



UNIVERSITY OF GOTHENBURG
SCHOOL OF BUSINESS, ECONOMICS AND LAW

WORKING PAPERS IN ECONOMICS

No 564

**Social information and charitable giving:
An artefactual field experiment with young children
and adolescents**

**Andrea Guzmán, Clara Villegas-Palacio & Conny
Wollbrant**

**(March 2013)
Revised November 2014**

**ISSN 1403-2473 (print)
ISSN 1403-2465 (online)**

Social information and charitable giving: An artefactual field experiment with young children and adolescents*

Andrea Guzmán, Universidad Nacional de Colombia, Colombia^a

Clara Villegas-Palacio, Universidad Nacional de Colombia, Colombia^b

Conny Wollbrant, University of Gothenburg, Sweden^c

Abstract

A growing literature in economics examines the development of preferences among children and adolescents. We combine a repeated dictator game with treatments that either provides participants with information about the average behavior of others or not. In a sample of 384 children aged 5-17, we find an increase in donations until the age of 13-14, but not beyond. We find no effect of social information on average donation behavior in any of the studied age-groups, but do find effects on the distributions of donations.

Keywords: Children; Charitable giving; Social information, Preference development

JEL classification: C93; D02; D03; D64

* Author names are in alphabetical order.

Acknowledgments: Financial support from the *Jan Wallander and Tom Hedelius* Foundation and the Swedish Research Council (*Vetenskapsrådet*) is gratefully acknowledged. We received helpful comments from Charles Bram Cadsby, Peter Martinsson, Gerhard Riener, and two anonymous referees. Remaining errors are our own.

^a Department of Geosciences and Environment. Engineering Faculty. Universidad Nacional de Colombia-Sede Medellín; Phone: +57 318 614 91 54; E-mail: acguzmanc@gmail.com

^b Department of Geosciences and Environment. Engineering Faculty. Universidad Nacional de Colombia-Sede Medellín; Phone +57 301 391 55 56; E-mail: civilleg@unal.edu.co

^c Corresponding author: Department of Economics, University of Gothenburg, Box 640, 405 30 Gothenburg, Sweden; Phone: +46 31 786 26 15; Fax: +46 31 786 10 43; E-mail: conny.wollbrant@economics.gu.se

1. Introduction

Social preferences are important for a range of social and economic outcomes, including cooperation, contractual arrangements and market outcomes (Fehr and Fischbacher, 2002). The effect of others' behavior on one's own has generated much interest in economics (see Shang and Croson, 2009, for a review). Models of altruism predict that donations of others will reduce one's own donation (e.g., Becker, 1974). As the recipient receives more, the marginal benefit of donating decreases and hence, own donations decrease too. Other models, based on for example conformity, predict that information about others' donations increases own donations (e.g., Bernheim, 1994). Social information serves to signal the norm of donating, and wishing to conform, own donations increase in others' donations. In the context of charitable giving, increases in others' donations may therefore either reduce (substitute) or increase (complement) one's own donation.

Recent work has explored pro-social preferences among children (e.g., Harbaugh *et al.*, 2003; List and Samak, 2013) and reputational effects of social information on charitable giving (Servátka, 2009; Reinstein and Riener, 2012). To the best of our knowledge, no previous study has explored the sensitivity to social information across age-groups in the context of charitable giving. We conduct a 5-period dictator game with 384 students evenly spread over the age-groups 5-6, 9-10, 13-14 and 16-17, with a charitable organization as the recipient (similar to Eckel and Grossman, 1996). This is combined with treatments that either provide information about the donations of others' or not as in Cason and Mui (1998). These authors found in an adult population that learning about socially relevant information influences decision in a sequential dictator game; subjects become more selfish in their "irrelevant information" treatment but do not become more selfish in their "relevant information" treatment. Our study contributes by examining the relevance of social information within different age-groups.

The literature on the development of social preferences among children has generally found a positive relationship between pro-social behaviors and age. For example, older children tend to be more fair (Gummerum *et al.*, 2010; Takezawa *et al.*, 2006), more trusting (Sutter and Kocher, 2007), more egalitarian (Bennenson *et al.*, 2007; Fehr *et al.*, 2008) and more cooperative (Harbaugh and Krause, 2000). Closer to our domain of inquiry, Bennenson *et al.* (2007), conduct a dictator game with children aged 4, 6 and 9 years, and find that older children donate more, although altruistic behavior is present at all ages. Harbaugh *et al.*

(2003) conduct a dictator game with children aged 7, 9, 10, 14, 18 years and find a positive relationship between donations and age, and that girls donate slightly more than boys. That girls behave more altruistically than boys has been repeatedly found in studies on the development of pro-social behaviors (Eisenberg and Fabes, 1998) and recently by Gummerum *et al.* (2010).

We contribute to this literature by examining both the relationship between donations and age, as well as gender differences in this pattern. Also relevant for our study is the work by Harbaugh and Krause (2000) who combine a multi-period public good game with a dictator game and subjects aged 6-12 years. They find that while younger children tend to increase their contributions over rounds, older children behave more like adults and decrease their contributions. Older children seem to learn to free ride faster than younger children, although they are initially more cooperative. The authors, however, raise concerns about whether these patterns may be due to confusion among the younger participants in their experiment as it often takes many rounds for adults to learn the freeriding strategy. We contribute to this literature by examining multi-period altruistic behaviour in a less cognitively demanding task. If similar patterns are obtained in a repeated dictator game, our confidence in the ability of young children to maintain socially beneficial outcomes increases.

In addition, we examine the effect of social information on the development of conformity with age. The donation of others may be a complement to one's own donation for some individuals and a substitute for others. While social information may or may not affect donations on average, it may lead to conformity despite heterogeneity of underlying social preferences. An emerging literature examines adherence to social norms when analysing altruism and its development with age (Bennenson *et al.*, 2007; Eckel *et al.*, 2011) while others have investigated whether the tendency to conform with a norm differs with gender (Cadsby and Mayne, 1998). This paper contributes to this literature by analysing the development of conformity with age as well as gender differences in this development.

Most papers concerning the development of preferences for charitable giving have to date mainly studied western samples. For example, Harbaugh and Krause (2010) recruit subjects in Albuquerque, New Mexico and Bennenson *et al.* (2007) and Gummerum *et al.* (2010) recruited subjects from England. Studies using non-western samples provide an important robustness check as populations may vary considerably with respect to patterns of

economic decision-making (Henrich *et al.*, 2010).¹ In this paper we use a sample from Colombia. In this way, our paper contributes by documenting behavioral patterns in a non-western sample.

Evidence on gender differences in pro-social preferences among adults is inconclusive. Some find that women exhibit more pro-socially oriented behaviors while others find the opposite. It has been suggested that the observed heterogeneity may be due to women's relative sensitivity to context and social cues (see Croson and Gneezy, 2009, for a review). Our paper provides a test of this notion by comparing the effect of social information provision on males and females.

We find a general increase in average donations with age but we fail to find any gender differences in this trend. We find that children aged 5-6 increase their donations over periods while donations of children aged 9-10 and 13-14 follow an inverted U-shape, peaking in period 3. Children aged 16-17, however, decrease their donations across periods. With respect to social information, we do not find any evidence that social information affects average donation behavior at any of the investigated ages. We find, however, that for some age groups providing information about the average donation in the previous period has a significant effect on the proportion of subjects that in the present period contributes more than the average in the previous period. This holds for age groups 5-6 and 16-17. We also find some evidence of conformity among the subjects aged 13-14 years, and significant gender differences within these age groups in the proportion of subjects that donate above, equal or below the average donation.

The paper proceeds as follows: section 2 outlines our experimental design and procedure and section 3 describes the results. Finally, section 4 concludes the paper.

2. Experimental design and procedure

We designed a 5-period repeated dictator game in which children were given the opportunity to donate to a charitable foundation, *Fe y Alegría*, active in a number of Latin American and Caribbean countries.² The foundation provides schooling for the poorest children in the region. We chose this organization as it is well-known among children of all ages in the

¹ See also the discussion by Gächter (2010).

² See Eckel and Grossman (1996) for an early contribution using the Red Cross as recipient.

Aburrá Valley, Colombia, and at the school where we conducted our study. For example, children growing up in the region are frequently made aware of the children at *Fe y Alegría* and schools organize fundraising campaigns for the foundation.

At the start of each period, children were endowed with 10 stickers and were told they could donate, all, some or none, to *Fe y Alegría*. Previous research by Bennenson *et al.* (2007) and Gummerun *et al.* (2010) has found that stickers are considered a valuable resource and therefore appropriate for dictator games with children. In particular, comprehension among the youngest children was a concern and the stickers offered the practical advantage of being possible to paste into the appropriate box on the decision sheet. Children were also informed at this stage about the exchange rate of the stickers, which were calibrated such that the total endowment would equal an average weekly allowance for the relevant age-group; 50 stickers equalled 1250, 3500, 7000 or 10500 Colombian Pesos.³ In this way, we aimed to keep opportunity cost constant across ages rather than the monetary endowment.⁴ In no round were the children informed that there would be a next round, or which was the last round. At the end of the game, the children were paid in cash according to the sum of the stickers they had kept for themselves.

We employed two treatments in a pen-and-paper experiment. In the “no information” treatment, children played the dictator game without any information about the behavior of their peers. In the “information treatment,” the average donation of the group was announced between periods. The study was conducted at the Rafael J. Mejía school, Aburrá Valley, Colombia, in 2012. Children were informed prior to the visit that they would be playing games where they could earn money. Written consent was provided by the parents of each participating child and only a small fraction of invited children did not present a signed consent form.

We conducted 8 sessions with about 50 children in each. We opted for larger experimental sessions to achieve unified information about the average donation rather than several smaller sessions with variation in the provided information. From the children who had expressed interest in participation and presented a signed consent form, we randomly assigned participants to each treatment. We aimed for 100 subjects in each age group, but the youngest age group only had 84 children. All of these participate in our experiment. Once

³ Exchange rate at the time of the experiment was USD 1 = COP 1820.

⁴ See e.g., Kocher *et al.*, (2012) for a discussion of this design choice.

offered to participate, no child opted out of the experiment. The experiment started with the experimenter distributing experimental id-numbers to all participants, after which instructions for the dictator game were distributed (see appendix A) and read aloud to all children, who could ask questions in private.⁵ The experimenter then handed out decision sheets for the first round. Once participants had indicated their decisions, the experimenter collected the decision sheets and distributed the next decision sheet. In the information treatment, the mean donation of the period was announced prior to distributing the next decision sheet. This procedure was repeated for the five rounds in each treatment.

Once the five rounds had been completed, participants exited the room, were instructed to line up, and re-entered one-by-one to receive their payment in private. A session lasted about 90 minutes including payment. Upon payment, participants filled in a short questionnaire containing a few demographic and socioeconomic questions. Once all sessions had been completed, a cash donation was made to *Fe y Alegría* and a copy of the receipt was exhibited at the school.

3. Results

384 children participated in our study; 84 children are 5-6 years old, 100 children are 9-10, 100 children are 13-14 and 100 are 16-17, equally divided between the two treatments. In the information treatment, 56% are male and in the no information treatment, 60% were male, reflecting the male-female distribution at the school. Our descriptive statistics in Figure 1 suggest that mean donations for the full sample (all ages) are similar to previous studies with charitable organizations as receivers (see e.g., Eckel and Grossman, 1996; Martinsson *et al.*, 2012). Comparing the pooled mean donations across age-groups reveals that both the “Young” (9-10 years) and the “Middle” (13-14 years) age-group donate significantly more than the “Very young” (5-6 years). Finally, the “Oldest” (16-17 years) age-group donates significantly less than all other age-groups.

Figure 1 about here

A similar pattern is found in the treated and untreated samples. In the untreated sample, the Very young and Young donate about the same, and the Middle age-group donates significantly more than both. Finally, the Oldest donate significantly less than all other age-

⁵ In our experiment, all participants were literate.

groups on average. In the treated sample, the donation pattern is similar to that of the untreated sample. Since these results include all periods, we turn to first period donations to address the relationship between age and donation behavior and present these results in Table 1 below. Since in the first period no information is provided in either of the treatments, we pool the data from both.

Table 1 about here

Period 1 mean donations increase significantly from 4.67 among the very young to 5.38 among the young ($p < 0.05$; very young vs. young) and then to 5.93 among the middle age-group ($p < 0.05$; young vs. middle). The mean donation of 6.62 of the oldest is not statistically different from the contributions of the young ($p > 0.4$) or the middle age-group ($p > 0.3$). With respect to gender, we cannot find any statistically significant differences between males and females within age-groups (see table 1). We summarize these findings below:

Result 1. *Period 1 mean donations increase with age, peaks at age 13-14 and keeps constant at the age of 16-17. There are no gender differences in mean donations within age-groups.*

We next describe patterns of mean donations by period. Figure 2 (Panel A) describes mean donations by period for all ages jointly, but broken down by treatment. We see that when pooling the age-groups, we observe no significant differences between mean donations in the first period. In the treated sample, mean donations compared to period 1, are significantly higher in all subsequent periods ($p < 0.01$). In the untreated sample, mean donations compared to period 1 are significantly higher in all subsequent periods ($p < 0.01$). In period 4, mean donation in the treated sample is significantly higher than in the untreated sample, but only at the 10%-level ($p < 0.1$). On average, it does not seem that social information is very effective in terms of increasing mean donations across periods.

Figure 2 about here

Result 2. *On average, social information does not increase mean donations over periods.*

In Figure 3, panels A-D, we repeat this analysis for each of the age-groups separately. In panel A, we see a positive time trend; in both the treated and untreated sample, donations significantly increase across period. For example, the difference between mean donations of the first and last period is significant in both subsamples ($p < 0.01$). Panel B reveals a similar pattern to panel A, but the mean donation is higher in the untreated than in the treated sample. These differences, however, are not significant. In panel C and D, mean donations are stable across periods. In panel C, mean donations in the untreated sample is significantly higher than in the treated sample ($p < 0.01$) while in panel D, the opposite holds ($p < 0.01$). Furthermore, while untreated donations increase in the very young sample, they increase only initially up to period 3 in the young and middle sample. In the oldest sample, mean donations in the untreated sample are stable at a low level.

Result 3. *Mean donations in the untreated samples increase over periods in the very young sample and increase initially in the young and middle sample to period 3, after which, mean donations keep constant. Among the oldest, mean donations in the untreated sample are relatively low and stable.*

Figure 3 about here

We also observe from the panels, however, that for some of the age-groups (Very young, Middle and Oldest) the treatment difference in mean donation in period 1 is significant. This must be taken into account when evaluating the effect of social information since no information is provided in the first period in either of the treatments. To address this issue, we exploit the panel nature of our data by using a difference-in-difference approach with random effects similar to Harbaugh and Krause (2000).⁶ The baseline in each regression is period 1 in the untreated sample. The variable “treatment” measures the difference between the two sub-samples, and the interaction variable “treatment-period two” is the difference-in-difference estimator. This is the interaction term of most interest; subsequent treatment-period interaction terms measure the effect social information in each of the periods and as such, can also be considered difference-in-difference estimators but since we do not control the information between periods, we cannot compare these effects across age-groups. We present our results by age-groups in table 2 below.

⁶ It is important to note that the results of the random effect model must be interpreted with caution due to the possibility of a correlation between the random effect errors and the regressors.

Table 2 about here

Inspecting first the pooled sample results, we find first that the treatment dummy variable is not significant. The main interaction of interest between the treatment dummy variable and the period two dummy is not significant, indicating that there is no significant difference-in-difference, and hence no effect of social information in the second period. The same holds for the remaining treatment-period interactions; there are no significant differences-in-differences for period three through five.

This pattern replicates also on the age-group level. Repeating the analysis for each age-group separately reveals no significant effect of social information. The only exception is the Very young age-group where the interaction between the treatment dummy and the period four dummy is significant at the 10%-level. Taken as a whole, table 2 indicates no significant effect of social information in our sample.⁷

Finally, to address the hypothesis that males and females differ in their sensitivity to social information we repeat the analysis for the pooled sample presented in table 2 including interactions between gender and the regressors as well as a dummy variable for gender and present our results in table 3. We observe neither significant treatment effects, nor any significant gender effects. These results do not support the notion of gender differences in sensitivity to social information.⁸ We summarize this result below:

Table 3 about here

Result 4. *There is no statistically significant effect of information on average donations, neither in the pooled sample nor within individual age-groups. We find no gender differences in sensitivity to information.*

We now turn to analyzing the effect of social information on conformity in donations. To this end, for each period we examine the difference in the fraction of participants donating

⁷ In our experiment, we do not control the information given to the participating subjects. We provide a summary of the provided information in table 5 in Appendix B. As can be seen, information is confounded with period and there are only a few instances in which one could compare the age-effect on donation behavior controlling for informational content (e.g., in period 2, Young vs. Oldest). In cases where such comparisons are possible, we have not been able to detect any significant differences. Joint inspection of table 1 and table 5 reveals confirms this. Results are also available upon request.

⁸ We repeated this analysis for each of the age-groups separately and found no significant differences. These tables are omitted but are available upon request.

below the previous mean, equal to the previous mean or above the previous mean. We compare actual donation with previous mean given that in the treated sample the information provided is about average donation in previous period. In particular, we are interested in how this fraction differs between the treated and untreated sample. If information affects conformity, we expect the fraction of people contributing equal to the previous average to be higher in the treated sample than in the untreated sample. Table 4 contains the differences in the proportion of subjects donating either below, equal to, or less than the previous average for a given period by age group. We report p -values for the hypothesis of no difference in proportions for the pooled sample (whole age group) and by gender.

Table 4 about here

We find significant differences within each age group (except 9-10 years old) but the strongest pattern arises in the 5-6 and 16-17. In the 5-6 age group, we find a significant increase in the proportion of subjects that donate more than the previous average (period 2 and 3), a decrease in the proportion of subject that donate equal to the previous average (period 2) and less than the previous average (period 3). In the pooled sample, information about the previous average increases the proportion of subjects that contribute more than the previous average in early periods. This pattern replicates when examining 5-6 year old sample by gender with only slight differences between males and females in periods 3 and 4. In the 9-10 age group, we find an increase in the proportion that donates equal to the average early in the game (period 2) but in later periods we find increases in the proportion that donates less than the average (period 3 and 5). The effect in period 2 is driven by males, while the effect in period 5 is driven by females. In the 13-14 age group, we find an increase in the proportion donating equal to the average (period 2) and this effect is driven by males. We also find an increase in the proportion donating less than the mean in period 5 and this effect is driven by females. In the 16-17 age group, we find a consistent decrease in the proportion of subjects that donate equal to the average (periods 2 to 4) and an increase in the proportion donating more than the average in period 2. We also find that males seem to move away from the previous average donation towards higher donations while among females the proportion of subjects that donate equal to previous average is not different, the proportion who donate less than the previous average falls in favor of a higher proportion donating more than the previous average (period 2). We summarize these results below:

Result 5. *Providing information about the average donation has a significant effect within each age group except 9-10 years and in particular in the very young (5-6 years) and the oldest (16-17 years) age groups. In both age groups (5-6 years and 16-17 years) the general tendency is to increase the proportion of subjects that donates more than the previous average and to decrease the proportion of subjects who donates equal to the previous average. We find small differences in the behavior of males and females in the very young age group while in the oldest age group the decrease in proportion of people who donate equal to previous average seem to be driven by males. We only find evidence of conformity in the 13-14 age group.*

4. Concluding discussion

This paper studied the development of preferences for charitable giving using a repeated dictator game with a charitable organization as the recipient. Our experiment was conducted in Medellín, Colombia, and our subject pool consisted of 384 children from the age-cohorts 5-6, 9-10, 13-14 and 16-17. In addition, we implemented treatments in each age-cohort that either provided information about the past round or not. We found that mean donations increased with age, peaking at 13-14 years. From this age on, we found no further increase. This is similar to patterns observed elsewhere, for example, in Harbaugh and Krause (2000) in the context of dictator games and in Bennenson *et al.* (2007) in the context of linear public goods games.

With respect to repeated donation behavior, we replicate a pattern found in Bennenson *et al.* (2007). Mean donations in the untreated samples increase with repetition in the very young age-group, follow an inverted U-shape in young and middle age-group and decrease in the oldest age-group. Moreover, among the oldest subjects in the untreated sample, mean donations are relatively low and stable. Compared to the study by Bennenson and colleagues – which employed a public goods game with a western sample – we used the cognitively less demanding dictator game with a non-western sample. Since their results are replicated here, we increase our confidence in the ability of even very young children to achieve and improve socially beneficial outcomes. Our study also suggests that their results may generalize further.

Using a difference-in-difference approach, we did not find any effect of social information on average donation behavior, neither in the pooled sample, nor within any of the

age-groups. As it has previously been shown in adult samples that providing relevant social information can be successful in preventing decay of pro-social behavior (e.g., Bennenson *et al.*, 2007; Servátka, 2009), we expected to observe differences due to information at least in the older age-groups. Our results suggest that social information was not necessary to attain relatively high donation levels across age-groups, or to sustain these levels with repeated play.

We did not find any differences in average donation behavior with respect to gender. Throughout our analysis, we found no tendency for female subjects to donate more or less than males, neither in the first nor in following periods. Although to date the literature on gender differences in pro-social behavior is inconclusive, it remains surprising that we do not observe any gender differences in sensitivity to information, given the notion that women are more sensitive to context and subtle informational cues (see e.g., Croson and Gneezy, 2009).

Finally, we find that providing information has an effect on the distribution of donations, in all age groups but the 9-10 year old subjects. In particular, we found that in the 5-6 and 16-17 age groups, the tendency is to increase the proportion of subjects that donates more than the average in the previous period and to decrease the proportion of subjects who donates equal to the previous average. In the oldest age group, this pattern is driven by male subjects. We also find an increase in the proportion of subjects donating equal to the mean in the 13-14 age group. This supports the notion that early adolescents are more norm-adherent and attribute more importance to fitting in and that adolescents aged 14 are least resistant to peer pressure (Steinberg and Monahan, 2007).

This paper studied the development of preferences for charitable giving in a repeated dictator game using a Colombian subject pool. While some results from previous work conducted with western subjects were also found here, others were not replicated in full. Future work may consider using more culturally diverse subject pools as a robustness check of major patterns of behavior.

References

- Becker, G., 1974. A theory of social interactions. *Journal of Political Economy*, 82, 1063-1093.
- Bennenson, J., Pascoe, J., Radmore, N. 2007. Children's altruistic behavior in the dictator game. *Evolution and Human Behavior*, 28, 168-175.
- Bernheim, D. 1994. A theory of conformity. *Journal of Political Economy*, 102, 841-877.
- Cadsby, C.B., Maynes, E. 1998. Gender and Free Riding in a Threshold Public Goods Game: Experimental Evidence. *Journal of Economic Behavior & Organization*, 34, 603-620.
- Cason, T., Mui, V. 1998. Social influence and the sequential dictator game. *Journal of Mathematical Psychology*, 42, 248-265.
- Croson, R., Gneezy, U. 2009. Gender differences in preferences. *Journal of Economic Literature*, 47, 448-474.
- Eckel, C., Grossman, P. 1996. Altruism in anonymous dictator games. *Games and Economic Behavior*, 16, 181-191.
- Eckel, C., Grossman, P., Johnson, C., De Oliveira, A., Rojas, C., Wilson, R. 2011. Social Norms of Sharing in High School: Teen Giving in the Dictator Game. *Journal of Economic Behavior & Organization*, 80, 603-612
- Eisenberg, N., Fabes, R. 1998. Prosocial development. In Damon, W., Eisenberg, N. (Eds.), *Handbook of Child Psychology: Vol. 3. Social, emotional, and personality development (701-778)*. New York: Wiley.
- Fehr E., Bernhard, H., Rockenbach, B. 2008. Egalitarianism in young children. *Nature*, 454, 1079-1083.
- Fehr, E., Fischbacher, U. 2002. Why social preferences matter – The impact of non-selfish motives on competition, cooperation and incentives. *Economic Journal*, 122(March) C1-C33
- Gächter, S. 2010. (Dis)advantages of student subjects: What is your research question? Comment on Henrich *et al.* The Weirdest People in the World. *Behavioral and Brain Sciences*, 33, 92-93.
- Gummerum, M., Hanoc, Y., Keller, M., Parsons, K., Hummel, A. 2010. Preschoolers' allocations in the dictator game: The role of moral emotions. *Journal of Economic Psychology*, 31, 25-34.
- Harbaugh, W., Krause, K. 2000. Children's altruism in public good and dictator experiments. *Economic Inquiry*, 38, 95-109.

- Harbaugh, W.T., Krause, K., Liday, S.J., 2003. Bargaining by children. University of Oregon Economics Department Working Paper No. 2002-04.
- Henrich, J., Heine, S., Norenzayan, N. 2010. Most people are not WEIRD. *Nature*, 466, 29.
- Kocher, M.G., Martinsson, P., Visser, M. 2012. Social background, cooperative behavior, and norm enforcement. *Journal of Economic Behavior and Organization*, 81, 341-354.
- List, J.A., Samak, A.C. 2013. Exploring the origins of charitable acts: Evidence from an artefactual field experiment with young children. *Economics Letters*, 118, 431-434.
- Martinsson, P., Myrseth, K.O.R., Wollbrant, C. 2012. Reconciling pro-social vs. selfish behavior: On the role of self-control. *Judgment and Decision Making*, 7, 304-315.
- Martinsson, P., Nordblom, K., Rützler, D., Sutter, M. 2011. Social preferences during childhood and the role of gender and age – An experiment in Austria and Sweden. *Economics Letters*, 111, 248-251.
- Reinstein D., Riener, G. 2012. Reputation and influence in charitable giving: An experiment. *Theory and Decision*, 72, 221-243.
- Servátka, M. 2009. Separating reputation, social influence and identification effects in a dictator game. *European Economic Review*, 53, 197-209.
- Shang, J. Croson, R. 2009. Field experiments in charitable contribution: The impact of social influence on the voluntary provision of public goods. *The Economic Journal*, 119, 1422-1439.
- Steinberg, L., Monahan, K. 2007. Age differences in resistance to peer influence. *Developmental Psychology*, 43, 1531–1543.
- Sutter, M., Kocher, M. 2007. Trust and trustworthiness across different age-groups. *Games and Economic Behavior*, 59, 364-382.
- Takezawa, M., Gummerum, M., Keller, M. 2006. A stage for the rational tail of the emotional dog: Roles of moral reasoning in group decision making. *Journal of Economic Psychology*, 27, 117-139.

Figures and Tables

Figure 1

Mean donations with 95%-confidence intervals by age-group

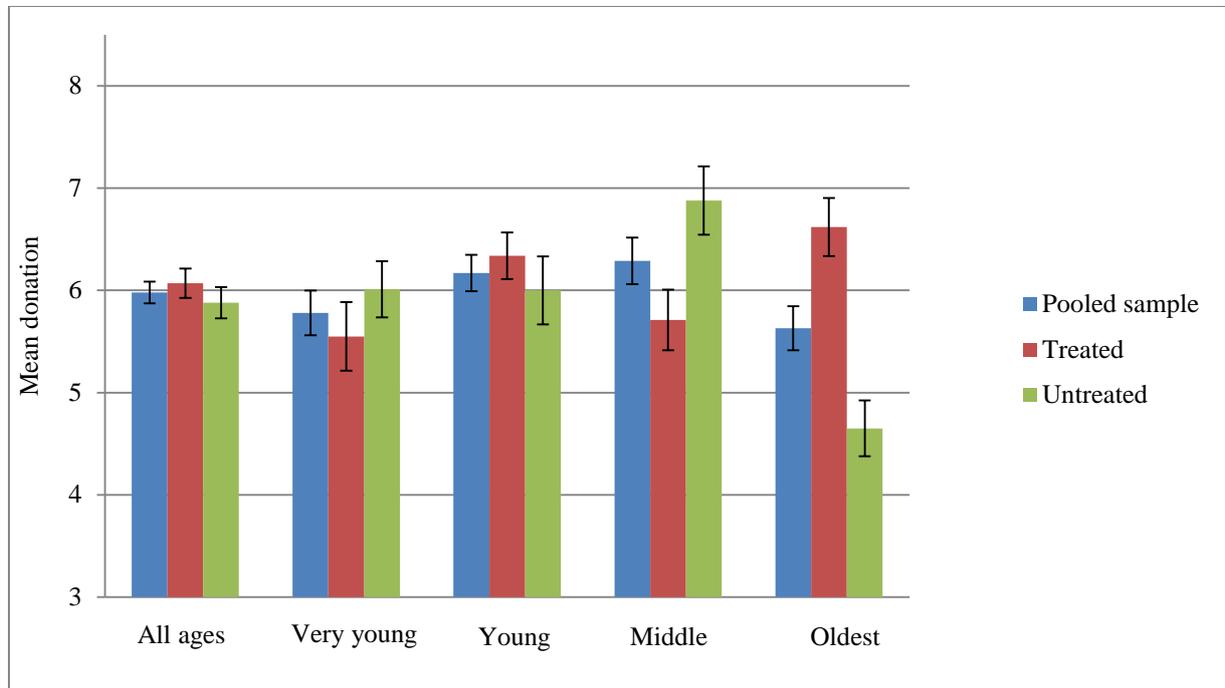


Figure 2

Pooled sample mean donations and 95%-confidence intervals by treatment

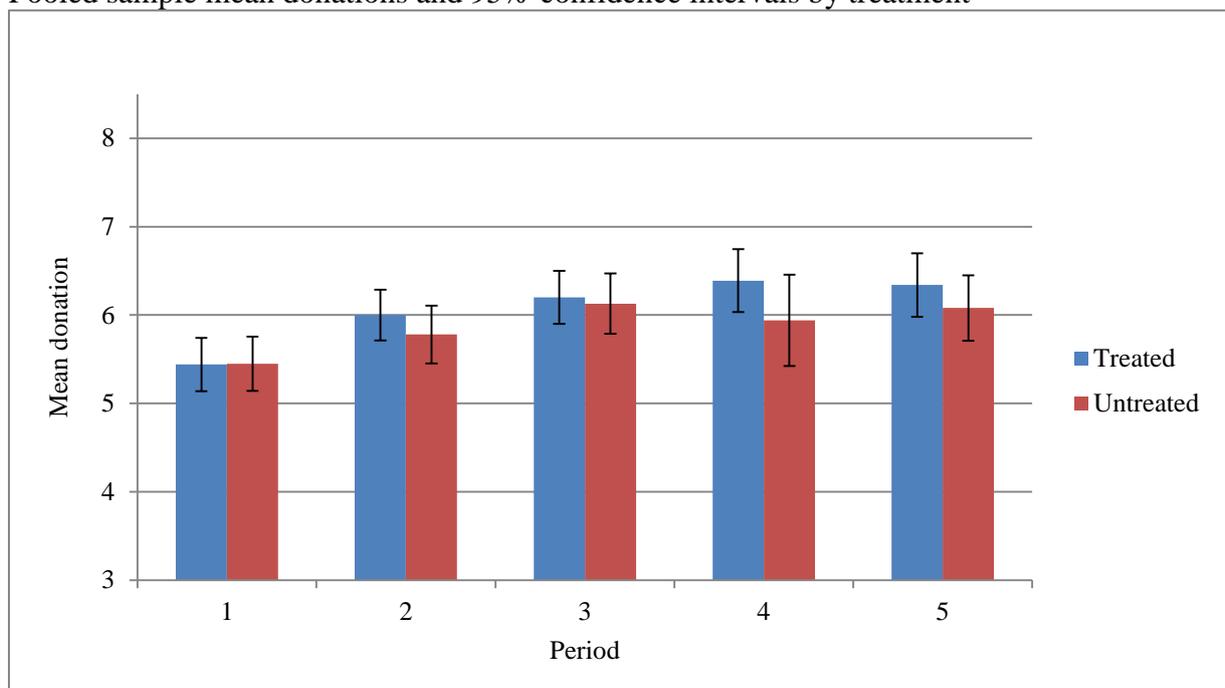
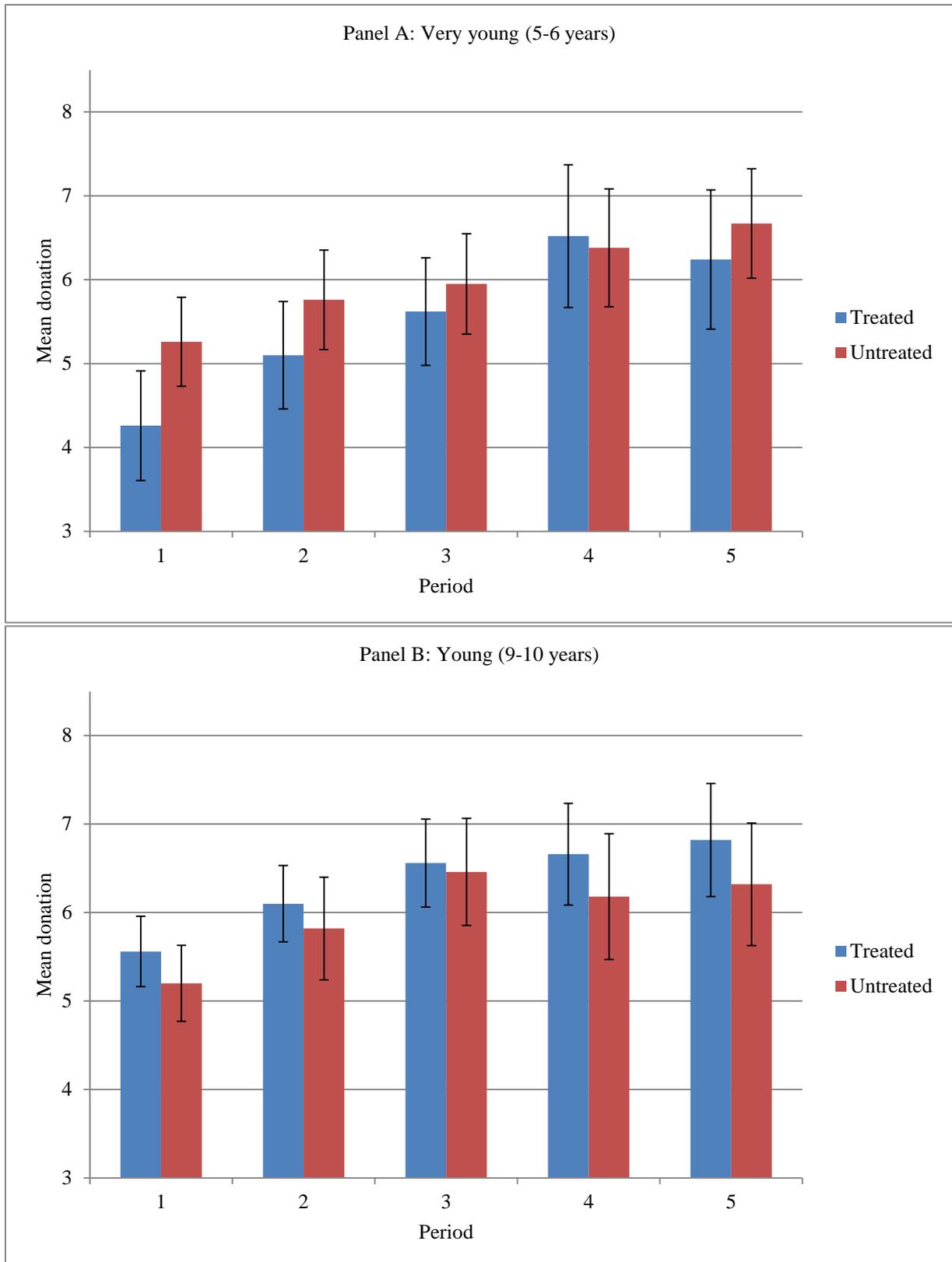
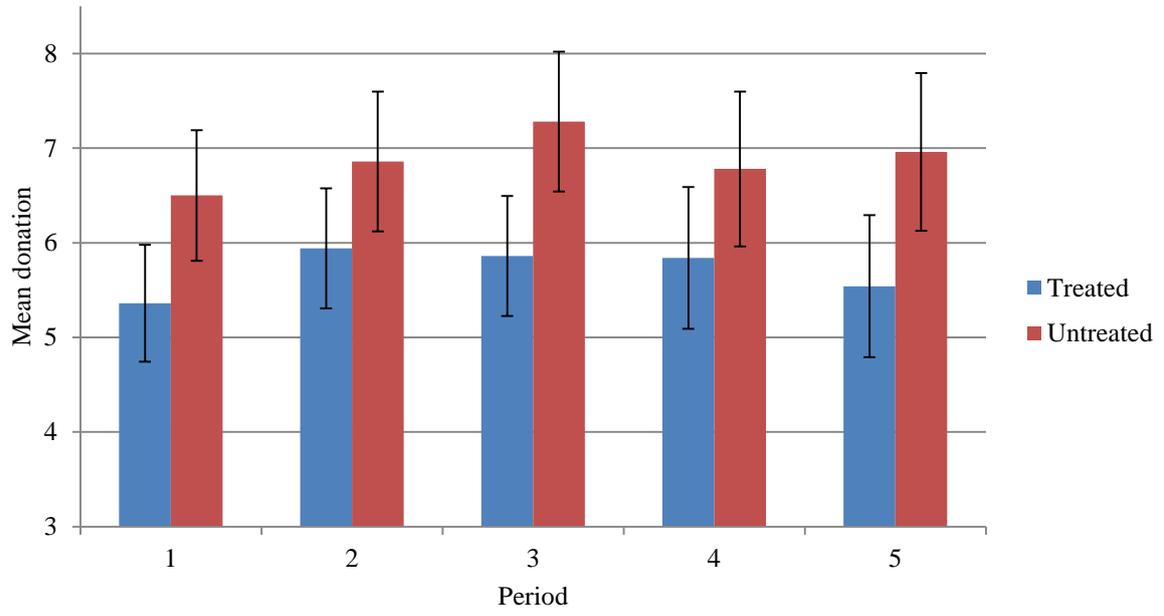


Figure 3

Panels of mean donations and 95%-confidence intervals by treatment and age-group



Panel C: Middle (13-14 years)



Panel D: Oldest (16-17 years)

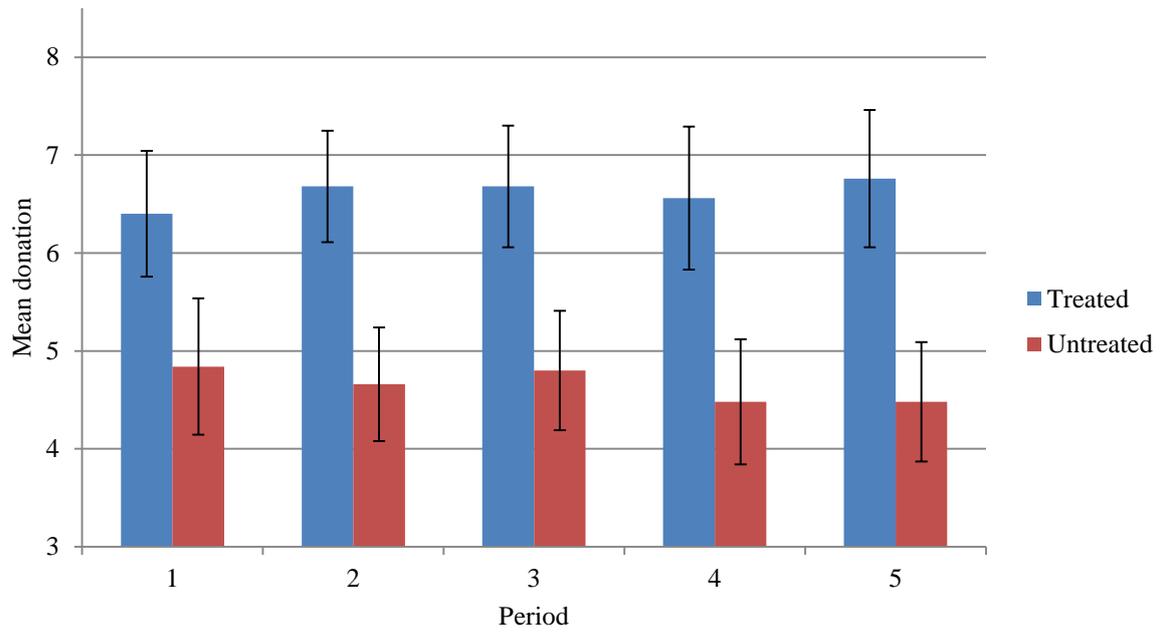


Table 1

Period 1 mean donations by pooled, male and female sample.

Age group	Pooled sample				Males				Females				Mann-Whitney <i>p</i>
	N	Mean	Std	Se	N	Mean	Std	Se	N	Mean	Std	Se	
Very young (5-6 years)	84	4.76	1.96	0.21	55	4.80	2.10	0.28	29	4.69	1.69	0.31	0.665
Young (9-10 years)	100	5.38	1.46	0.15	50	5.54	1.57	0.22	50	5.22	1.34	0.19	0.7393
Middle (13-14 years)	100	5.93	2.37	0.24	49	5.90	2.66	0.38	51	5.96	2.08	0.29	0.6635
Oldest (16-17 years)	100	5.62	2.47	0.25	69	5.78	2.47	0.30	31	5.26	2.48	0.44	0.3649

Note: *p*-values refer to two-sided Mann-Whitney-U tests of gender differences; standard errors in parentheses.

Table 2

The effect of social information on donation behavior: Difference-in-difference estimation results by age-group with random effects

Sample:	All ages	Very young (5-6 years)	Young (9-10 years)	Middle (13-14 years)	Oldest (16-17 years)
Dependent variable:	Donation	Donation	Donation	Donation	Donation
Period two	0.318 (1.33)	0.500 (1.06)	0.620 (1.56)	0.360 (0.71)	-0.180 (-0.40)
Period three	0.672*** (2.81)	0.690 (1.46)	1.260*** (3.18)	0.780 (1.53)	-0.040 (-0.09)
Period four	0.479** (2.00)	1.119** (2.37)	0.980** (2.47)	0.280 (0.55)	-0.360 (-0.80)
Period five	0.625*** (2.61)	1.405*** (2.97)	1.120*** (2.82)	0.460 (0.90)	-0.360 (-0.80)
Treatment	-0.016 (0.07)	-1.000** (2.11)	0.360 (0.91)	-1.140** (-2.24)	1.560*** (3.45)
Treatment × period two	0.229 (0.68)	0.333 (0.50)	-0.080 (0.14)	0.220 (0.31)	0.460 (0.72)
Treatment × period three	0.089 (0.26)	0.667 (1.00)	-0.260 (-0.46)	-0.280 (-0.39)	0.320 (0.50)
Treatment × period four	0.469 (1.38)	1.143* (1.71)	0.120 (0.21)	0.200 (0.28)	0.520 (0.81)
Treatment × period five	0.276 (0.82)	0.571 (0.85)	0.140 (0.25)	-0.280 (-0.39)	0.720 (1.13)
Constant	5.458*** (32.25)	5.262*** (15.73)	5.200*** (18.55)	6.500*** (18.06)	4.840*** (15.14)
Random effects	Yes	Yes	Yes	Yes	Yes
<i>N</i>	1920	420	500	500	500
Groups	5	5	5	5	5

Notes: Absolute values of *t*-statistics in parentheses; * denotes $p < 0.1$, ** $p < 0.05$, and *** $p < 0.01$.

Table 3

Gender differences in the effect of social information on donation behavior: Difference-in-difference estimation results by age-group with random effects

Dependent variable:	Donation
Period two	0.318 (1.33)
Period three	0.672*** (2.81)
Period four	0.479** (2.00)
Period five	0.625*** (2.61)
Treatment	0.048 (0.15)
Treatment × period two	0.444 (1.02)
Treatment × period three	0.257 (0.59)
Treatment × period four	0.723* (1.67)
Treatment × period five	0.304 (0.70)
Male	0.228 (1.48)
Treatment × male	-0.098 (0.26)
Treatment × male × period two	-0.382 (0.79)
Treatment × male × period three	-0.299 (0.62)
Treatment × male × period four	-0.452 (0.94)
Treatment × male × period five	-0.049 (0.10)
Constant	5.322*** (27.58)
<i>N</i>	1920
Groups	5

Notes: Absolute values of *t*-statistics in parentheses; * denotes $p < 0.1$, ** $p < 0.05$, and *** $p < 0.01$.

Table 4.

Proportion of subjects donating more, less or equal to the average donation in the previous round by treatment, age group and gender.

Proportion of subjects donating less, equal or more than previous average			Period 2			Period 3			Period 4			Period 5		
			Untr.	Treat.	<i>p</i> -value									
Very young (5-6 years)	Pooled	Less	21.4	16.7	0.580	54.8	23.8	0.004**	47.6	35.7	0.270	42.9	57.1	0.190
		Equal	38.1	14.3	0.014**	11.9	21.4	0.244	14.3	14.3	1.000	11.9	7.1	0.460
		More	40.5	69.0	0.009**	33.3	54.8	0.049**	38.1	50.0	0.270	45.2	35.7	0.377
	Females	Less	28.6	20.0	0.596	57.1	26.7	0.102	57.1	20.0	0.043**	42.9	66.7	0.205
		Equal	42.9	13.3	0.080*	7.1	26.7	0.171	21.4	13.3	0.571	28.6	6.7	0.125
		More	28.6	66.7	0.044**	35.7	46.7	0.56	21.4	66.7	0.016**	28.6	26.7	0.910
	Males	Less	17.9	14.8	0.763	53.6	22.2	0.018**	42.9	44.4	0.906	42.9	51.9	0.508
		Equal	35.7	14.8	0.078*	14.3	18.5	0.674	10.7	14.8	0.651	3.6	7.4	0.535
		More	46.4	70.4	0.075*	32.1	59.3	0.045**	46.4	40.7	0.673	53.6	40.7	0.345
Young (9-10 years)	Pooled	Less	36.0	40.0	0.682	34.0	34.0	1.000	56.0	54.0	0.840	56.0	48.0	0.426
		Equal	22.0	26.0	0.641	22.0	22.0	1.000	6.0	8.0	0.697	8.0	10.0	0.728
		More	42.0	34.0	0.400	44.0	44.0	1.000	38.0	38.0	1.000	36.0	42.0	0.540
	Females	Less	57.1	37.9	0.183	38.1	27.6	0.436	71.4	55.2	0.247	57.1	44.8	0.395
		Equal	9.5	24.1	0.741	23.8	24.1	0.979	0.0	13.8	0.079*	14.3	6.9	0.395
		More	33.3	37.9	0.400	38.1	48.3	0.480	28.6	31.0	0.853	28.6	48.3	0.165
	Males	Less	20.7	42.9	0.095*	31.0	42.9	0.395	44.8	52.4	0.600	55.2	52.4	0.847
		Equal	31.0	28.6	0.853	20.7	19.0	0.887	10.3	0.0	0.132	3.4	14.3	0.168
		More	48.3	28.6	0.200	48.3	38.1	0.480	44.8	47.6	0.850	41.4	33.3	0.567
(13-14)	Pooled	Less	46.0	30.0	0.100	36.0	54.0	0.071*	42.0	48.0	0.548	36.0	58.0	0.028**
		Equal	6.0	18.0	0.067*	8.0	6.0	0.697	10.0	12.0	0.750	14.0	6.0	0.185
		More	48.0	52.0	0.700	56.0	40.0	0.110	48.0	40.0	0.423	5.0	36.0	0.159

	Females	Less	42.3	24.0	0.169	34.6	56.0	0.129	38.5	48.0	0.496	26.9	56.0	0.036**
		Equal	11.5	24.0	0.248	15.4	8.0	0.417	15.4	12.0	0.728	23.1	8.0	0.143
		More	46.2	52.0	0.700	50.0	36.0	0.320	46.2	40.0	0.660	50.0	36.0	0.318
	Males	Less	50.0	36.0	0.327	37.5	52.0	0.313	45.8	48.0	0.880	45.8	60.0	0.325
		Equal	0.0	12.0	0.083*	0.0	4	0.327	4.2	12.0	0.320	4.2	4.0	0.977
		More	50.0	52.0	0.900	62.5	44.00	0.200	50.0	40.0	0.490	50.0	36.0	0.328
Oldest (16-17 years)	Pooled	Less	44.0	32.0	0.219	42.0	52.0	0.319	50.0	52.0	0.842	32.0	48.0	0.104
		Equal	28.0	14.0	0.088*	26.0	8.0	0.018**	22.0	4.0	0.007**	16.0	8.0	0.221
		More	28.0	54.0	0.008**	32.0	40.0	0.470	28.0	44.0	0.097*	52.0	44.0	0.426
	Females	Less	56.3	20.0	0.041**	56.25	53.3	0.873	56.3	53.3	0.875	31.3	53.3	0.220
		Equal	25.0	26.7	0.917	25.0	6.7	0.172	18.8	6.7	0.324	18.8	13.3	0.680
		More	18.7	53.3	0.048**	18.75	40.0	0.200	25.0	40.0	0.379	50.0	33.3	0.350
	Males	Less	38.2	37.1	0.926	35.94	51.4	0.179	47.1	51.4	0.717	32.4	45.7	0.259
		Equal	29.4	8.6	0.028**	26.47	8.6	0.052*	23.5	2.9	0.010**	14.7	5.7	0.219
		More	32.4	54.3	0.068*	38.23	40.0	0.880	29.4	45.7	0.166	52.9	48.6	0.719

Note: Untr.=Untreated, Treat.=Treatment; *p* refers to a test of no difference in proportions.

Appendix A: Instructions intended for online publication only (translated from Spanish)

Good morning. Thank you for being here. My name is Andrea Guzmán. I am a student at the National University of Colombia – Medellín, and with me today are Diana Buitrago and Felipe Mejía, who are helping me with this study. Today we will play some decision making games in which you will participate and earn money. How is this? Before we start playing, we will give you some instructions about the game; in the game you will make some decisions and depending on the decisions you make today, you can earn a certain amount of money. It is therefore important that you listen carefully to these instructions. All students will earn real money and no student will leave without money. We will give you ten happy face stickers like these ones (*show stickers*) which at the end of the experiment will be changed to real money in cash. Every happy face is worth (*show exchange rate*) pesos.

Now that we have started, all communication is strictly forbidden. Those who communicate in any way will be excluded from the game and will not receive any sticker and therefore any money. If you have any question, please raise your hand and one of us will come and help you.

All your answers are confidential and anonymous, this is, no one except you will know what you decided, your decisions are a secret. To identify you, during and after the experiment, we will only use the number you received when you entered the room. This is, that number will be like your “name” during this game. This number will also be used when we give you your payment at the end of the experiment. Please, keep in mind that you need to write this number on all papers we give you, or else we will not be able to pay you.

When the experiment finishes, you will be asked to leave the room. To receive your payment, about 45 minutes after you exit, you will need to present the little slip you were given with your number on it. Your payment will then be given to you in private in a sealed envelope. We do this to make sure that no one else but you get to know how much you earned in the experiment to keep your earnings confidential.

Decision task

I will now give you ten stickers of happy faces (*Distribute happy faces*). Your task is to decide how many you want to share with *Fe y Alegría*, and how many you would like to keep for yourself. Keep in mind that the number of faces you keep for yourself and the number you share, must sum to 10. Remember that you will be paid according to how many happy faces you keep for yourself (*Distribute decision sheets*).

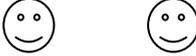
On the sheet that is being distributed to you now, in the square called “I want to keep”, you stick the number of faces you want to keep for yourself. In the square called “I want to share” you stick the number of faces you want to share with *Fe y Alegría* kids.

In this experiment, any decision is valid. This means that you can decide to share all, some, or no happy faces.

Example:

You can keep all 10 faces for yourself and not share anything, you can keep 5 for yourself and share 5 or you can share all 10 and keep nothing for yourself (*Write all combinations on the blackboard*). This is only an example, that does not mean that you have to do this, it is only for you to understand the game. Once more, out of the 10 stickers you can keep for yourself as many as you want, and you can share as many as you want.

In this table for example you keep 6 for yourself and share 4 with *Fe y Alegría*

I want to keep		I want to share	
	+		10
			
			

Are there any questions? Please raise your hands and we will go to your chair to answer (*Address questions in private*).

You will now have a few minutes to make your decisions. Please, do not forget to write the identification number you were given on all your papers. Do not speak to anyone until the experiment has finished and you have exited the room. Do not worry if others seem to finish before you. We will not continue with the experiment until everyone is finished and everyone has answered. After this we will collect your sheets.

After we are done, you can wait for us outside the room so that we can pay you. We will call for you one by one. When you come back, we will ask you a few questions and hand you your money.

After all experiments are done here at the school, we will add up all the happy faces that you have shared and donate this money to Fe y Alegría within 5 days. There will be a receipt of the donation published on the notice board outside the principal's office.

Appendix B

Table 5

Information provided in the social information treatment by period and age-group

Period	2	3	4	5
Very young (5-6 years)	4	5	6	7
Young (9-10 years)	6	6	7	7
Middle (13-14 years)	5	6	6	6
Oldest (16-17 years)	6	7	7	7