



**On the evolution of altruistic and cooperative behaviour due to
schooling system in Spain**

MASTER PROJECT

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Abstract

This paper aims to find a pattern in the evolution of altruistic and cooperative behaviour whilst distinguishing across different types of schools in Spain. In specific, we design a controlled laboratory experiment by running the standard dictator game and a public goods game in a public and private ("concertada") high school. Using a sample of 180 students, we compare 12 and 16 year old children to distinguish the evolutionary pattern and test if there is a significant change by the type of schooling system. Alongside, we control for variants such as parental wealth status, religious views and ethical opinions. Interestingly, evidence from our data highlights that altruism levels rise throughout public school education whilst it falls in private schools. On the contrary, cooperation levels are relatively stable in public schools but rise in private schools. The results from this paper can be exploited to understand how education may influence selfish and individualistic behaviour in our society.

Keywords: Altruism; Cooperation; Behavioural decision making; Education system

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Contents

1	Introduction	1
2	Literature Review	2
3	Research Method	5
3.1	Research Design	5
3.2	Experimental Design	6
3.3	Dataset	7
3.4	Regression Models	8
3.4.1	Difference-in-Difference	8
3.4.2	Qualitative models	9
4	Results and Empirical Analysis	12
4.1	Descriptive statistics	12
4.2	Difference in difference results	13
4.3	Qualitative regressions results	15
4.4	Further discussion and extensions	20
5	Conclusion	21
	References	23
	Appendix	26
A1	Games used	26
A2	Personal Survey	28
A3	Ethical Survey	30
A4	Extended Regression results	32

1 Introduction

Altruism is simply defined as behaviour which is costly to an individual but beneficial to others. In general, it involves selfless acts or undertakings that put the welfare of others before one's own. For example, charitable contributions, blood donations or acts of rescue. On the other hand, cooperation is defined as the behaviour that benefits both the individual participating and the receiver, and it is only selected if it benefits both. Therefore, cooperation leads people to act or work together for a common purpose. Well-known examples are people voting, paying taxes, participate in unions, or exert effort in teams.

It is important to study the methods and motives behind both cooperation and altruism as such behaviours are beneficial for society. Both attitudes are present in our everyday life, since they determine how individuals interact and make decisions. As there already exists a large body of previous literature addressing these issues, to fully understand both concepts, we aim to evaluate the origins that influence such behaviours. Therefore, in this paper, we propose a hypothesis that schooling is an influential factor in shaping an individual's behaviour from an early stage. Coupled with learning the basic fundamentals, a child's personality develops as they interact with their classmates, teachers and parents; thus, our research intends to understand the role of education in promoting altruism and cooperation to its students. In particular, we aim to find a difference in the level of altruism and cooperation according to the environment which depends on the type of school system a child receives. More specifically, a public versus private education system.

The paper is organised as follows. Section 2 focuses on a review of related literature. Experimental and research design along with a description of data and various regression models are discussed in Section 3. Section 4 deals with the analysis of empirical results obtained and their interpretation and limitations of the model. Section 5 concludes the paper and discusses policy implications. Supplementary material such as experimental games, survey questionnaires and detailed regression results are relegated to the Appendix.

2 Literature Review

Bolton, Katok and Zwick (1998) was one of earliest papers to discuss the concept of the prevalent dictator game studied in economics. The game typically consists of two individuals, one of whom is given an initial sum of money and the second individual is given nothing. The participant given the money is known as “the dictator” within the experiment and is asked to decide how much of the money he/she would like to offer the second participant, even if that amount is zero. Regardless of the amount that the dictator offers, the second participant must accept and as they have absolutely no power there is no way he/she can punish the dictator unlike the ultimatum game. Standard game theory predicts that the dictator should keep the entire amount to themselves. Nevertheless, behavioural experiments find that many subjects behave altruistically and that fully selfish behaviour is the exception rather than the rule. Henceforth, we find that the behaviour of individuals differs vastly when exposed to the dictator game. Results such as Eckel and Grossman (1996), contradict the theoretical result by conducting a double anonymous dictator game experiment. They found that as participants learned more about the characteristics of the recipient, the amount of donations raised with an increase in the degree of “deservedness” of the receiver. This has been further supported by Hoffman, McCabe and Smith (1996). Moreover, according to Camerer (2011), the mean donation in laboratory experiments for dictator games is approximately 20% of the initial endowment.

The results of previous literature are indicative of a prevailing altruism pattern in individuals. However, the methodology used in the earlier dictator game experiments suffer from several potential biases which might have influenced the result. As already stated, factor of anonymity plays a huge role in decision making where participants are aware that their actions are observed. Besides this, the origin of the endowment to be allocated lead to different results suggestive of an endowment bias. Furthermore, Cherry, Frykblom and Shogren (2002) show that participants allocate significantly less generously when they have to use their own money to play in comparison to a sum of money received at the beginning of the game. Eckel

and Grossman (1998) provide evidence in their paper that, on average, women donate twice as much as men to their anonymous partners eliminating for any other cooperation factors suggesting that women are more generous than men. There are several other well-established findings in literature which demonstrate that the level of altruism rises with an increase in household income (Andreoni, 2006; Hoffman, 2011) and age of the participant (Bekkers, 2006; Havens, O' Herlihy, and Schervish, 2006). Additionally, there exists a strong correlation between religious involvement and philanthropy (Bekkers, 2006; Havens, O' Herlihy and Schervish, 2006) since these practices are likely to improve pro-social behaviour.

In addition, a popular debate of nature versus nurture raises an interesting concern in determining whether particular aspects of human behaviour are a product of an individual's genes or their environment. This shadows our research question as we focus on the nurturing (environmental) side of a child's early-stage education. We test whether the type of education acquired influences an individual's behaviour and if this impacts their altruistic and cooperative decisions. Previous research indicates that an increase in the level of education improves the philanthropy tendency of a person (Bekkers, 2006; Brown, 2005; Havens, O' Herlihy and Schervish, 2006). This is justified by the fact that higher education level is associated with higher income, strong verbal ability, larger social networks and greater levels of trust.

Another dimension of human behaviour that we are interested in analysing is the element of cooperation. Prior studies typically assess the notion of cooperation by allowing individuals to participate in a public goods game. In experimental economics, a typical setup of the game is players contributing certain fraction of their endowment for acquiring a common resource (e.g. a public fund). Each player also keeps the money they did not contribute. The reception of public good depends on threshold amount of money collected from contribution irrespective of who the participants were. Game theory suggests that the rational but selfish strategy is to contribute nothing as players face the temptation to defect and free-ride on the other player's contributions. This leads to economic inefficiencies and a state in which individuals face a mutual deadlock. However this hypothesis has been challenged

significantly in lab experiments. For instance, in a one-shot game Marwell and Ames (1981) found that subjects generally contribute to a public good at levels halfway between the pareto efficient level and the free riding level. In case of multiple trials, with each repetition of the game, provision of the public good decays toward the free riding level. This decay phenomenon is observed irrespective of whether participants have perfect information on the length of the game (Isaac and Walker, 1988) or not (Isaac, McCue and Plott, 1985). Fischbacher, Gächter and Fehr (2001) report that under conditional cooperation, an individual will contribute more towards a public good when other players also contribute more. These studies point that free-riding is not as dominant in the real world as is predicted by theory. Several reasons have been proposed to justify these results. Factors like desire to win prestige, receive social acclaim and other psychological motives have been proposed in affecting decision making (Becker, 1974). More recently, theories such as stranger-partner treatment (Andreoni, 1988), warm glow (Andreoni, 1990), reciprocal altruism (Fehr, Ernst and Fischbacher, 2003) and presence of punishment (Fehr, Ernst and Gächter, 2000) also explain this surprisingly high level of cooperation observed in lab experiments.

Education is emphasised as a building block for the development of an individuals' personality. It is not solely on acquiring worldly knowledge but also in improving one self's pro-social behaviour. The purpose of our research is to understand the role of schools in promoting altruism and cooperation. The reason schools are an important factor is because they can encourage empathy and pro-social behaviour such as sharing, cooperation and honesty. According to Litvack-Miller, McDougall & Romney (1997), these attributes are associated positively and this is supported consistently throughout the development of additional literature. Kingston & Medlin (2005) compares empathy, altruism, moral reasoning, and pro-social behaviour in home schooled children and public school children. They found that home schooled children reported slightly more pro-social behaviour. Bettinger & Slonim (2006) uses an educational intervention on students: a voucher program, to examine the effect on altruism. Results showed a positive effect on students' altruism towards charitable donations rather than their peers. Ultimately, these studies highlight the importance of modelling education in understanding altruistic and cooperative traits.

3 Research Method

3.1 Research Design

To best address our research question, we believe that running a controlled laboratory experiment is the optimal and most efficient research design approach. The rationale behind using a laboratory setting is primarily due to our budget and time constraint. Moreover, we are able to obtain more trustworthy results with less bias influence as this environment helps us to isolate the possibility of other variables, such as peer effects or both positive and negative externalities from other individuals, swaying the behaviour and thus the answers of the individuals tested. Finally, variables can be adjusted and combined by the experimenter which is convenient and often less costly (Cooper & Schindler, 2013).

Despite the popularity and advantages of a controlled laboratory experiment, there also exists certain shortcomings. The most common weakness of this design is its external validity. This questions the extent to which the results of the experiment can be applied to the real life setting (Cappelen & Tungodden, 2013). Furthermore, being a participant in a controlled experiment can lead to a bias change in the behaviour of individuals. This arises due to the fact that individuals may notice they are being observed and therefore, may act in the way they believe researchers are expecting them to. This concern is commonly known as the Hawthorne-effect. It is also argued that the participants being tested face relatively weak monetary incentives in the experiments, which has implications in modelling real life economic situations to the full extent (Cappelen & Tungodden, 2013). Nevertheless, as we take into account these limitations of conducting a laboratory experiment, we believe that it is still the a reasonable approach to answer our research question.

For our research, we have decided to focus on two types of schools: concerted private (known as “concertada” in Spain) and public. Both types are prevalent within Spain and for simplicity, we will use the notation ‘private schools’ for concerted

private. Whilst we are all familiar with public schools, concerted private schools are not so familiar. This type of school has been present in Spain since 1984 and was introduced with the aim of ensuring that there is a provision of free places to Catholics (approximately 80% of these schools remain populated by Catholics). Although a concerted school is a privately owned, it stipulates an agreement with the government and receives full subsidies in exchange for implementing an admission policy similar to public schools (Arellano & Zamarro, 2007).

3.2 Experimental Design

Our experiment was conducted in one public and one private high school in Teruel (Spain) during April 2019. A total of 180 students participated, 143 from the public school and 37 from the private school. In order to ensure a balanced sample in years, we ran the experiment in four classes of first year students (aged 12 years) and four classes of students in the last compulsory year of education (aged 16 years). From those classes, three were from the public high school and one from the private high school. The experiment lasted for approximately 20-30 minutes and we ran it during a normal school day. It was divided into two sections: the first entailed two games and the second was composed of two surveys. The first game was a standard dictator game (see Figure A1.1 in appendix) and the second game was a public goods provision game where we implemented two extra questions to ensure that the students understood the game (see Figure A1.2 in appendix). For the surveys, we distributed a personal survey (see Figure A2.1 in appendix) which focused on questions related to the individuals' characteristics (such as gender, parent's occupation used as a proxy for income, religion, number of siblings, etc.) and an ethical survey which asked for the degree of accordance on specific ethical dilemma statements (see Figure A3.1 in appendix). For example, questions related to income distribution, political views, social equality and environmental issues. The idea of the personal survey was to obtain observed individual characteristic's used as variable in order to introduce controls in the regressions and to see how this may affect the levels of altruism and cooperation. On the other hand, the purpose of the ethical survey was to see whether

there was a correlation between more ethical individuals and the level of cooperation or altruism.

The experiment was completely anonymous and the participants were aware of this information in advance. Furthermore, as demonstrated in (Smith & Walker,1993), experiments without monetary incentives tend to not induce realistic behaviour by individuals. For this reason, we decided to incentivise students by notifying them that a handful would win real money at the end of the games. To execute the lottery we randomly selected one student from each class at the end of the experiment. To ensure randomness and anonymity we wrote a unique number on the reverse of the physical copies of each individuals submission and the school director transferred the money to prevent any bias behaviour.

It is important to note that in our study we assume first and last year students of the same high school are identical, except for age. This is a plausible assumption since there is no significant shock (e.g. income, immigration or natural disaster) reported throughout the four years in neither districts where the school is located. Moreover, both high schools are placed in the same district thus we can discard any exogenous influence due to location.

3.3 Dataset

In order to estimate our models, we obtained a set of control variables from the surveys answered by the students. This allows us to better understand the causality of attending different types of schools on the patterns of altruism and cooperation. In this section, we provide a brief explanation and define our dataset.

School is a dummy variable for "treatment", which is equal to 1 if an individual is attending the private school or 0 if attending the public school. In addition, we control for whether an individual previously attended the same school (*previous school*) and if not, which type of school they previously attended (*type*).

Salcat represents the average salary level per year of both parents which has been

divided into five different categories.¹ (Note that this variable has been re-scaled into log terms) We decided to include the average income of parents as a possible determinant to explain the altruistic and cooperation behaviour of an individual since there are many studies that support this idea (see Kakavoulis, 1998; Weinberg, 2001; and Deckers, Falk, Kosse & Schildberg-Hörisch, 2015).

Gender is a dummy variable equal to 1 if the individual is female or 0 if male. In related literature, the differences in gender have received increasing attention (see Sent, Vyrastekova & van Staveren, 2015; Chowdhury, Jeon & Saha, 2017; and Klinowski, 2018) hence, it is interesting to see if this divergence is also present in our results.

Class: is a dummy variable equal to 0 for students in the first year of high school and equal to 1 for students in the fourth (last) year of high school.

Finally, we estimate other personal characteristics such as the number of siblings and sisters, having a pet or not, where do they live, if the student receives an allowance, if they have ever took part in volunteering, how they travel to school and who with, how many times they have travelled outside Spain, and their religion.

3.4 Regression Models

3.4.1 Difference-in-Difference

To estimate the effect of different schools on altruism and cooperation levels, we run a Difference-In-Difference model:

$$Y_i = \beta_0 + \beta_1 School_i + \beta_2 LastCourse_i + \beta_3 School_i \quad LastCourse_i + \beta_4 C_i + u_i$$

Where Y_i denotes the level of altruism/generosity for individual i , $School_i$ is a

¹The salary level of both parents has been estimated based on the salary level information of the province of Teruel that the Instituto Nacional de Estadística provided us (INE, 2019). Indices on parental salary are re-coded into the following categories: (1) if the total salary of both parents is ≤ 30000 e; (2) if it is $>$ than 30000 e but ≤ 36000 e; (3) if it is $>$ 36000 e and ≤ 40000 e; (4) if the total salary is $>$ 40000 e and ≤ 45000 e; and 5 if total salary is $>$ 45000 e.

dummy variable for the type of school attended by the individual (equal 1 if Private and 0 if Public), $LastCourse_i$ is a dummy variable for the class year the individual tested is in (equal 1 if in the last class and 0 if first class), and $School_i \cdot LastCourse_i$ is an interaction dummy variable which is equal to 1 if the individual attends the private school and is in the last class, and 0 otherwise. C_i represents a vector of individual specific controls. The different coefficients β measure altruism/cooperation levels: β_0 measures the mean level in the first class of the public high school, β_1 measures the difference between the means of the two high schools in first class, and β_2 measures the difference between means of the two courses in the public high school. The main variable of interest for our study is β_3 , which measures the difference in the mean change from the first to the last class between the private and public high school.

It is important to note that in our difference-in-difference regressions we define the first year students in both the public and private school as the control group. This is valid under the crucial assumption that there is a common trend between both schools within the first year and we can test this by using a non-parametric test. We implement the Wilcoxon Rank-Sum test, which compares a randomly selected value from one sample versus another and states under the null hypothesis that the distribution of both populations are equal. Our test results show the p-value in the dictator game and public goods game as 20.07% and 94.63% respectively. Hence, we can strongly accept the null at a 1% significance level and correctly assume a common trend.

3.4.2 Qualitative models

In addition to studying the effects that different types of schools have on the patterns of both altruism and cooperation, we would also like to expand further in our analysis by testing whether different variables affect individual specific behaviour. For this reason, we run four different regressions in order to gain a better understanding of why and how much the individuals donate. Each regression has different properties and their assumptions are satisfied.

- Ordinary Least Squares (OLS): Although, this is not its most common use, OLS regressions can also model binary variables using linear probability models. It gives us predicted values beyond the range (0,1). Therefore, we have specified the following binary model:

$$Y_i = \beta_0 + \beta X_i + u_i$$

Where Y_i is the dependent variable that denotes if an individual is donating or not (1 = donate and 0 = do not donate) , X_i is a vector of explanatory variables with its coefficient vector and u_i is the residuals term. Hence, we have two different dependent variables, one which is capturing whether an individual is giving or not giving money (in the dictator game), and the other is capturing whether the students are cooperating or not (in the public goods game).

- Ordinary Least Squares (OLS) for individuals who donated: We estimate another OLS model, where the dependent variable (Y) now represents the amount of money given in both games. Thus, the difference in this model is that we are now trying to estimate which factors influence individuals to donate more or less:

$$Y_i = \beta_0 + \beta X_i + u_i$$

Where Y_i is now a dependent variable that denotes how much is the individual donating or cooperating. This provides us with two different dependent variables for both cooperation and altruism similar to the previous model.

- Logit Model: By contrast to OLS, logistic regressions estimate the probability of an outcome. In this approach, events are coded as binary variables with a value of 1 if the individual is donating (occurrence of our outcome) and a value of 0 representing the absence of donation. Therefore, logistic regression models estimate probabilities of events as functions of independent variables (Cramer, 2002). Note that the Logit Model assumes residuals are following a logistic

distribution therefore, the model we are estimating is expressed as followed:

$$Y_i = 1 \text{ if } \beta X_i + u_i > 0$$

$$Y_i = 0 \text{ if } \beta X_i + u_i \leq 0$$

$$\text{where Prob}(Y_i = 1) = \frac{e^{\beta X_i}}{1 + e^{\beta X_i}} \text{ and } \text{Prob}(Y_i = 0) = \frac{1}{1 + e^{\beta X_i}}$$

It is also relevant to add that the logistic model used, fits the data much better than the linear model in the context of binary models. But in many situations the linear model fits just as well, or almost as well, as the logistic model. In fact, the linear and logistic model give results that are practically indistinguishable except that the logistic estimates are harder to interpret (Helleveick, 2009).

- **Ordered Logit Model:** The Ordered Logit Model is also used in a discrete choice context but it is differentiated as it estimates the probability of an outcome which is divided in sequentially ordered categories. In our study, the categories are classified by the amount of money donated. For instance, when testing altruism we divide the outcome into six categories and for the cooperation our outcome is divided in six categories too. Our model is expressed as:

$$Y_i^* = \beta_0 + \beta X_i + u_i$$

where we observe the latent variable (Y^*) for altruism according to the following threshold rules:

Table 3.1: Latent variable rule

(a) For altruism		(b) For cooperation	
$Y_i^* \leq 0$	$Y_i = 1$	$Y_i^* \leq 0$	$Y_i = 1$
$0 < Y_i^* \leq 2$	$Y_i = 2$	$0 < Y_i^* \leq 2.5$	$Y_i = 2$
$2 < Y_i^* \leq 3$	$Y_i = 3$	$2.5 < Y_i^* \leq 5$	$Y_i = 3$
$3 < Y_i^* \leq 4$	$Y_i = 4$	$Y_i^* = 5$	$Y_i = 4$
$4 < Y_i^* \leq 5$	$Y_i = 5$	$5 < Y_i^* \leq 7.5$	$Y_i = 5$
$5 < Y_i^*$	$Y_i = 6$	$7.5 < Y_i^*$	$Y_i = 6$

In order to test the Parallel Lines Trend assumption, we ran a Brant Test. This

ensures that we are capable of implementing the model suggested. The results showed us that we can not reject the null hypothesis which states that there is no parallel lines trend. Hence, we can estimate the Ordered Logit Model efficiently.

We have also considered estimating other models such as the Tobit Model or the Multinomial Logit Model. On the one hand, the Tobit regression model assumes that the error term must be normally distributed, which is requirement that is not satisfied in our study. Moreover, we tested the coefficients obtained by a Probit Model and found that their values are not equal to the coefficients of the Tobit model divided by the standard deviation thus, violating another property of the Tobit Model. On the other hand, we reject the use of the Multinomial Logit Model as the independence of irrelevant alternatives property is not satisfied.

4 Results and Empirical Analysis

4.1 Descriptive statistics

Below we present the descriptive statistics table on how much students donate to a second participant in the dictator game (Figure 4.1). From the results, we find evidence that students attending a public school are on average more altruistic than the ones attending a private school. Our findings suggest that the evolution of altruism within public schools is positive (mean donations increase from 3.07 to 3.78 euros) compared to private schools which show a negative trend (mean donations decrease from 2.5 to 1.27 euros).

Figure 4.1: Descriptive Statistics Table for Altruism

School Type	Class	Mean	Standard Deviation	Median	Min Value	Max Value	N
Public	1st Course	3.07	1.98	3	0	6	69
	4th Course	3.78	1.62	5	0	5	74
Private	1st Course	2.5	1.84	2.25	0	5	22
	4th Course	1.27	1.49	1	0	5	15

On the contrary, we find an interesting observation in our results for cooperation as

it show a different trend (see Figure 4.2). The evolution of average contributions in public schools is slightly lower (5.08 to 5.04 euros) whereas the evolution of contributions is slightly higher for private schools (4.82 to 5.14 euros). This suggests that students attending private schools become more cooperative than public schools once they reach their last year of compulsory education. It is also important to mention that, according to the logic questions we pose after running the game, 39 students from the whole sample did not fully understand the public goods game.

Figure 4.2: Descriptive Statistics Table for Cooperation

School Type	Class	Mean	Standard Deviation	Median	Min Value	Max Value	N
Public	1st Course	5.08	1.69	5	0	10	69
	4th Course	4.94	1.78	5	0	9	74
Private	1st Course	4.95	1.99	5	0	10	22
	4th Course	5.13	0.35	5	5	6	15

Although the structure of our data is clearly hierarchical (by class and school), we have decided against running a multi-level model. According to the paper written by Bryan and Jenkins (2016) based on Monte Carlo simulations, multi-level models require at least twenty-five countries. As we have data from only two schools, the standard errors can be easily clustered by school. As these are a special type of robust standard errors, they can account for non-independence in the data structure, i.e. for heteroskedasticity across “clusters” of observations. We decided to cluster by schools for all our models since our sampling process was done under a clustered procedure (Abadie, Carleton, Imbens & Wooldridge, 2017). Moreover, it is relevant to specify that our sample data is not normally distributed. In large part this can be attributed to the fact that we are dealing with a small sample size.

4.2 Difference in difference results

The results from our difference-in-difference regression indicate that the average donation in the first class of the public high school is 3.08€. The difference with the private school within the same class is -0.58€. The average difference with the last course is 0.69€. Moreover, the difference of the effect of the 4 years of education in

the private school with respect to the effect of the public one is of $-1.93e$.

Table 4.1: Dif and Dif regression

	(1)	(2)
	Altruism	Cooperation
School	-0.583*** (0.000)	-0.225*** (0.000)
Class	0.698*** (0.000)	0.038*** (0.000)
SchoolClass	-1.931*** (0.000)	0.278*** (0.000)
Constant	3.083*** (0.000)	5.043*** (0.000)
Observations	176	180
R-squared	0.144	0.002

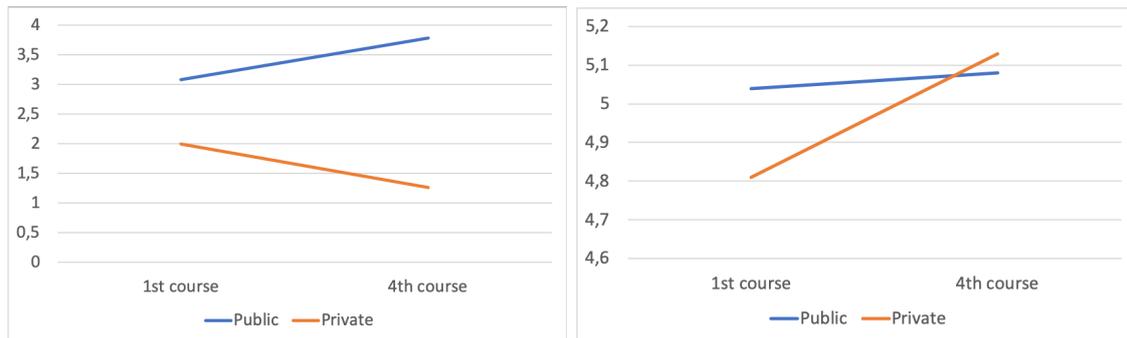
Robust standard errors in parentheses
 *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

For cooperation the average contribution in the first course of the public school is of $5.04e$. The difference with the private high-school in the same course is of $-0.23e$. The average difference with the last course is $0.04e$. Moreover, the difference of the effect of the 4 years of education in the private school with respect to the effect of the public one is of $-0.28e$.

However, we find a crucial difference between the two models. While we observe that more than 14% of the change in altruism patterns due to schooling system is explained by our model, we notice also that the change in cooperation due to the schooling system is barely explained by our model ($R^2 = 0.002$).

In Figure 4.3 we can see an evolution of the average donation (L) and contribution (R) by class along with how different school types affects the outcomes.

Figure 4.3: Diff-in-Diff (Altruism (L) & Cooperation (R))



4.3 Qualitative regressions results

In this section we explore our analysis on altruism and cooperation from the results displayed in Table A4.3 for the four regression models specified in section 3.

First, column 1 presents the OLS results for altruism and according to the coefficients, we can imply that attending a private school reduces the probability of donating by 0.164 and for females the probability is increased by 0.017 (both statistically significant). With regards to the salary, all the coefficients are negative therefore, we can conclude that the category individuals in the lowest income bracket, donate more on average than the rest. Furthermore, being in the last course increases your probability of donating by 0.021. However, neither salary nor class are significant coefficients.

Column 2 displays the OLS results for those who donate where we observe that only school type is significant. This coefficient indicates that attending private school reduces an individuals donation by 1.37 € on average. At the same time, being female has almost no influence on the average donation. In this estimation, income does not follow a linear progressive pattern between categories so we cannot state whether being richer or poorer influences an individuals donation. Lastly, being in the last course increases an average donation by 0.21€.

Next, we study the coefficients of the Logit model, that is expressed in column 3. These coefficients show us the change in the log odds of the altruism level for a one unit increase in the predictor variable. Therefore, as we can observe, attending

Table 4.2: Qualitative regressions (Altruism)

VARIABLES	(1) OLS	(2) OLD_d	(3) Logit	(4) O. Logit
School	-0.164** (0.00295)	-1.375* (0.202)	-1.374*** (0.105)	-1.705*** (0.0654)
gender	0.0176** (0.000760)	0.0312 (0.0355)	0.160*** (0.00831)	0.0965 (0.127)
salcat = 2	-0.0117 (0.0524)	-0.00874 (0.452)	0.0961 (0.884)	-0.216 (0.152)
salcat = 3	-0.0153 (0.0441)	-0.203 (0.496)	-0.0140 (0.572)	-0.365 (0.446)
salcat = 4	-0.0560 (0.0833)	0.0831 (0.304)	-0.434 (0.842)	-0.317 (0.619)
salcat = 5	-0.0109 (0.0954)	-0.559 (0.0899)	-0.0695 (1.268)	-0.804* (0.426)
class	0.0210 (0.106)	0.214 (0.267)	0.349 (0.948)	0.217 (0.627)
Observations	177	151	150	173
R-squared	0.128	0.237		

Robust standard errors in parentheses

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

a private school decreases the log odds of donating by 1.374. Moreover, being a female increases the log odds of donating by 0.160. In other words, females and students from the public school have higher probability to donate. Note, that both school and gender are statistically significant. In addition, we compute the average marginal effects in order to gain a greater understanding of the patterns (see table A4.1 (b) in appendix). We see that attending a private school reduces the probability of donating by 15.4 percentage points. This positive direction is in line with the results of our previous models which confirms that students in private schools tend to donate less than public schools. Furthermore, our findings suggest that there is a positive correlation between education and altruism as we see that the probability of donating increases by 3.9 percentage points when attending the last year of compulsory education. This suggests that as children become more educated, they donate more on average which could be explained by gaining more education, having a better understanding of the game or children being more capable of applying the altruistic behaviour to such a game. Although statistically insignificant, it is interesting to note that we find females are more likely to donate than males by 18

percentage points and as a parents income increases, the probability of donating reduces.

Finally, in order to understand the motives of individuals donating higher, we study the Ordered Logit Model. The results are presented in column 4. Results are again in log odds, hence attending a private school decreases the ordered log odds of being in a higher category of donation by 1.705, holding other variables constant. Although gender is now a non significant variable, we still observe that females increase the ordered log odds of being in a higher category of donation by 0.096. Similarly, parents' income reduces the log odds of donating more money. In sum, people have more probability to donate a higher amount if they are in the public school, they are female and their parents have less income.

Regarding the marginal effects of this model (see Table A4.1 (a) in appendix), we can observe that on average, an individual attending a private school is 17 percentage points more likely than an individual attending a public school to donate the lowest amount of money, and approximately 34.2 percentage points less likely to donate with the highest amount of money. With respect to gender, females are 0.9 percentage points less likely than males to donate the lowest amount of money. As the quantity raises, female are more likely to donate than males, being a 1.9 percentage points more likely to donate the highest category. Moreover, those students in the last year are more likely to donate in the highest category (by 4.3 percentage points) than the first year students. With respect to salary, we observe again the pattern that as salary of the parents increase, the child is less likely to donate.

Following this, we continue with the OLS results for cooperation in column 1 of Table 4.3. According to the coefficients, attending a private school reduces your probability of contributing to the common pot by 0.228 and being female reduces it by 0.206. Regarding the salary, it does not follow a linear progressive pattern between categories therefore, we cannot state whether being richer or poorer influences your contribution. Furthermore, being in the last course increases your probability of contributing by 0.184. However, the coefficients in this regression are insignificant.

Column 2 shows the OLS results for those who donate where we also observe

Table 4.3: Qualitative regressions (Cooperation)

VARIABLES	(1) OLS	(2) OLD_d	(3) Logit	(4) O. Logit
School	-0.228 (0.0816)	-0.0464 (0.00906)	-3.800*** (0.349)	-0.397*** (0.0764)
gender	-0.206 (0.415)	0.0578 (0.0158)	3.787*** (0.612)	0.146 (0.445)
salcat = 2	0.0617 (0.675)	0.0603** (0.00467)		0.372 (0.916)
salcat = 3	-0.500 (0.326)	0.00938 (0.0674)	-0.167*** (0.0239)	-1.013*** (0.0276)
salcat = 4	-0.249 (0.878)	-0.0425 (0.0313)	-1.231 (1.105)	-0.468 (0.545)
salcat = 5	-0.414 (0.602)	-0.0199 (0.0244)	-1.178 (1.015)	-0.740* (0.415)
class	0.184 (0.112)	-0.00407 (0.0621)	-2.032*** (0.441)	0.352*** (0.122)
Observations	167	177	91	177
R-squared	0.115	0.226		

Robust standard errors in parentheses

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

insignificant coefficients. The first estimate of this column indicates that attending private school reduces your donation by 0.046€ on average. At the same time, being female causes a similar effect, but in the positive direction. In this estimation, income does not follow a linear progressive pattern between categories therefore, we cannot state whether being richer or poorer influences your contribution. Lastly, going to the last course neither increases or decreases your contribution.

With respect to the logistic regression model, we observe that attending a private school reduces the log odds of cooperating by 3.8. Note that this implies a higher drop than when comparing the altruism levels. Furthermore, for females the log odds of donating increase by 3.787. In other words, females and students of the public schools have more probability to cooperate. Even though it is again not significant, we can observe that the log odds of cooperating reduces as parents' income grows, with respect to the first category. Moreover, studying in the last year leads to a fall in the log odds of cooperation by 2.032. After computing the marginal effects (see Table A4.2 (b) in the appendix), results provide evidence that attending a private school reduces the probability of cooperation by 24.9 percentage points. However,

females tend to cooperate more than males by 24.8 percentage points and being in the last year reduces the probability by 13.3 percentage points. This is contradictory to our previous findings when analysing the patterns in altruism. Finally, we further observe that as a parents income bracket increases, the probability of cooperation reduces.

Lastly, we estimate the Ordered Logit model (column 4), in order to understand the motives of cooperation within individuals by comparing the highest with the least amount of contributions. Holding all other variables constant, attending a private school decreases the ordered log odds of being in a higher category of cooperation by 0.397. Additionally, even though gender is a not significant variable, we can observe that being a female increase the ordered log odds of being in a higher category of cooperation by 0.146. Similarly, as parents' income increases, it decreases the log odds of cooperating with more money. Regarding the marginal effects (see Table A4.2 (a) in appendix), we can observe that on average, private schools are 1.8 percentage points more likely than public schools to cooperate with the lowest amount of money on average, and approximately 2.7 percentage points less likely to cooperate with the highest amount of money. With respect to gender, females are 0.6 percentage points less likely than males to cooperate the lowest amount of money. As the quantity raises, females are more likely to cooperate than males, being a 1.0 percentage point more likely to cooperate with the highest category. Moreover, students in the last year are more likely to cooperate with the highest category (by 2.4 percentage points) than first year students. With respect to parents income, we observe again the pattern that as the salary of the parents income increases, the less likely its child is to cooperate.

To complement the main objective of our study, we considered including an ethical questionnaire to explore if more ethical individuals have more altruistic and cooperative behaviours (see Figure A3 in appendix). However, given the responses in the ethical questionnaires, we find no overall clear correlation between having more altruistic or cooperative behaviours and being a more ethical individual. In addition to the ethical-related questions, two personal questions in the survey asked for the

self perceived degree of selfishness/altruism and individualism/cooperation. We find a significant predictive power of the self perceptions on the real level of altruism and cooperation. The questions were proposed on a scale from 1 to 5. With 5 being very altruistic/cooperative and 1 being very selfish/independent. Our results showed that when an individual increases its self perception of altruism by one point, it should lead to a 0.30 cents increase in the donations give in the dictator game. Similarly, an increase in one point of an individuals self perception of cooperation, predicts a 0.28 cents increase in the contribution to a public good.

4.4 Further discussion and extensions

Although we find some interesting results and insights for the evolution of the behaviour of school children in different types of schools, we acknowledge that our research has several shortcomings and restrictions.

First of all, our sample is relatively small, both in terms of students and in terms of schools. This explains why a majority of our results are not statistically significant. Furthermore, this limits the external validity of the experiment: it would be interesting to replicate the experiment using a bigger sample, including several cities and high schools across Spain. However, it is beneficial to experiment on schools that are located in the same districts as it enables us to control more easily for the differences in terms of income and community values across schools. Furthermore, due to budget constraints, our argument is limited as we applied weak incentives (only 10 euros per class) in order to motivate students to play the games and answer the surveys.

A second restriction is that we were unable to get approval from the schools in allowing us to run the experimental games on the parents, this was due to privacy reasons. If we were able to collect data from the parents as well as their children, we would be able to provide a more precise and perhaps convincing argument on the evolution of altruism and cooperation by controlling for the parents influence on a child. Another limitation of our research is that we are assuming the first year and

last year students of the same school have identical preferences and level of altruism and cooperation. Ideally the experiment should be run on individuals in their first year and followed through with the same individuals in fourth year. In this case, we could be more confident in measuring the actual causal effect of schooling given that the individuals would be the identical. Lastly, there is a large margin error regarding the variable representing the parents salary. For privacy reasons and ignorance of the child, we were unable to directly ask the child what their parents annual income is. Therefore, we used a parents occupation as a proxy for income and estimated the average income based on the statistics using Instituto Nacional de Estadística.

Lastly, we consider a possible failure in the design of our public goods game. As can be seen in Figure A1.2 of the appendix, we provide the following clue, "It is not better to contribute more or less, it all depends on how much your classmates contribute". As a consequence of this experiment, we noticed that this could perhaps anchor the results toward the middle position i.e. 5 euros. From the responses in the public goods game, this is confirmed as we observe the distribution of the data.

Highlighting these weaknesses implies there is room for adaptation to our research in order to provide broader and more robust results. For instance, as suggested by Rao (2013), offering students the opportunity to take part in active volunteering after school is a clear way to study whether students are more altruistic and cooperative. As we can observe both their attendance and time dedicated, application of behaviour, effort and team skills.

5 Conclusion

Previous research suggests that many behavioural phenomena, including age, gender and religion can provide a plausible explanation in understanding what influences an individual's level of altruism and cooperation. Our study depart from these prior studies, as we attempt to find a fundamental factor that contributes to an individuals level of altruism and cooperation. More specifically, we provide empirical evidence to support the hypothesis that throughout a child's secondary school education, the

evolution of his/her altruistic and cooperative behaviour diverges when comparing against different types of schooling system (within Spain) particularly public versus private.

Our results show that at the initial stage, i.e. for the first year students, the level of altruism is higher in public schools and this prevails throughout the students' education in a public school. On the other hand, we observe an opposite trend for students attending private school, as over the four years of education, the average level of altruism declines. In regards to cooperation, we find some surprising results. Although students attending a public school initially show higher levels of cooperation than private schools, over the course of their education, this gap is not only reduced but it is also surpassed by the private school. Our results are in line with previous research which state that females are more likely to donate and cooperate than males but contradict the popular view in literature that income has a positive correlation with both dependent variables.

It is important to emphasise the fact that we find public schooling systems to be more influential in the positive evolution of altruism whilst maintaining a relatively constant level of cooperation. This evidence is important to understand in the view of policy implications to encourage more pro-social behaviour and therefore, provide positive externalities within a society. One example of the policy can be governments finding ways to endorse more admissions in public schools. This is relevant as there is sometimes a perception that private schooling is better for a child. Moreover, local governments may decide to prioritise its investments in public school infrastructure and become more actively involved, for example, attend meetings or assemblies, provide public talks and present awards based on performance and achievements.

To conclude, this paper provides a good introduction for encouraging supplementary research in order to support the hypothesis that a school's education system is an instrumental factor in developing an individual's behaviour from an early stage. Our idea of understanding the role of different education systems in promoting altruism and cooperation among students open many doors for further investigation and hopefully finds its way in the future research in this area.

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Appendix

A1 Games used

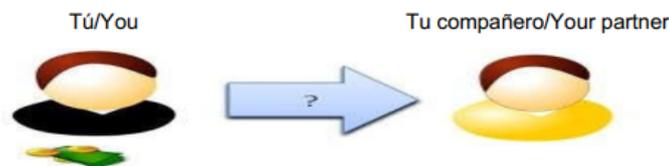
Figure A1.1: Dictator Game

Estos juegos y cuestionarios son anónimos. Nadie sabrá tus respuestas. Tampoco tus compañeros. Sin embargo, recuerda tomarte las respuestas en serio porque podrías ganar el dinero que consigas en estos juegos (haremos un sorteo al final de la clase y a algunos de vosotros les pagaremos dentro de un sobre el dinero que hayan ganado).
¡Gracias por participar!

Juego n°1. En este juego, estás agrupado con otro compañero.

Recibes 10€ de manera gratuita. Tu compañero, que no sabes quién es y el no sabe quién eres, no ha recibido nada. Si lo deseas, puedes compartir algo de ese dinero con él.

¿Cuánto quieres compartir con él? Escribe la cantidad a continuación: _____



(English Translation)

This games and surveys are anonymous. No one will know your answers. Neither your classmates. However, remember to take the answers seriously as you can earn the money that you win in this games (we will make a lottery at the end of the class and we will pay the money to some of you).
Thank you for participating!

Game no. 1. In this game you are playing with another classmate.

You receive 10€ for free. Your classmate has received nothing. If you want, you can share part of the money that you have received with your classmate.

How much you want to share with him? Write the quantity: _____

Figure A1.2: Public Goods Game

Juego n°2. En este juego, estás agrupado con otros 3 compañeros.

Recibís cada uno 10€ de manera gratuita. Puedes poner parte de ese dinero en un bote común, pero el dinero que pongas lo pierdes. Digamos que aportas una cantidad "x" entre 0€ y 10€. Tus compañeros pondrán en el bote el dinero que quieran. Si entre todos habéis juntado 20€ en el bote común, os regalaremos 10€ a cada uno. Pero si no llegáis a 20€ no os daremos nada, te quedarás con los 10€ iniciales menos lo que metiste en el bote.

¿Cuánto quieres aportar al bote común? _____

¿Cuánto ganarías con esa aportación si el bote común llega a 20€? _____ ¿Y si el bote común es menor de 20€? _____

Pista: No es mejor aportar mucho o poco, todo depende de cuanto pongan tus compañeros



(English Translation)

Game no. 2. In this game, you are in a group with other 3 classmates.

Each one you receive 10€ for free. You can put part of that money in a common pot, but you would lose that money. Let's say that you contribute a quantity "x" between 0€ and 10€. Your classmates would put in the common pot the money that they want (you cannot know). If after you all introduce the money, there are 20€ in the common pot, we will give you 10€ more to each one of you. But if the common pot contains less than 20€ we would give nothing and you would gain the 10€ minus what you have introduced in the common pot.

How much do you want to introduce in the common pot? _____

How much do you win with that contribution if the common pot contains 20€? _____ And if the common pot contains less than 20€? _____

Clue: It is not better to contribute more or less, it all depend of how much your classmates contribute

A2 Personal Survey

Figure A2.1: Personal Survey (Spanish Version)

Encuesta Personal:

1. ¿Cuál es tu género? Hombre Mujer
2. ¿Que curso estás estudiando? 1ºESO 4ºESO
3. ¿Donde estudiaste Educación Primaria? En esta escuela En otra
Si es en otra, indica su nombre: _____
Si es en otra, indica si es: Pública Concertada Privada
4. ¿Cuál es el trabajo de tu padre? _____
¿Cuál es el trabajo de tu madre? _____
(Dejar en blanco si son desempleados o parados)
5. ¿Cuántos hermanos tienes (sin contarte a ti)? 0 1 2 3 +3
¿Cuántos de tus hermanos son mujeres? 0 1 2 3 +3
6. ¿Tienes mascotas? Si No
7. ¿Has vivido siempre en Teruel? Si No
Si no has vivido siempre aquí, indica en qué otras ciudades/pueblos:

8. ¿En qué barrio vives? _____
9. ¿Cómo vienes al colegio? Coche Bus Metro Bici Tram Andando
¿Con quien? Padres Hermanos Abuelos Amigos Solo Otros
10. ¿Juegas a algún deporte de equipo semanalmente? Si No
11. ¿Cuál es tu religión/creencia?
 Católico Protestante Musulmán Judío Otra Ateo Agnóstico Ninguna
¿Con qué frecuencia va a la iglesia/mezquita/sinagoga/templo? Nunca Alguna vez al año
 Alguna vez al mes Todas las semanas Varias veces a la semana
12. ¿Has hecho voluntariado alguna vez? Si No
13. ¿Cuántas veces has viajado fuera de España para hacer turismo (sin contar para visitar familiares)? 0 1 2 3 4 5 +5
14. ¿Con qué frecuencia recibes una paga de tus padres?
 Nunca Semanalmente Mensualmente Anualmente

Figure A2.2: Personal Survey (Translated English Version)

Personal Survey:

1. Which is your sex? Man Woman
2. Which course are you studying? 1°ESO 4°ESO
3. Where did you study Primary School? In this school Other
 If it is other, specify which one: _____
 If it is other, specify if it was: Public Concertada Private
4. Which is your father's occupation? _____
 Which is your mother's occupation? _____
 (You do not have to answer if they are unemployed or retired)
5. How many siblings do you have without taking you into account? 0 1 2 3 +3
 How many sisters do you have? 0 1 2 3 +3
6. Do you have any pet? Yes No
7. Have you always lived in Teruel? Yes No
 If you have not, specify in which cities/villages you have lived in the past:

8. In which district do you live? _____
9. How are you usually going to the school? Car Bus Underground Bike Tram Walking
 With whom? Parents Siblings Grandparents Friends Alone Other
10. Do you usually play any team sport? Yes No
11. What is your religion/belief?
 Catholic Protestant Muslim Jew Other Atheist Agnostic None
 How often do you go to the church/mosque/synagogue/temple? Never A few times a year
 A few times a month Every week More than twice a week
12. Have you ever done volunteering? Yes No
13. How many times have you travel outside Spain as a tourist (Do not take into account family visits)? 0 1 2 3 4 5 +5
14. How often do you receive a pay from your parents?
 Never Annually Monthly Weekly

A3 Ethical Survey

Figure A3.1: Ethical Survey (Spanish Version)

Del 1 al 5, indica cuanto de acuerdo estás con las siguientes afirmaciones, siendo 1 completamente en desacuerdo y 5 completamente de acuerdo:

Desigualdad:

1. La desigualdad entre personas ricas y pobres es mala: 1 2 3 4 5
2. Los países ricos tienen el deber de ayudar a los países pobres: 1 2 3 4 5
3. Cuando gane dinero, donaré una parte a una ONG: 1 2 3 4 5
4. Es importante hacer voluntariado para ayudar a los demás: 1 2 3 4 5

Política:

1. La inmigración es buena para un país: 1 2 3 4 5
2. Tenemos el deber de ayudar a los refugiados: 1 2 3 4 5
3. La democracia es muy importante para que una sociedad funcione bien: 1 2 3 4 5

Sociedad:

1. Existe una discriminación de género contra las mujeres: 1 2 3 4 5
2. Las personas homosexuales deben tener los mismos derechos que las heterosexuales: 1 2 3 4 5
3. Conocer gente de diferentes religiones y culturas es bueno para todos: 1 2 3 4 5

Medio ambiente:

1. Debemos reducir el uso de objetos que generan residuos plásticos ej. Envoltorios de plástico: 1 2 3 4 5
2. El cambio climático es un problema urgente e importante: 1 2 3 4 5
3. Debemos intentar reducir el uso del coche para reducir las emisiones de gases contaminantes: 1 2 3 4 5

Personalidad:

1. En la escala numérica siguiente, indica con qué número te identificas más (1 = egoísta; 5 = generoso): 1 2 3 4 5
2. En la escala numérica siguiente, indica con qué número te identificas más (1 = individual; 5 = trabajador en equipo): 1 2 3 4 5

Figure A3.2: Ethical Survey (Translated English Version)

State from 1 to 5 how much do you agree with this statements, 1 being completely disagree and 5 being completely agree:

Distribution of income:

1. Inequality between rich and poor people is bad: 1 2 3 4 5
2. Rich countries have the duty to help poor countries to develop: 1 2 3 4 5
3. When I have money, I would donate part of it to charity: 1 2 3 4 5
4. I think it's important to take part to voluntary activities: 1 2 3 4 5

Political:

1. Immigration is bad for a country: 1 2 3 4 5
2. We have a duty to accept and help refugees: 1 2 3 4 5
3. Democracy is very important to a society to work well: 1 2 3 4 5

Social Equality:

1. There is a gender discrimination against women: 1 2 3 4 5
2. Homosexuals should have the same rights as heterosexuals: 1 2 3 4 5
3. Meeting people from different religions and cultures is good for us: 1 2 3 4 5

Environmental views:

1. Reducing the use of plastic objects should be encouraged e.g. plastic straws: 1 2 3 4 5
2. Global warming is a really important and urgent problem: 1 2 3 4 5
3. We should try to reduce the use of the car in order to reduce emissions: 1 2 3 4 5

Personality traits:

1. On each numerical scale that follows, indicate which point is generally more descriptive of you (1 = selfish; 5 = generous): 1 2 3 4 5
2. On each numerical scale that follows, indicate which point is generally more descriptive of you (1 = independent; 5 = team player): 1 2 3 4 5

A4 Extended Regression results

Table A4.1: Marginal effects (Altruism)

(a) Ordered logit

VARIABLES	(1) M_ologit	(2) M_ologit	(3) M_ologit	(4) M_ologit	(5) M_ologit	(6) M_ologit
School	-0.170* (0.011)	0.104*** (0.009)	0.048*** (0.009)	0.027*** (0.005)	-0.007** (0.002)	-0.342 (0.003)
gender	-0.009 (0.011)	-0.005 (0.006)	-0.002 (0.004)	-0.001 (0.023)	0.000 (0.000)	0.019 (0.024)
salcat = 2	0.0192*** (0.00109)	0.013 (0.010)	0.006 (0.004)	0.005 (0.008)	0.000 (0.005)	-0.044*** (0.002)
salcat = 3	0.0339* (0.0197)	0.022 (0.028)	0.011 (0.012)	0.007 (0.014)	-0.000 (0.008)	-0.073*** (0.005)
salcat = 4	0.0290 (0.0394)	0.019 (0.038)	0.009 (0.017)	0.007 (0.012)	-3.50e (0.007)	-0.064*** (0.004)
salcat = 5	0.0851*** (0.00402)	0.047 (0.028)	0.020*** (0.007)	0.010 (0.033)	-0.005 (0.017)	-0.157*** (0.019)
class	0.0216 (0.064)	-0.013 (0.040)	-0.006 (0.016)	-0.035 (0.096)	0.000 (0.031)	0.043 (0.129)
Observations	173	173	173	173	173	173

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

(b) Logit

VARIABLES	(1) M_logit	Standard errors in parentheses
School	-0.154***	(0.00442)
gender	0.0180***	(0.00180)
salcat = 2	0.0100	(0.0877)
salcat = 3	-0.00151	(0.0615)
salcat = 4	-0.0522	(0.102)
salcat = 5	-0.00760	(0.140)
class	0.0392	(0.105)
Observations	150	

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

Table A4.2: Marginal effects (Cooperation)

(a) Ordered logit

VARIABLES	(1) M_ologit	(2) M_ologit	(3) M_ologit	(4) M_ologit	(5) M_ologit	(6) M_ologit
School	0.018 (0.001)	0.007 (0.005)	0.017*** (0.006)	0.020*** (0.001)	-0.034*** (0.005)	-0.027*** (0.008)
gender	-0.007 (0.019)	-0.003 (0.009)	-0.006 (0.020)	-0.007 (0.021)	(0.013) (0.038)	0.010 (0.032)
salcat = 2	-0.010 (0.026)	-0.005 (0.009)	-0.012 (0.028)	-0.044 (0.109)	0.035 (0.086)	0.036 (0.087)
salcat = 3	0.052** (0.024)	0.020*** (0.005)	0.047*** (0.000)	0.023 (0.047)	-0.083*** (0.005)	-0.060*** (0.023)
salcat = 4	0.019 (0.018)	0.008 (0.012)	0.020 (0.025)	0.029 (0.038)	-0.042 (0.047)	-0.034 (0.046)
salcat = 5	0.033*** (0.011)	0.014 (0.013)	0.033 (0.021)	0.032 (0.030)	-0.063 (0.035)	-0.048 (0.040)
class	-0.016** (0.008)	-0.006*** (0.001)	-0.015*** (0.003)	-0.017*** (0.008)	0.030*** (0.012)	0.024*** (0.006)
Observations	177	177	177	177	177	177

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

(b) Logit

VARIABLES	(1) M_logit	Standard errors in parentheses
School	-0.249***	(0.0174)
gender	0.248***	(6.70e-05)
salcat = 2, omitted	-	
salcat = 3	-0.00782***	(0.00256)
salcat = 4	-0.0751	(0.0519)
salcat = 5	-0.0711	(0.0453)
class	-0.133***	(0.0505)
Observations	91	

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

Table A4.3: Qualitative regressions

(a) Altruism					(b) Cooperation				
VARIABLES	(1) OLS	(2) OLD_d	(3) Logit	(4) O. Logit	VARIABLES	(1) OLS	(2) OLD_d	(3) Logit	(4) O. Logit
School	-0.164** (0.00295)	-1.375* (0.202)	-1.374*** (0.105)	-1.705*** (0.0654)	School	-0.228 (0.0816)	-0.0464 (0.00906)	-3.800*** (0.349)	-0.397*** (0.0764)
gender	0.0176** (0.000760)	0.0312 (0.0355)	0.160*** (0.00831)	0.0965 (0.127)	gender	-0.206 (0.415)	0.0578 (0.0158)	3.787*** (0.612)	0.146 (0.445)
salcat = 2	-0.0117 (0.0524)	-0.00874 (0.452)	0.0961 (0.884)	-0.216 (0.152)	salcat = 2	0.0617 (0.675)	0.0603** (0.00467)		0.372 (0.916)
salcat = 3	-0.0153 (0.0441)	-0.203 (0.496)	-0.0140 (0.572)	-0.365 (0.446)	salcat = 3	-0.500 (0.326)	0.00938 (0.0674)	-0.167*** (0.0239)	-1.013*** (0.0276)
salcat = 4	-0.0560 (0.0833)	0.0831 (0.304)	-0.434 (0.842)	-0.317 (0.619)	salcat = 4	-0.249 (0.878)	-0.0425 (0.0313)	-1.231 (1.105)	-0.468 (0.545)
salcat = 5	-0.0109 (0.0954)	-0.559 (0.0899)	-0.0695 (1.268)	-0.804* (0.426)	salcat = 5	-0.414 (0.602)	-0.0199 (0.0244)	-1.178 (1.015)	-0.740* (0.415)
class	0.0210 (0.106)	0.214 (0.267)	0.349 (0.948)	0.217 (0.627)	class	0.184 (0.112)	-0.00407 (0.0621)	-2.032*** (0.441)	0.352*** (0.122)
siblings	-0.00958 (0.00581)	-0.0141 (0.163)	0.00454 (0.125)	-0.0270 (0.129)	siblings	0.247 (0.116)	0.0102 (0.0124)	-0.117*** (0.0293)	0.295*** (0.0296)
city	0.0378 (0.0930)	-0.818 (0.297)	0.570 (0.850)	-0.576 (0.506)	city	0.0261 (0.271)	-0.0160 (0.00626)	-2.707*** (0.00981)	-0.191 (0.220)
transport = 2	-0.0730 (0.0854)	-0.376 (0.148)	-0.637 (1.236)	-0.323 (0.312)	transport = 2	0.294 (0.335)	-0.00140 (0.00357)	-0.0223 (0.367)	0.648 (0.560)
transport = 4	0.265* (0.0304)	1.511** (0.0326)		16.44*** (1.296)	transport = 4		-0.969** (0.0228)		-19.90*** (1.271)
transport = 6	-0.0581 (0.0263)	-0.0576 (0.127)	-0.600 (0.508)	-0.0824*** (0.00305)	transport = 6	-0.0429 (0.0140)	0.0173 (0.0248)	3.217*** (0.857)	0.324*** (0.00676)
religion = 2	0.251 (0.118)	0.713 (0.297)		1.651*** (0.0265)	religion = 2	0.865** (0.0139)	-0.130 (0.0468)		0.462*** (0.0404)
religion = 3	0.143 (0.225)	2.639 (0.608)		16.83*** (1.003)	religion = 3	-1.178 (0.401)	0.134* (0.0157)		-0.387*** (0.133)
religion = 5	0.218 (0.0798)	0.466** (0.0169)		1.375*** (0.234)	religion = 5	-0.0396 (0.369)	0.0749* (0.00903)		0.0550 (0.393)
religion = 6	0.0802 (0.192)	0.0630 (0.0502)	0.894 (1.895)	0.290 (0.370)	religion = 6	0.108 (0.581)	-0.0184 (0.0572)	-3.033* (1.556)	0.186 (0.539)
religion = 7	0.0671 (0.0113)	1.088 (0.562)	0.787 (0.723)	1.193* (0.711)	religion = 7	-0.123 (0.0402)	-0.0278 (0.0880)	-0.0345 (2.503)	-0.461** (0.213)
religion = 8	-0.125 (0.0766)	0.102 (0.154)	-0.807*** (0.0849)	-0.449 (0.478)	religion = 8	0.203 (0.184)	-0.0366 (0.0102)	-3.511*** (1.227)	-0.0881 (0.275)
church = 0	0.0522 (0.0426)	-0.927 (0.218)		-0.310 (0.706)	church = 0	-0.712 (0.622)	-0.108 (0.175)		-2.837** (1.436)
church = 1	0.0792 (0.136)	-1.514** (0.0811)	-0.391*** (0.0113)	-0.144 (0.522)	church = 1	-1.104 (0.918)	-0.0716 (0.128)	3.947* (2.359)	-3.452*** (1.408)
church = 2	0.0814 (0.0921)	-1.107* (0.122)	-0.357 (0.492)	0.193 (0.620)	church = 2	-0.824 (0.935)	-0.139 (0.141)		-3.622** (1.672)
church = 3	0.109 (0.109)	-1.729 (0.412)		-0.271 (0.551)	church = 3	-0.712 (0.672)	-0.0541 (0.113)		-3.726*** (1.119)
church = 4	0.217 (0.134)	-0.954 (0.704)		0.428* (0.232)	church = 4	-0.440 (0.779)	-0.0799 (0.138)		-2.990*** (1.024)
volunteering	-0.0376 (0.0193)	0.111 (0.335)	-0.562 (0.488)	0.0896 (0.399)	volunteering	-0.259** (0.0196)	0.0284 (0.00911)	0.643 (1.115)	-0.259*** (0.0912)
travel = 2	0.0690 (0.0899)	-0.432 (0.211)	0.610** (0.259)	-0.0418 (0.570)	travel = 2	0.104 (0.411)	0.0193 (0.0771)	3.934 (4.629)	0.270** (0.107)
travel = 3	0.0492 (0.0238)	-0.690 (0.504)	0.599 (0.841)	-0.405 (0.450)	travel = 3	0.346 (0.743)	-0.00745 (0.0778)	2.562 (4.463)	0.483 (0.493)
travel = 4	-0.0291 (0.0305)	-1.360 (0.311)	-0.404 (0.584)	-1.239*** (0.256)	travel = 4	-0.218 (0.396)	-0.00426 (0.0438)		-0.509** (0.242)
travel = 5	0.0480 (0.195)	-1.541 (0.490)	0.269 (1.924)	-0.986 (0.775)	travel = 5	0.171 (0.947)	-0.146* (0.0180)	-1.065 (2.207)	-0.716 (0.903)
travel = 6	0.227 (0.112)	0.168 (0.288)		1.226 (0.804)	travel = 6	-0.914 (0.432)	-0.122 (0.246)	-4.288*** (0.0890)	-1.945 (1.464)
travel = 7	0.0261 (0.0738)	-0.342 (0.159)	0.346 (0.523)	0.113 (0.214)	travel = 7	-0.235 (0.342)	-0.00510 (0.0344)	3.508 (4.388)	0.141*** (0.0177)
allowance	-0.0390** (0.00304)	-0.0183 (0.0761)	-0.361* (0.208)	-0.200* (0.108)	allowance	-0.0944** (0.00229)	0.0126 (0.00770)	1.948* (1.107)	-0.0459*** (0.0147)
Observations	177	151	150	173	Observations	167	177	91	177
R-squared	0.128	0.237			R-squared	0.115	0.226		

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

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