participants is forbidden. If you have any questions or concerns, please raise your hand; we will answer your questions individually.

Please read the following instructions carefully. These instructions are identical for all participants. This experiment allows you to earn a sum of money. How much you will earn is in part a fixed amount and in part depends on the decisions you will make. Your decisions will remain absolutely anonymous. There is no right or wrong answer. The show-up fee (€ 2.50) and any additional amount of money that you will earn during the experiment will be paid out to you in cash at the end of the experiment.

The experiment consists of 3 phases and a final questionnaire. In each phase you will be required to make some decisions. At the end of the experiment the computer will generate a random number between 1 and 3, equal for all participants. You can imagine the choice of this number as drawing a ball from an urn containing 3 balls numbered from 1 to 3, remembering that any number between 1 and 3 is equally likely.

- If the number 1 comes out, you will receive the sum of money you have earned in phase 1;
- If the number 2 comes out, you will receive the sum of money you have earned in phase 2;
- If the number 3 comes out, you will receive the sum of money you have earned in phase 3.

Then you will receive the sum earned in phase 1 or the sum earned in phase 2 or the sum earned in phase 3, and each phase has the same probability of being selected for the payment.

In each phase the unit of experimental money will be the ECU (Experimental Currency Unit), where 1 ECU = 0.30 €.

Before explaining to you which decisions you need to make at each phase, we ask you to answer some questions. By filling out the following questionnaire you will earn € 0.50 that you will receive at the end of the experiment in addition to the show-up fee and the sum earned in one of the three phases.

FIRST PHASE

Now we start the first phase of the experiment.

In each phase you are paired with another individual who will participate in this experiment during another session. The role assigned to you is that of *Giver*; the participant paired with you plays the role of *Recipient*. The individual paired with you will be randomly chosen by the computer.

You are paired with this participant only in this phase and you interact with her only once. You will never know her identity and she will never know yours.

Now we'll explain what you have to do. You are asked to allocate **20 ECU**. In particular, you will have to choose the amount *x* to keep for yourself and the amount *y* to give to the Recipient paired with you. Therefore, you will have to choose one of the following allocations (*x,y*) showed in the table.

Your amount x	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
The amount y for the Recipient	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

The Recipient paired with you accepts your choice and makes no decision.

At the end of the experiment if the number generated randomly by the computer will be the number 1, then you will receive the sum earned in this phase. In particular, you will receive the amount x converted into euros + the show-up fee + the amount earned by completing the

questionnaire. The Recipient will earn the amount y converted into euros + the show-up fee + the amount earned by completing the questionnaire.

Before choosing how to allocate the 20 ECU you will be informed about the allocation (*x,y*) chosen by a Giver participating in another experiment. You will see the allocation (*x,y*) of a Giver chosen randomly among the participants in that experiment. Your decisions will be transmitted neither to individuals participating in this experiment, nor to individuals participating in other experiments.

On the desk of the researchers you can find a certificate that confirms the actual payment made to the Recipient. This certificate was signed by the administrative secretary of the Department of Economics of the University of Verona. At the end of the experiment, if you want, you can read this certificate.

SECOND PHASE

Now we start the second phase of the experiment.

In this phase you are paired with another *Recipient*, different from the previous one. Your role is still that of *Giver*.

As in the previous phase you are asked to allocate 20 ECU. You will have to choose the amount *x* to keep for yourself and the amount *y* to give to the new Recipient paired with you.

Before choosing how to allocate the 20 ECU you will be asked if you are interested in knowing the allocation (*x,y*) chosen by another Giver, different from the previous one and who has particular characteristics or preferences.

- If you answer *Yes* to this question, you will be given 3 information about some characteristics or preferences of the Giver and you will be informed about the allocation (*x,y*) chosen by this Giver. You will be asked to sort, according to your preferences, the type of information you would like to receive and you will be provided with the one you consider the most important.
  Then you will have to choose how to allocate the 20 ECU with your Recipient.
- If you answer *No* to this question, you will proceed to the next phase.

At the end of the experiment if the number generated randomly by the computer will be the number 2, then you will receive the sum earned in this phase. In particular:

- If you answered *Yes* to the question, you will receive the amount *x* chosen in the phase 2 converted into euros + the show-up fee + the amount earned by completing the questionnaire. The Recipient will earn the amount *y* chosen in the phase 2 converted into euros + the show-up fee + the amount earned by completing the questionnaire;
- If you answered *No* to the question, you will receive the amount *x* chosen in the phase 1 converted into euros + the show-up fee + the amount earned by completing the questionnaire. The Recipient will earn the amount *y* chosen in the phase 1 converted into euros + the show-up fee + the amount earned by completing the questionnaire.

We remind you that on the desk of the researchers you can find a certificate that confirms the actual payment made to the Recipient. This certificate was signed by the administrative secretary of the Department of Economics of the University of Verona. At the end of the experiment, if you want, you can read this certificate.

THIRD PHASE

Now we start the third phase of the experiment.

In this phase you are paired with another *Recipient*, different from the previous ones. Your role is still that of *Giver*.

As in the previous phases you are asked to allocate 20 ECU. You will have to choose the amount *x* to keep for yourself and the amount *y* to give to the new Recipient paired with you.

Before choosing how to allocate the 20 ECU you will be asked if you are interested in knowing how a group of Givers with particular characteristics or preferences decided to allocate the amount of money available.

- If you answer *Yes* to this question and in the phase 2 you answered *No* moving directly to the phase 3, you will be given 3 information about some characteristics or preferences of a group of Givers and you will be informed, by displaying a histogram, about the distribution of the amount *y* that each Giver gave to her Recipient. You will be asked to

sort, according to your preferences, the type of information you would like to receive and you will be provided with the one you consider the most important.
Then you have to choose how to allocate the 20 ECU with your new Recipient.

- If you answer *Yes* to this question and you answered *Yes* also in the phase 2, you will be given the same type of information as the phase 2, in this case related to the group of Givers. You will be revealed, by displaying a histogram, the distribution of the amount *y* that each Giver gave to her Recipient.
  Then you have to choose how to allocate the 20 ECU with your new Recipient.
- If you answer *No* to this question, you will proceed filling in a final questionnaire.

At the end of the experiment if the number generated randomly by the computer will be the number 3, then you will receive the sum earned in this phase. In particular:

- If you answered *Yes* to the question, you will receive the amount *x* chosen in the phase 3 converted into euros + the show-up fee + the amount earned by completing the questionnaire. The Recipient will earn the amount *y* chosen in the phase 3 converted into euros + the show-up fee + the amount earned by completing the questionnaire;
- If you answered *No* to the question, you will receive the amount *x* chosen in the phase 1 converted into euros + the show-up fee + the amount earned by completing the questionnaire. The Recipient will earn the amount *y* chosen in the phase 1 converted into euros + the show-up fee + the amount earned by completing the questionnaire.

We remind you that on the desk of the researchers you can find a certificate that confirms the actual payment made to the Recipient. This certificate was signed by the administrative secretary of the Department of Economics of the University of Verona. At the end of the experiment, if you want, you can read this certificate.

[*Read aloud after the third phase*]
Finally, we ask you to answer other questions. By filling in this second questionnaire you will earn € 3.50 that you will receive at the end of the experiment in addition to the amount you have already earned previously.

Appendix C.4. Instruction for Dictator – Cost Treatment –

Welcome! Thank you for participating in this experiment. Each of you will receive € 2.50 for having shown up on time. From now on any kind of communication with other participants is forbidden. If you have any questions or concerns, please raise your hand; we will answer your questions individually.

Please read the following instructions carefully. These instructions are identical for all participants. This experiment allows you to earn a sum of money. How much you will earn is in part a fixed amount and in part depends on the decisions you will make. Your decisions will remain absolutely anonymous. There is no right or wrong answer. The show-up fee (€ 2.50) and any additional amount of money that you will earn during the experiment will be paid out to you in cash at the end of the experiment.

The experiment consists of 3 phases and a final questionnaire. In each phase you will be required to make some decisions. At the end of the experiment the computer will generate a random number between 1 and 3, equal for all participants. You can imagine the choice of this number as drawing a ball from an urn containing 3 balls numbered from 1 to 3, remembering that any number between 1 and 3 is equally likely.

- If the number 1 comes out, you will receive the sum of money you have earned in phase 1;
- If the number 2 comes out, you will receive the sum of money you have earned in phase 2;
- If the number 3 comes out, you will receive the sum of money you have earned in phase 3.

Then you will receive the sum earned in phase 1 or the sum earned in phase 2 or the sum earned in phase 3, and each phase has the same probability of being selected for the payment.

In each phase the unit of experimental money will be the ECU (Experimental Currency Unit), where 1 ECU = 0.30 €.

Before explaining to you which decisions you need to make at each phase, we ask you to answer some questions. By filling out the following questionnaire you will earn € 0.50 that you will receive at the end of the experiment in addition to the show-up fee and the sum earned in one of the three phases.

FIRST PHASE

Now we start the first phase of the experiment.

In each phase you are paired with another individual who will participate in this experiment during another session. The role assigned to you is that of *Giver*; the participant paired with you plays the role of *Recipient*. The individual paired with you will be randomly chosen by the computer.

You are paired with this participant only in this phase and you interact with her only once. You will never know her identity and she will never know yours.

Now we'll explain what you have to do. You are asked to allocate **20 ECU**. In particular, you will have to choose the amount *x* to keep for yourself and the amount *y* to give to the Recipient paired with you. Therefore, you will have to choose one of the following allocations (*x,y*) showed in the table.

Your amount x	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
The amount y for the Recipient	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

The Recipient paired with you accepts your choice and makes no decision.

At the end of the experiment if the number generated randomly by the computer will be the number 1, then you will receive the sum earned in this phase. In particular, you will receive the amount x converted into euros + the show-up fee + the amount earned by completing the questionnaire. The Recipient will earn the amount y converted into euros + the show-up fee + the amount earned by completing the questionnaire.

Before choosing how to allocate the 20 ECU you will be informed about the allocation (*x,y*) chosen by a Giver participating in another experiment. You will see the allocation (*x,y*) of a Giver chosen randomly among the participants in that experiment. Your decisions will be transmitted neither to individuals participating in this experiment, nor to individuals participating in other experiments.

On the desk of the researchers you can find a certificate that confirms the actual payment made to the Recipient. This certificate was signed by the administrative secretary of the Department

of Economics of the University of Verona. At the end of the experiment, if you want, you can read this certificate.

SECOND PHASE

Now we start the second phase of the experiment.

In this phase you are paired with another *Recipient*, different from the previous one. Your role is still that of *Giver*.

As in the previous phase you are asked to allocate 20 ECU. You will have to choose the amount *x* to keep for yourself and the amount *y* to give to the new Recipient paired with you.

Before choosing how to allocate the 20 ECU you will be asked if you are interested in knowing the allocation (*x,y*) chosen by another Giver, different from the previous one and who has particular characteristics or preferences.

- If you answer *No* to this question, you will proceed to the next phase.
- If you answer *Yes* to this question, you will be asked if you are willing to pay for this information.
    - If you answer *No* to this question, you will proceed to the next phase.
    - If you answer *Yes* to this question, you will be asked the maximum price you are willing to pay to know how another Giver with particular characteristics or preferences allocated the amount of money. You will have to declare 3 maximum buying prices corresponding to different characteristics and preferences of the Giver.

Each price must be not smaller than 1 ECU and not greater than 4 ECU. Furthermore, it must be an integer number. Therefore, you will have to choose between 1, 2, 3, 4.

The buying price is not yet determined. After having revealed your 3 maximum prices, the computer will randomly choose an integer between 1 and 4, the same for all participants. You can imagine the choice of this number as drawing a ball from an urn containing 4 balls numbered from 1 to 4, remembering that each number between 1 and 4 is equally likely.

- If the drawn number *c* is greater than all three prices that you declared ($c > p_1 \geq p_2 \geq p_3$) you will not receive any information, neither concerning the

amount *y* nor concerning the characteristics or preferences of the Giver. You will proceed to the next phase.

- If the drawn number *c* is greater than two prices and equal to or smaller than a price you declared ($p_1 \geq c > p_2 \geq p_3$) you will receive information on the amount *y* and the characteristics or preferences of the Giver, corresponding to the price p_1.

  Then you will have to choose how to allocate the 20 ECU with your Recipient.
- If the drawn number *c* is smaller than or equal to more than one price you declared ($p_1 > p_2 \geq c > p_3$ or $p_1 > p_2 \geq p_3 \geq c$) you will receive information on the amount *y* and the characteristics or preferences of the Giver, corresponding to the higher price p_1.

  In the case that more prices are equal to and greater than the drawn number *c* ($p_1 = p_2 > p_3 \geq c$ or $p_1 = p_2 = p_3 \geq c$) the computer will choose randomly which characteristics or preferences you will receive among those corresponding to the highest price.

  Then you will have to choose how to allocate the 20 ECU with your Recipient.

This procedure ensures that the maximum price you are revealing is actually the price you are willing to pay. If you declare a price that is higher than what you are willing to pay, you may find yourself having to pay a higher price than you would like. If you declare a price that is lower than what you are willing to pay, you may not be able to buy the information because the price drawn is higher than what you declare but lower than what you are willing to pay. Note that you cannot influence the buying price with the price you declare. In fact, the buying price is a number generated by the computer, completely random and independent of whatever you declare.

The cost *c*, paid to obtain the information concerning the amount *y* and the characteristics or preferences of the Giver, will be subtracted from the final payoff.

At the end of the experiment if the number generated randomly by the computer will be the number 2, then you will receive the sum earned in this phase. In particular:

- If you received information related to another Giver, you will receive the amount *x* chosen in the phase 2 converted into euros + the show-up fee + the amount earned by completing the questionnaire – the cost *c* paid to obtain information, converted into

euros. The Recipient will earn the amount *y* chosen in the phase 2 converted into euros + the show-up fee + the amount earned by completing the questionnaire;

- If you did not receive information related to another Giver, you will receive the amount *x* chosen in the phase 1 converted into euros + the show-up fee + the amount earned by completing the questionnaire. The Recipient will earn the amount *y* chosen in the phase 1 converted into euros + the show-up fee + the amount earned by completing the questionnaire.

We remind you that on the desk of the researchers you can find a certificate that confirms the actual payment made to the Recipient. This certificate was signed by the administrative secretary of the Department of Economics of the University of Verona. At the end of the experiment, if you want, you can read this certificate.

THIRD PHASE

Now we start the third phase of the experiment.

In this phase you are paired with another *Recipient*, different from the previous ones. Your role is still that of *Giver*.

As in the previous phases you are asked to allocate 20 ECU. You will have to choose the amount *x* to keep for yourself and the amount *y* to give to the new Recipient paired with you.

Before choosing how to allocate the 20 ECU you will be asked if you are interested in knowing how a group of Givers with particular characteristics or preferences decided to allocate the amount of money available.

- If you answer *No* to this question, you will proceed filling in a final questionnaire.
- If you answer Yes to this question and in the phase 2 you received information about the Giver (at least one price you declared was higher than the number *c* generated by the computer), you will be given the same type of information as the previous phase, in this case related to the group of Givers. You will be revealed, by displaying a histogram, the distribution of the amount *y* that each Giver gave to her Recipient.
  Then you will have to choose how to allocate the 20 ECU with your new Recipient.

- If you answer Yes to this question and in the phase 2 you did not receive information about the Giver because all the prices you declared were smaller than the number *c* generated by the computer ($c > p_1 > p_2 > p_3$), then you will not receive any information and will proceed filling in a final questionnaire.
- If you answer *Yes* to this question and in the phase 2 you answered *No* to at least one of the two questions, you will be asked the maximum price you are willing to pay to know how another Giver with particular characteristics or preferences allocated the amount of money. You will have to declare 3 maximum buying prices corresponding to different characteristics and preferences of the Giver.

Each price must be not smaller than 1 ECU and not greater than 4 ECU. Furthermore, it must be an integer number. Therefore, you will have to choose between 1, 2, 3, 4.

As in the previous phase, the buying price is not yet determined. After having revealed your 3 maximum prices, the computer will randomly choose an integer between 1 and 4, the same for all participants. You can imagine the choice of this number as drawing a ball from an urn containing 4 balls numbered from 1 to 4, remembering that each number between 1 and 4 is equally likely.

- If the drawn number *c* is greater than all three prices that you declared ($c > p_1 \geq p_2 \geq p_3$) you will not receive any information, neither concerning the distribution of the amount *y* that each Giver gave to her Recipient nor concerning the characteristics or preferences of the group of Givers. You will proceed filling in a final questionnaire.
- If the drawn number *c* is greater than two prices and equal to or smaller than a price you declared ($p_1 \geq c > p_2 \geq p_3$) you will receive information on the distribution of the amount *y* that each Giver gave to her Recipient and on the characteristics or the preferences of the group of Givers, corresponding to the price p_1.

  Then you will have to choose how to allocate the 20 ECU with your Recipient.
- If the drawn number *c* is smaller than or equal to more than one price you declared ($p_1 > p_2 \geq c > p_3$ or $p_1 > p_2 \geq p_3 \geq c$) you will receive information on the distribution of the amount *y* that each Giver gave to her Recipient and the characteristics or the preferences of the group of Givers, corresponding to the higher price p_1.

In the case that more prices are equal to and greater than the drawn number *c* ($p_1 = p_2 > p_3 \geq c$ or $p_1 = p_2 = p_3 \geq c$) the computer will choose randomly which characteristics or preferences you will receive among those corresponding to the highest price.

Then you will have to choose how to allocate the 20 ECU with your Recipient.

This procedure ensures that the maximum price you are revealing is actually the price you are willing to pay. If you declare a price that is higher than what you are willing to pay, you may find yourself having to pay a higher price than you would like. If you declare a price that is lower than what you are willing to pay, you may not be able to buy the information because the price drawn is higher than what you declare but lower than what you are willing to pay. Note that you cannot influence the buying price with the price you declare. In fact, the buying price is a number generated by the computer, completely random and independent of whatever you declare.

The cost *c*, paid to obtain the information concerning the amount *y* and the characteristics or preferences of the Giver, will be subtracted from the final payoff.

At the end of the experiment if the number generated randomly by the computer will be the number 3, then you will receive the sum earned in this phase. In particular:

- If you answered *Yes* to the question, you will receive the amount *x* chosen in the phase 3 converted into euros + the show-up fee + the amount earned by completing the questionnaire – the cost *c* paid to obtain information, converted into euros. The Recipient will earn the amount *y* chosen in the phase 3 converted into euros + the show-up fee + the amount earned by completing the questionnaire;
- If you answered *No* to the question, you will receive the amount *x* chosen in the phase 1 converted into euros + the show-up fee + the amount earned by completing the questionnaire. The Recipient will earn the amount *y* chosen in the phase 1 converted into euros + the show-up fee + the amount earned by completing the questionnaire.

We remind you that on the desk of the researchers you can find a certificate that confirms the actual payment made to the Recipient. This certificate was signed by the administrative secretary of the Department of Economics of the University of Verona. At the end of the experiment, if you want, you can read this certificate.

[*Read aloud after the third phase*]

Finally, we ask you to answer other questions. By filling in this second questionnaire you will earn € 3.50 that you will receive at the end of the experiment in addition to the amount you have already earned previously.

Appendix C.5. Post-Experiment Questionnaire for Dictator

1) Which degree program are you attending?

- □ Chemistry, Biology, Pharmacy
- □ Engineering
- □ Economics
- □ Juridical Sciences
- □ Letters, Philosophy, History, Human Sciences
- □ Medicine and Dentistry
- □ Physics, Mathematics, Computer Science
- □ Communication Science
- □ Psychology
- □ Foreign languages and literatures
- □ Physical Education
- □ Other

2) During your studies did you attend a course in Behavioral Economics and / or Game Theory and / or Advanced Microeconomics and / or Industrial Economics?

- □ Yes
- □ No

3) How many brothers/sisters do you have?

- □ 0
- □ 1
- □ 2
- □ 3
- □ More than 3

4) Have you volunteered in one or more groups or associations in your life?
(For example, red cross, clown therapy, scout, missionary group, entertainment, services or assignments at school, in parish, etc.)

- □ Yes, even now
- □ Yes, in the past
- □ No

5) How much does this type of activity involve you? The possible answers for each aspect are "A lot", "Some", "A little", "Not at all".

- In terms of time you dedicate or have dedicated to it;
- In terms of importance for the activity and for the values it transmits;
- In terms of enrichment and personal growth.

6) How accurately do the following statements describe you? The possible answers are "A lot", "Some", "A little", "Not at all".

- I can have my friends easily make up their minds;
- When I face an important choice, I take into consideration the advice of others;
- If my friends propose different alternatives to spend the evening, everything is always good for me, the important is staying together;
- I state without difficulty a contrary opinion to that of the interlocutor/speaker;
- I am sure of the choices I make and I do not give importance to what others think about my decisions;
- When I have to choose among various alternatives for which I am uncertain, I try to understand how my friends would behave, they could give me good ideas;
- My results are worth more if others notice what I have done;
- When I am in a group, I prefer to listen;
- It is difficult to make choices if I am not sure that my friends will approve them.

7) Please indicate how well each of the following describes you. Possible answers to each item are: “A lot”, “Some”, “A little” and “Not at all”.

[a] Outgoing
[b] Helpful
[c] Moody
[d] Organized
[e] Friendly
[f] Warm
[g] Worrying
[h] Responsible
[i] Lively
[j] Caring
[k] Nervous
[l] Creative
[m] Hardworking
[n] Imaginative
[o] Softhearted
[p] Calm
[q] Intelligent
[r] Curious
[s] Active
[t] Careless
[u] Broad-minded
[v] Sympathetic
[w] Talkative
[x] Sophisticated
[y] Adventurous
[z] Thorough

8) (Dictators who participate in Random Treatment)

What information about the other Deciders would you have preferred to receive? Order the following categories of information with numbers from 1 to 3 according to your preferences, keeping in mind that 1 means more important and 3 means less important.

- □ Hobbies' information (musical preference, favourite sport, kind of movie)
- □ Beliefs' information (political, religious and moral values)
- □ Socio-demographic information (gender, age, nationality)

9) (Dictators who receive information)

Which sub-category did you give the most importance?

- □ Gender
- □ Nationality
- □ Age
- □ All sub-categories with same importance

- □ Kind of movie
- □ Sport
- □ Musical genre
- □ All sub-categories with same importance

- □ Religious beliefs
- □ Civil union preference
- □ Political preference
- □ All sub-categories with same importance

10) Why did you give the Recipient an amount equal to y = * in the first phase of the experiment?

- □ I am interested only in earning as much as possible
- □ I am not interested in appearing generous because the recipient would not choose, in turn, how sharing the amount of ECU
- □ I believe my allocation the fairest
- □ I chose thinking about how I would like others to behave with me
- □ I am not interested in appearing generous because the recipient will not know who I am
- □ Other

11) (Dictators who choose to receive information)

Why were you interested in knowing how one or more people with particular characteristics had divided their amount of money?

- The curiosity
- The interest for some specific characteristics of other Dictators
- I wanted to be sure about the decision made in the Initial Phase
- I like to distinguish myself from others, in particular if others' preferences are different from mine
- I like to do what other similar people do
- Other

12) (Dictators who choose not to receive information)

Why were you not interested in knowing how one or more people with particular characteristics had divided their amount of money?

- I am interested only in earning
- I was sure in my decision
- I am not interested in the behavior of others
- I wanted to avoid feeling guilty if other individuals gave a greater amount than mine
- I am aware of this information would influence my choice
- I do not consider relevant these kind of information for choosing the allocation
- Other

13) (Dictators who receive information)

The information you received was related to a particular individual: (*here appears the three characteristics given Dictator, belonging to one category of information*). How much did you feel like this individual?

Consider a scale from 1 to 10 where 1 means no similar and 10 means very similar.

14) (Dictators who change allocation after receiving individual information)

Why did you change the amount y to give the recipient after receiving information about some characteristics of another decider?

- Because this individual with *similar* characteristics gave recipient an amount *greater* than mine

- Because this individual with *similar* characteristics gave recipient an amount *smaller* than mine
- Because this individual with *similar* characteristics gave recipient an amount *equal* to mine
- Because this individual with *opposite* characteristics gave recipient an amount *greater* than mine
- Because this individual with *opposite* characteristics gave recipient an amount *smaller* than mine
- Because this individual with *opposite* characteristics gave recipient an amount *equal* to mine
- Other

15) (Dictators who change allocation after receiving group information)
Why did you change the amount y to give the recipient after receiving information about some characteristics of a group of deciders?

- Because these individuals with *similar* characteristics gave recipient an amount *greater* than mine
- Because these individuals with *similar* characteristics gave recipient an amount *smaller* than mine
- Because these individuals with *similar* characteristics gave recipient an amount *equal* to mine
- Because these individuals with *opposite* characteristics gave recipient an amount *greater* than mine
- Because these individuals with *opposite* characteristics gave recipient an amount *smaller* than mine
- Because these individuals with *opposite* characteristics gave recipient an amount *equal* to mine
- Other

Appendix C.6. Instruction for Recipient

Welcome! Thank you for participating in this experiment. Each of you will receive € 2.50 for having shown up on time. From now on any kind of communication with other participants is forbidden. If you have any questions or concerns, please raise your hand; we will answer your questions individually.

Throughout this experiment you are paired with another individual who participated in this experiment during another session. The role assigned to you is that of *Recipient*; the participant paired with you plays the role of *Giver*. The individual paired with you was randomly chosen by the computer. You will never know her identity and she will never know yours.

In order to make the experiment, we introduce the ECU, the unit of experimental money where 1 ECU = 0.30 €.

During the experiment it was asked Giver to allocate **20 ECU**. In particular, the Giver chose the amount *x* to keep for herself and the amount *y* to give to the Recipient paired with her. Therefore, she chose one of the following allocations (*x,y*) showed in the table.

The amount x for the Giver	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
The amount y for the Recipient	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

You will not have to make any decisions, you will accept her choice.

Before choosing how to allocate 20 ECU the Giver paired with you was informed about the allocation (x, y) chosen by another Giver, with particular characteristics or preferences, participating in another experiment.

At the end of the experiment the Giver paired with you received the amount x converted into euros; you will earn the amount y converted into euros, in addition to the show-up fee.

Now you will see the amount that the Giver paired with you chose to give you.

Finally, before continuing/proceeding with the payment, we ask you to answer some questions. By filling in this questionnaire you will earn € 0.50 that you will receive at the end of the experiment in addition to the show-up fee and the amount y.

Appendix C.7. Certificate of Payment

UNIVERSITÀ di VERONA | Dipartimento di SCIENZE ECONOMICHE

CERTIFICATE OF PAYMENT

Regarding the online questionnaire you are participating in,

IT IS CERTIFIED

that the participant with the Recipient role will receive her payoff during an activity that will take place at the laboratory VELE of the University of Verona in the last two weeks of March 2018.

The payoff of the Recipient depends on the decision made by the participant in the online questionnaire with which she is paired.

Sincerely,

Dott.ssa Chiara Coriele
Researcher in charge of the activity

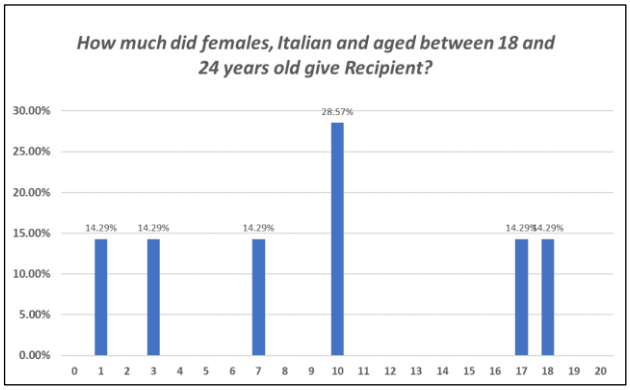
Dott.ssa Chiara Bernardi
The administrative secretary
Department of Economics

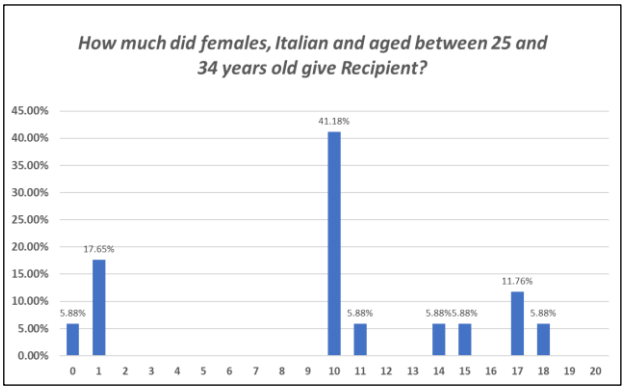
Verona, 7th March 2018

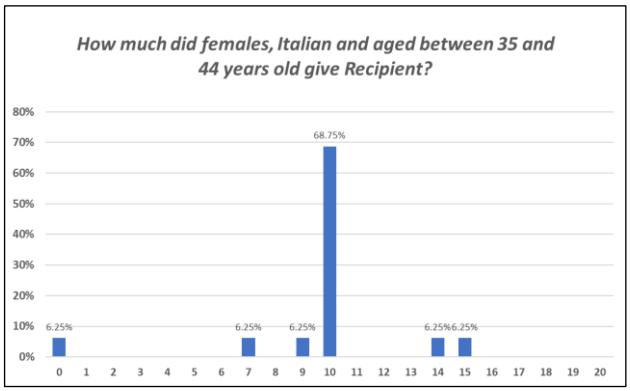
Dipartimento di Scienze economiche
Via Cantarane, 24 – 37129 | T: +39 045 8028.095-097-236
segreteria.dse@ateneo.univr.it | www.dse.univr.it
P. IVA 01541040232 | C.F. 93009870234

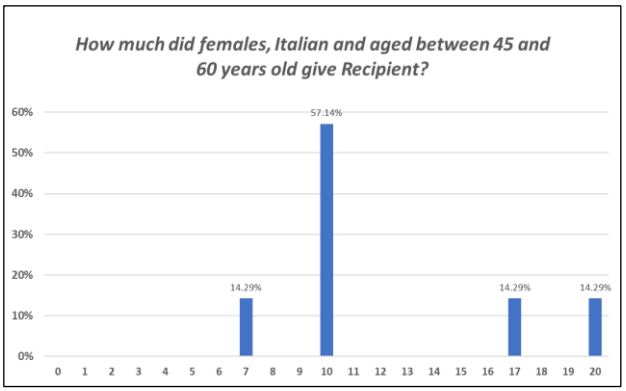
Appendix C.8. Allocations' distribution Graphs – Group Information Phase –

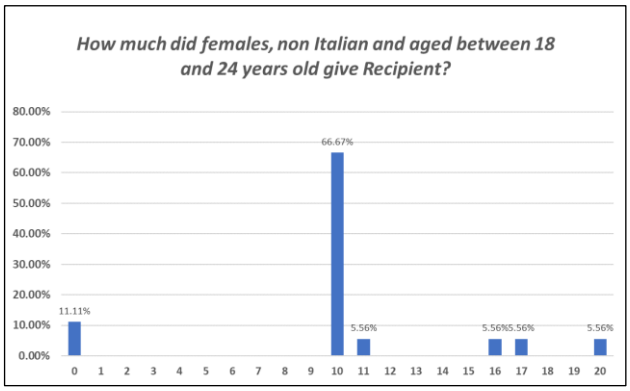
Demographic Information

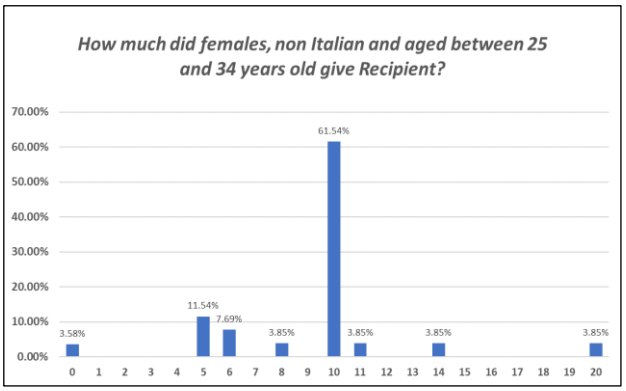


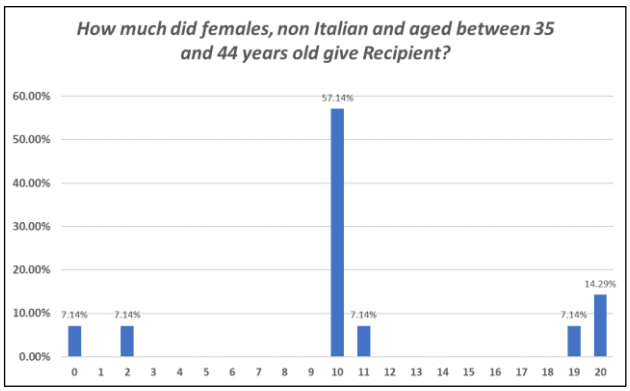


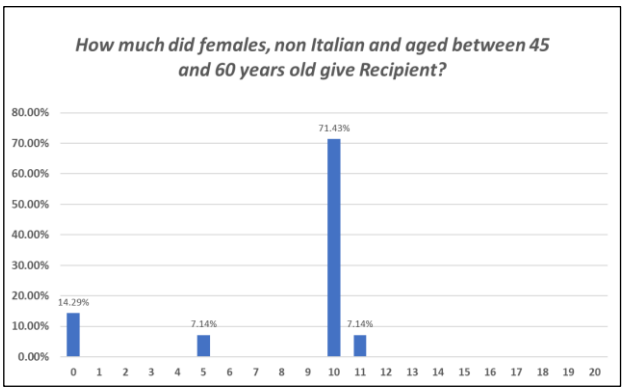


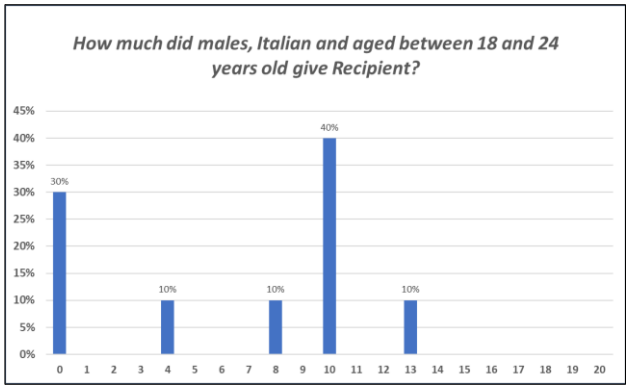


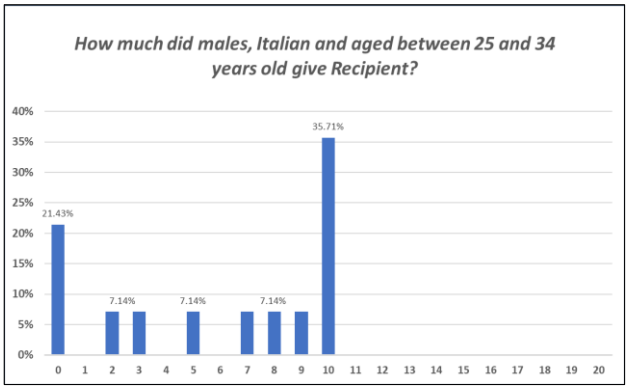


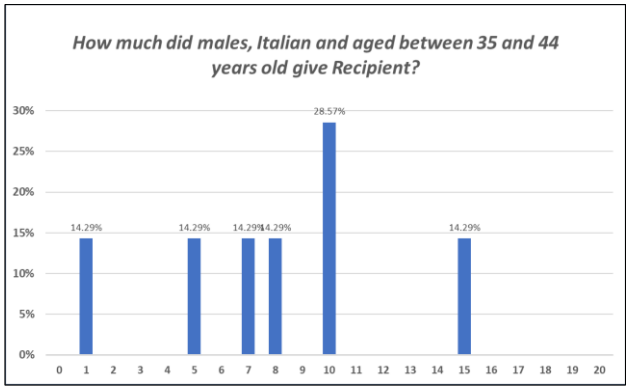


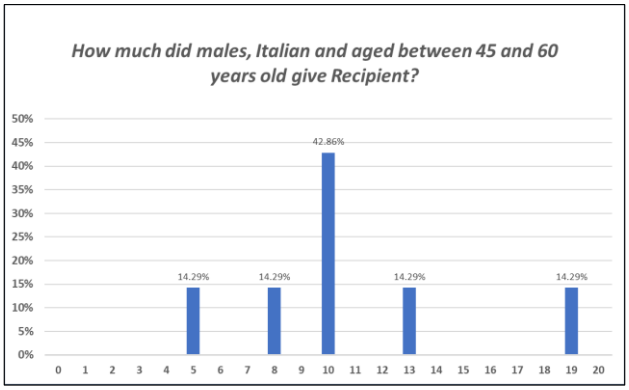


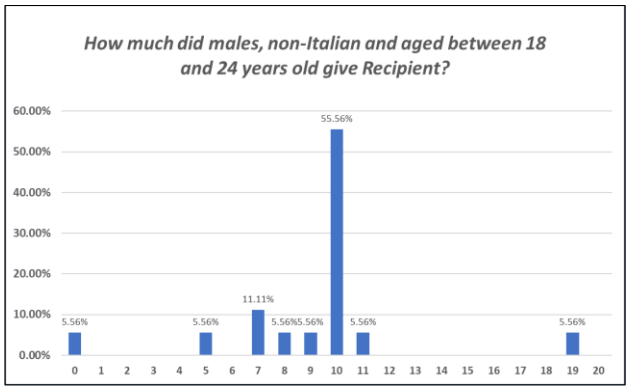


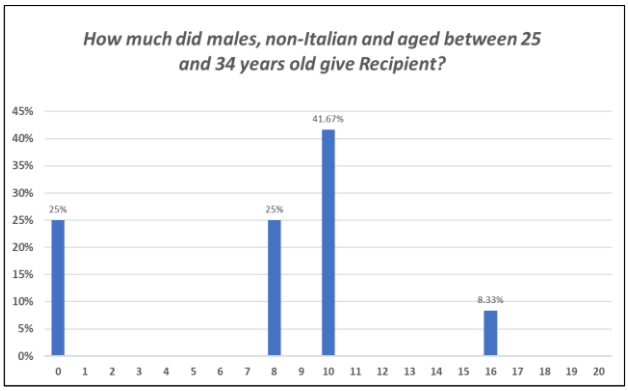

How much did males, Italian and aged between 18 and 24 years old give Recipient?
30%
10%
10%
40%
10%

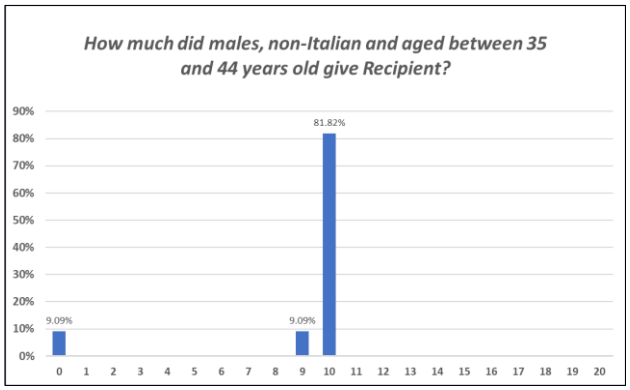

How much did males, Italian and aged between 25 and 34 years old give Recipient?
21.43%
7.14%
7.14%
7.14%
35.71%

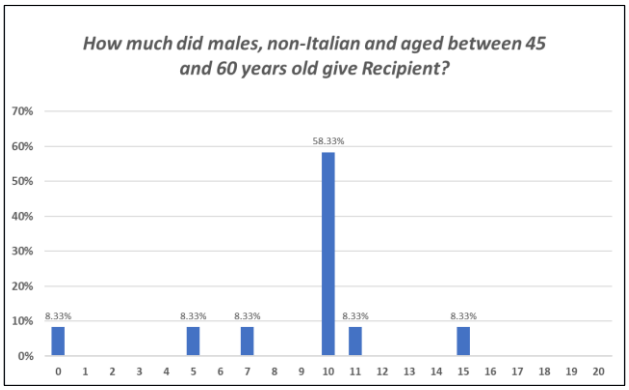

How much did males, Italian and aged between 35 and 44 years old give Recipient?
14.29%
14.29%
14.29%
14.29%
28.57%
14.29%


How much did males, Italian and aged between 45 and 60 years old give Recipient?
14.29%
14.29%
42.86%
14.29%
14.29%

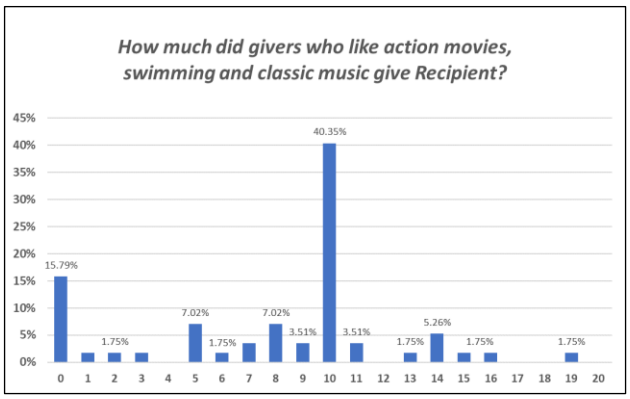

How much did males, non-Italian and aged between 18 and 24 years old give Recipient?
5.56%
5.56%
11.11%
5.56%
5.56%
55.56%
5.56%
5.56%

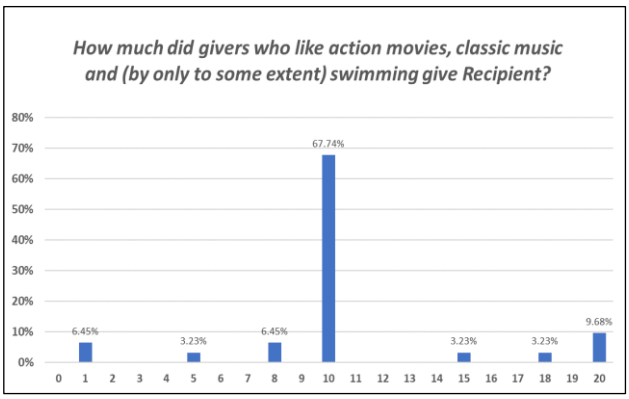

How much did males, non-Italian and aged between 25 and 34 years old give Recipient?
25%
25%
41.67%
8.33%

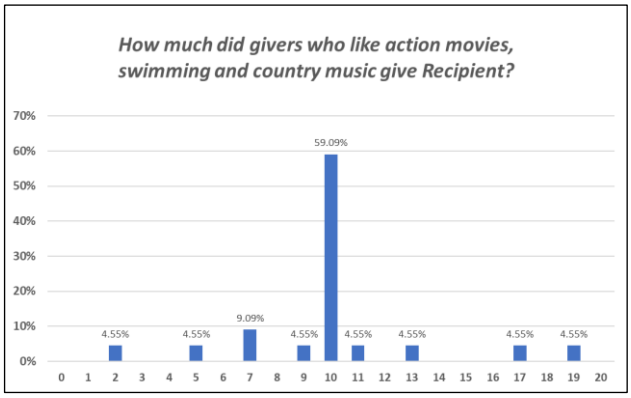

How much did males, non-Italian and aged between 35 and 44 years old give Recipient?
9.09%
9.09%
81.82%

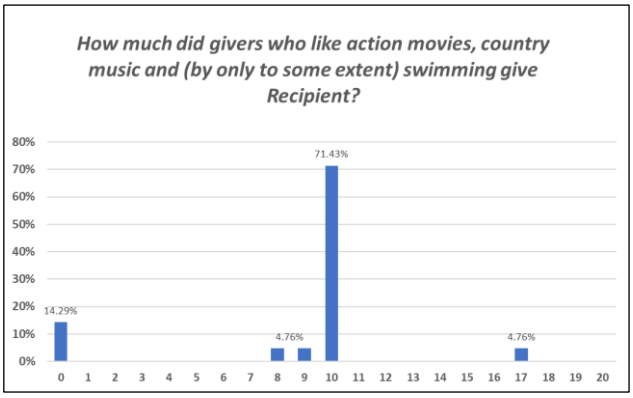

How much did males, non-Italian and aged between 45 and 60 years old give Recipient?
8.33%
8.33%
8.33%
58.33%
8.33%
8.33%

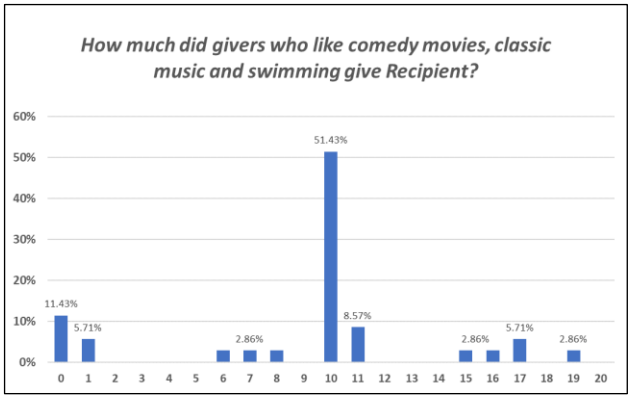
Hobbies' Information

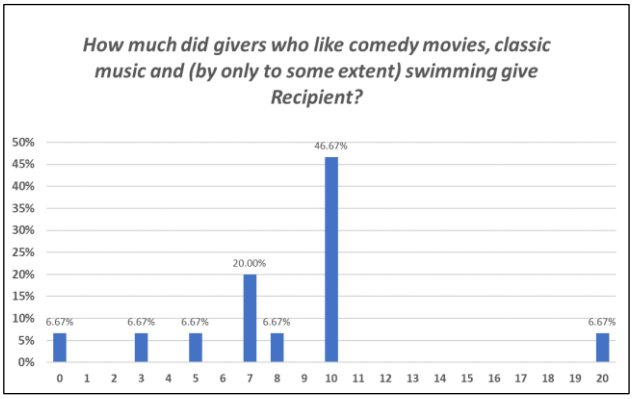


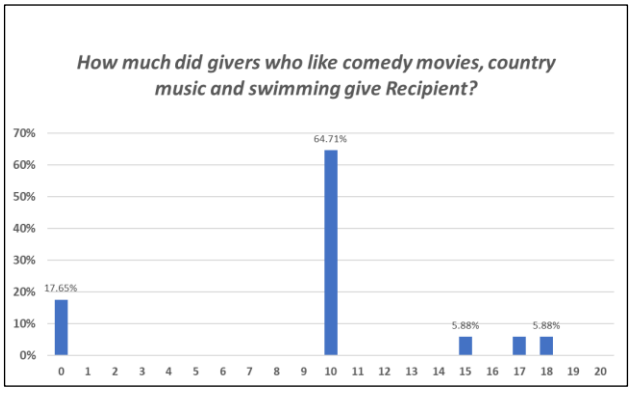


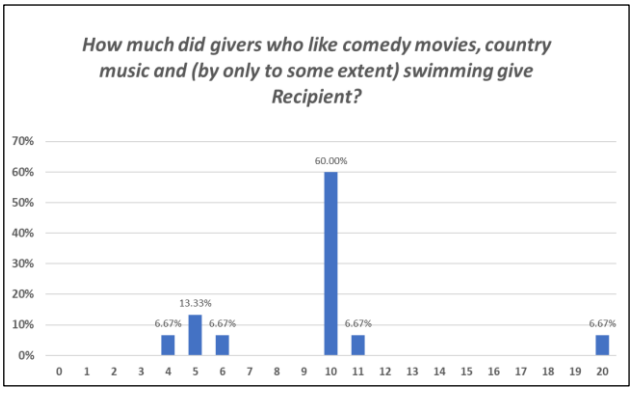




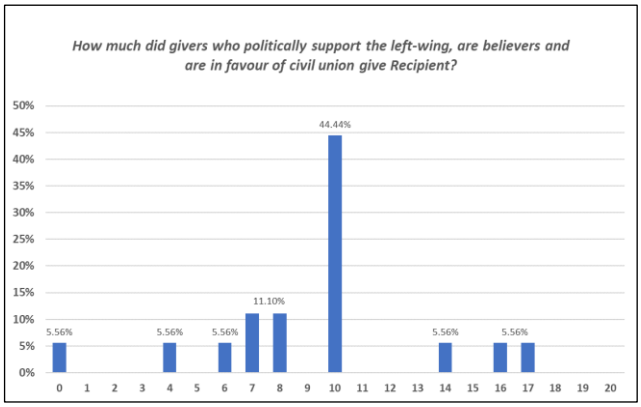


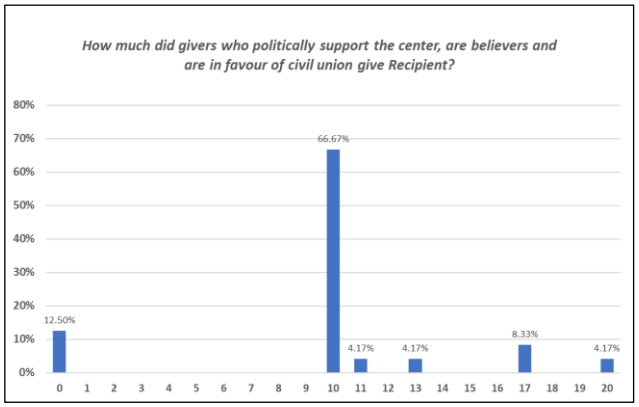


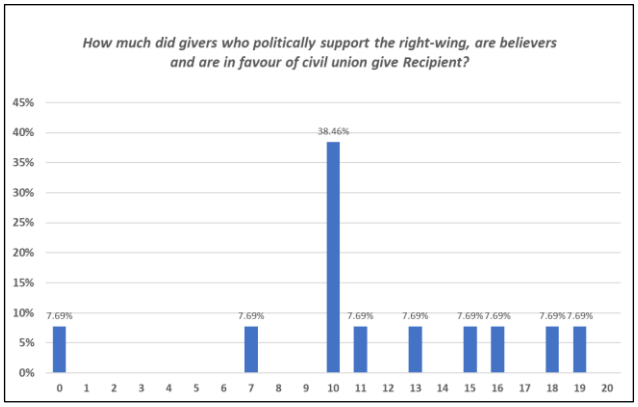


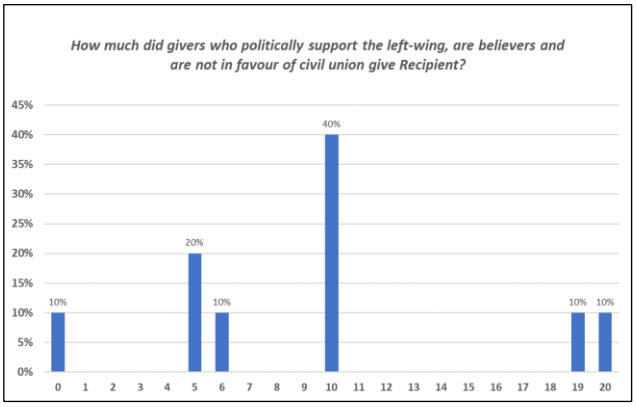


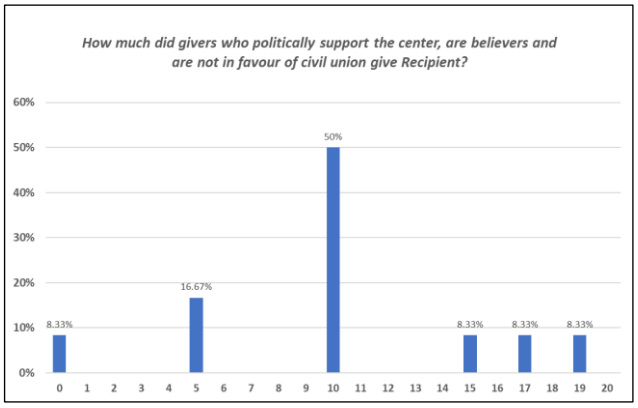
Beliefs' Information

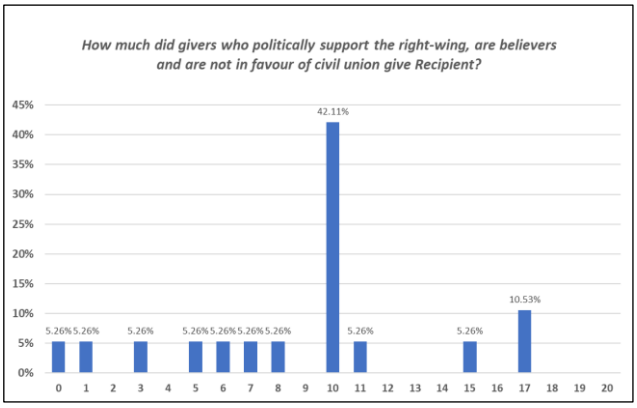


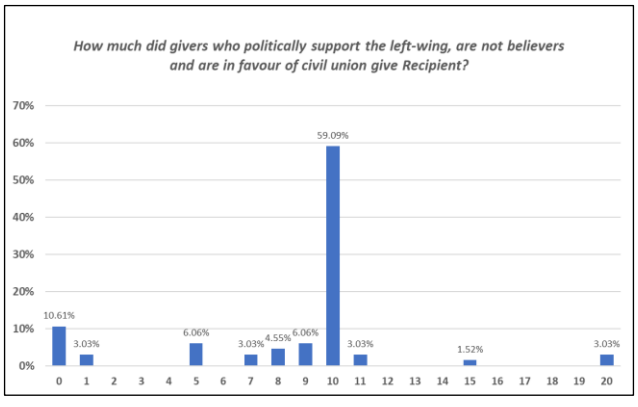


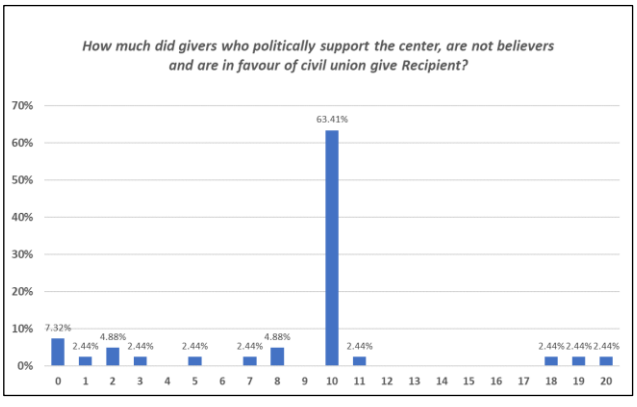


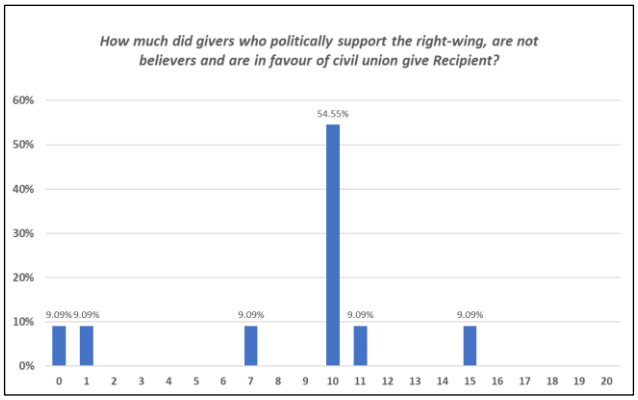


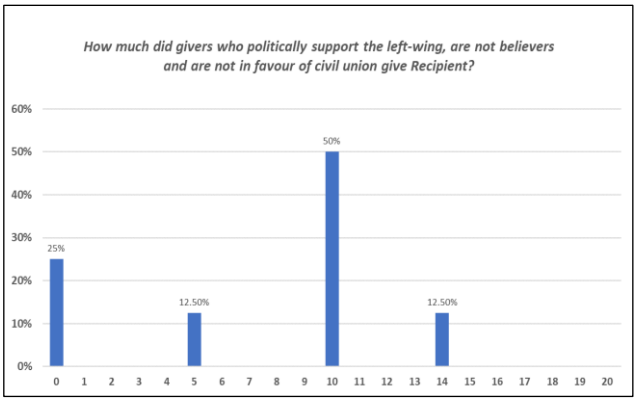


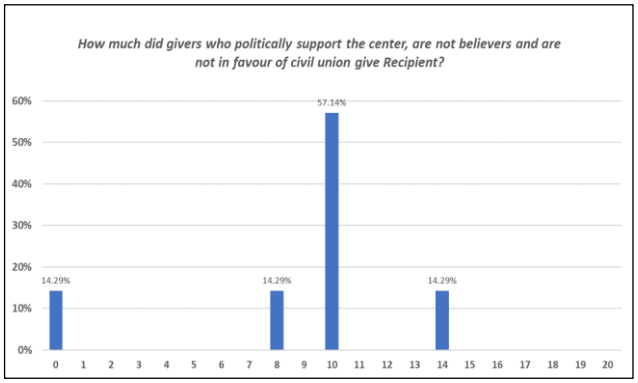


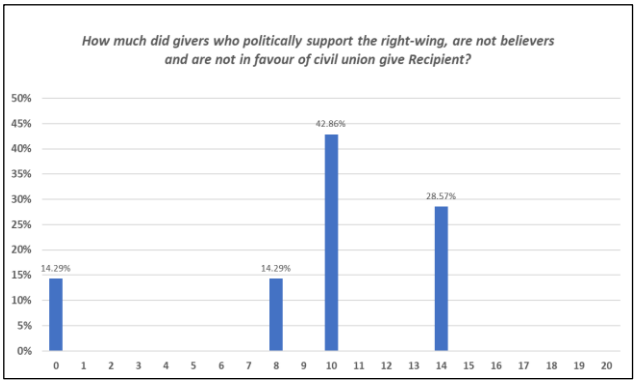





How much did givers who politically support the right-wing, are not believers and are in favour of civil union give Recipient?
60%
50%
40%
30%
20%
10%
0%
9.09%
9.09%
9.09%
54.55%
9.09%
9.09%
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20


How much did givers who politically support the left-wing, are not believers and are not in favour of civil union give Recipient?
60%
50%
40%
30%
20%
10%
0%
25%
12.50%
50%
12.50%
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20


How much did givers who politically support the center, are not believers and are not in favour of civil union give Recipient?
60%
50%
40%
30%
20%
10%
0%
14.29%
14.29%
57.14%
14.29%
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20


How much did givers who politically support the right-wing, are not believers and are not in favour of civil union give Recipient?
50%
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
14.29%
14.29%
42.86%
28.57%
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Appendix C.9. Big Five variables

Personality scores are constructed from question 7 of post-experiment questionnaire.

"Please indicate how well each of the following describes you.

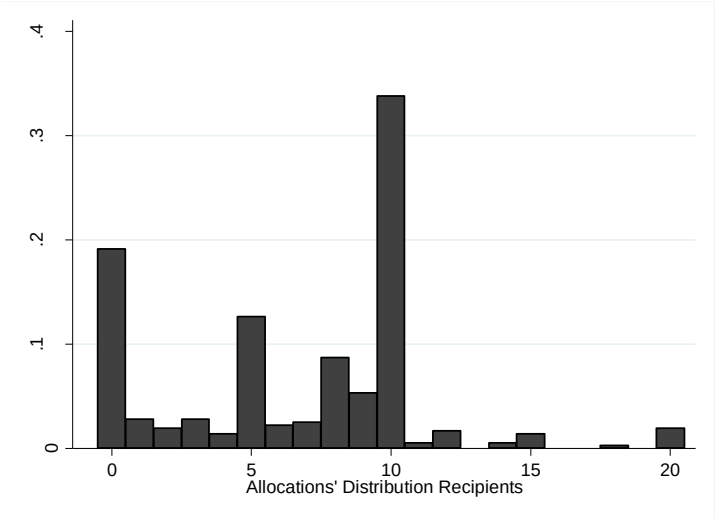
[a] Outgoing
[b] Helpful
[c] Moody
[d] Organized
[e] Friendly
[f] Warm
[g] Worrying
[h] Responsible
[i] Lively
[j] Caring
[k] Nervous
[l] Creative
[m] Hardworking
[n] Imaginative
[o] Softhearted
[p] Calm
[q] Intelligent
[r] Curious
[s] Active
[t] Careless
[u] Broad-minded
[v] Sympathetic
[w] Talkative
[x] Sophisticated
[y] Adventurous
[z] Thorough"

Possible answers to each item related to personality are: "A lot", "Some", "A little" and "Not at all", to which we assign the value 1, 2, 3 or 4 respectively. We assign the reverse code to all items apart from [p] and [t]. Following Smith et al. (2013), scores are built as the average of the following items:

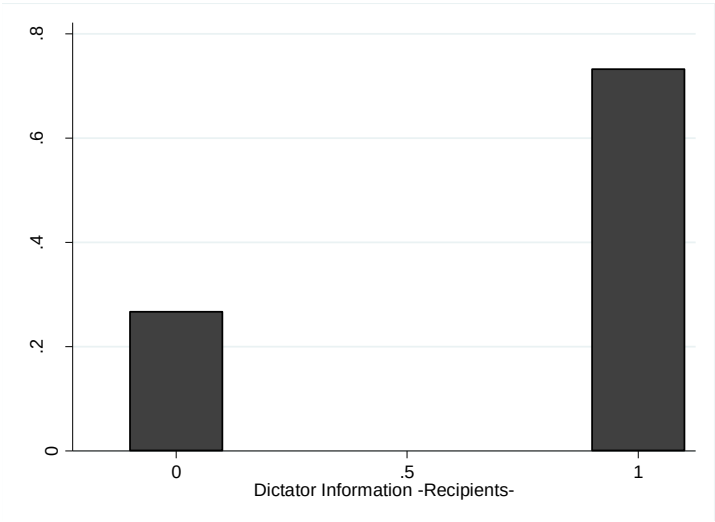
Openness: [l], [n], [q], [r], [u], [x], [y].
Conscientiousness: [d], [h], [m], [t], [z].
Extraversion: [a], [e], [i], [s], [w].
Agreeableness: [b], [f], [j], [o], [v].
Neuroticism: [c], [g], [k], [p].

Appendix C.10. Questionnaire and Graph on Recipients Choices

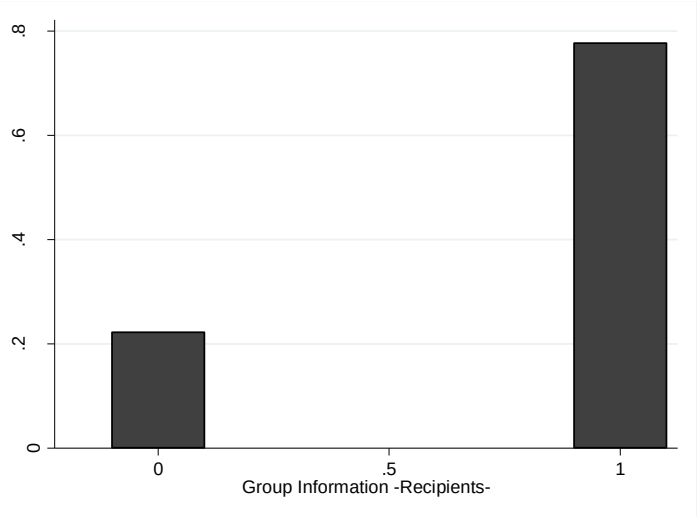
1) If you were assigned the role of Giver, how would you have allocated the 20 ECU?



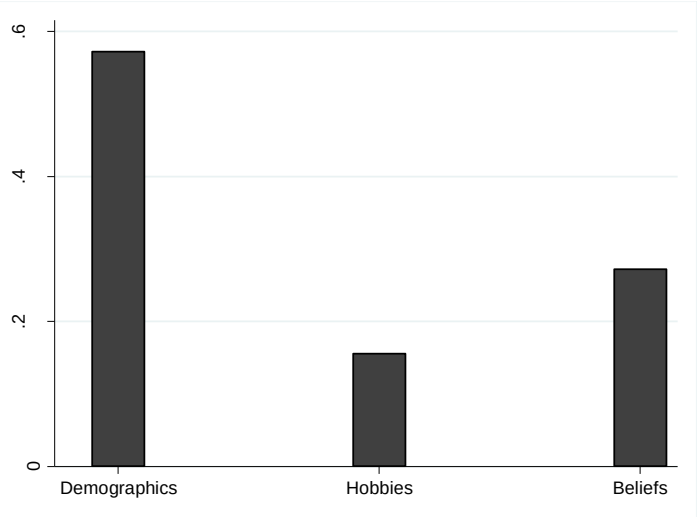
2) Would you have liked to know how another giver with specific socio-demographic characteristics (gender, age, nationality) or with specific hobbies (related to music, sports, movies) or with specific beliefs (related to religion, politics, ethics) allocated the 20 ECU?



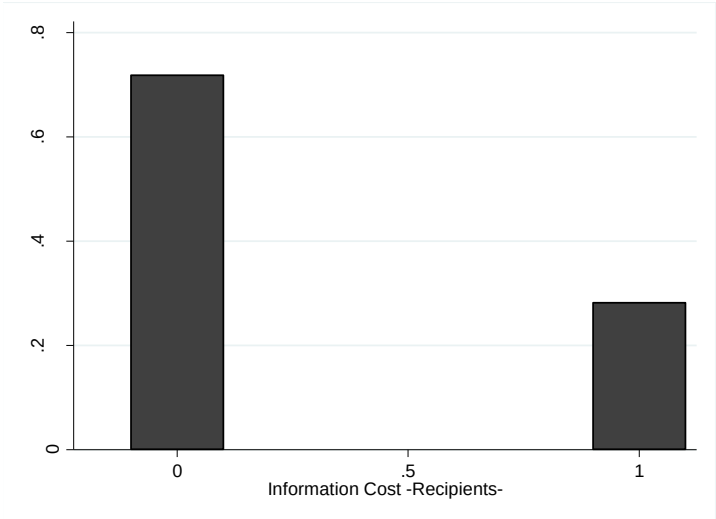
3) Would you have liked to know how a group of givers with specific socio-demographic characteristics (gender, age, nationality) or with specific hobbies (related to music, sport, film) or with specific beliefs (related to religion, politics, ethics) allocated the 20 ECU?



4) What information about the other Givers would you have preferred to receive?



5) If the information had a cost between 1 and 4 ECU, would you have been willing to pay to receive it?



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"Nothing happens by chance. Everyone who crosses our path has a message for us."

James Redfield

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