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Does context matter more for hypothetical than for actual contributions? Evidence from a natural field experiment

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Abstract

We investigate the importance of the social context for people's voluntary contributions to a national park in Costa Rica, using a natural field experiment. Some subjects make actual contributions while others state their hypothetical contribution. Both the degree of anonymity and provided information about the contributions of others influence subject contributions in the hypothesized direction. We do find a substantial hypothetical bias with regard to the amount contributed. However, the influence of the social contexts is about the same when the subjects make actual monetary contributions as when they state their hypothetical contributions. Our results have important implications for validity testing of stated preference methods: a comparison between hypothetical and actual behavior should be done for a given social context.

JEL-classification: C93, Q50

Key words: Environmental valuation, stated preference methods, voluntary contributions, anonymity, conformity, natural field experiment.

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1. Introduction

Context often matters even when conventional economic theory predicts that it should not (Tversky and Kahneman, 1981). The aim of this paper is to quantify the effect of two types of contexts on people's voluntary contributions to a national park in Costa Rica: the degree of anonymity and information about the contributions of others. We use a natural field experiment to investigate if the influence of social context is different for hypothetical contributions than for actual contributions.

There is ample evidence of context effects in the literature on environmental valuation, for example that framing in terms of scenario description, payment vehicle, or the degree of anonymity influences survey responses (Blamey et al., 1999; Russel et al., 2003; List et al., 2004). Schkade and Payne (1994) used a verbal protocol methodology where they let people think aloud when answering a contingent valuation question, and concluded that people seem to base their responses on many issues other than what the environmental valuation literature typically assumes. For example, they found that before providing an answer, more than 40% of the respondents considered how much others would be willing to contribute.

However, much experimental evidence suggests that context matters also in situations involving actual payments/contributions (Hoffman et al., 1994; Cookson, 2000; McCabe et al., 2000). More specifically, there is ample evidence of so-called *conditional cooperation*, meaning that many people would indeed like to contribute to an overall good cause, such as a public good, but only if other people contribute their fair share (Fischbacher et al., 2001; Frey and Meier, 2004; Gächter, 2006; Shang and Croson, 2006). In the light of this, the finding by Schkade and Payne (1994) may not be that surprising. One interesting question is whether respondent behavior is more sensitive to context (for example in terms of perception of the behaviors of others) when making a hypothetical (but realistic) choice, compared to when making a choice that involves an actual payment. Some have suggested that this difference may be large (e.g. Bertrand and Mullainathan, 2001), whereas others such as Hanemann (1994) believe that it is small, if existing at all, and that context affects behavior generally and not just in survey-based valuation studies.¹ The empirical evidence on comparing the effects of

¹ Note that we do not refer to the issue of hypothetical bias, i.e. that there is a difference between stated and real contributions for a given context. A large share of studies do find a hypothetical bias, although

context is rather scarce. Moreover, one may question the result of comparing lab experiments with hypothetical and actual money, if the purpose is to measure how well real life behavior is resembled. Levitt and List (2007) argue that lab experiments with real money are very useful for identifying mechanisms, since the possibility of control is much higher compared with conventional empirical analysis. At the same time, results of lab experiments should be interpreted with more care when it comes to generalizing to quantitative findings outside the experimental context. Instead, they advocate *field experiments*, where the subjects are observed without knowing that they are taking part in an experiment.

This present paper presents results of a natural field experiment – using the terminology of Harrison and List (2004) – in Costa Rica, where we investigate the importance of (1) anonymity with respect to the solicitor and (2) information about the contributions of others.² In particular, we quantify and compare these effects for two samples: one based on hypothetical contributions and one on actual contributions.

The effect of anonymity has been investigated previously for both hypothetical and actual treatments (Legget et al., 2003; List et al., 2004; Soetevent, 2005). For example, Legget et al. (2003) found that stated willingness to pay was approximately 23 percent higher when the contingent valuation survey was administered through face-to-face interviews rather than being self-administered by the respondents. List et al. (2004) looked at charitable contributions – both hypothetical and actual – to the Center for Environmental Policy Analysis at the University of Central Florida, using three different information treatments: (i) completely anonymous responses, (ii) the experimenter knows the response, and (iii) the whole group knows the response. While they found the largest share of "yes" responses when the whole group was informed of the response (followed by when only the experimenter knew the response), they also found that the differences among the information treatments were similar in the hypothetical and the actual voting treatments. A contribution of the present paper is to test whether this finding can be generalized to a field experiment setting.

the occurrence and extent of it depends on a number of factors such as the type of good and the elicitation method; for an overview see List and Gallet (2001).

² For other recent field experimental studies on determinants of charitable giving, see e.g. List and Lucking-Reiley (2002), Landry et al. (2006) and Karlan and List (2007).

The effect of information about the contributions/behaviors of others has been investigated in several field experiments (Alpizar et al., 2007; Frey and Meier, 2004; Shang and Croson, 2006; Heldt, 2005; Martin and Randall, 2005). For example, Shang and Croson (2006) investigated how information about a typical contribution to a radio station affects subject contributions. They found that their highest reference amount (\$300) implied a significantly higher contribution than giving no information at all. The direction for smaller amounts (\$75 and \$180) was the same, although not statistically significant. As far as we know, no previous study has looked directly at how information about the contributions of others affect stated contributions.³ Consequently, the present paper is also the first to analyze the difference between a hypothetical and actual treatment with respect to the influence of provided information about the contributions of others.

The reminder of this paper is organized as follows: Section 2 presents our fieldexperimental design, Section 3 the corresponding results, and Section 4 concludes the paper.

2. Design of the experiment

The experiment/survey concerns contributions of visiting international tourists to the Poas National Park (PNP) in Costa Rica in 2006. We put great effort into ensuring that the situation was realistic and credible; there was nothing indicating that this was a university study with the aim of analyzing people's behavior. This is potentially very important since, as noted by Levitt and List (2007), a perceived experimental situation may highlight people's sense of identity or self-image to a larger extent than outside the experimental situation; cf. Akerlof and Kranton (2000).

Our five solicitors were officially registered interviewers of the Costa Rican Tourism Board. We began by inviting all potential interviewers by email to a first screening meeting where we evaluated their personalities and abilities to speak fluently

³ However, one explanation of so-called yea-saying – the tendency of some respondents to agree with an interviewer's request regardless of their true views (Mitchell and Carson, 1989) – is that respondents believe that the suggested bid in a contingent valuation survey contains information about the behaviors of others. If so, one may interpret observed yea-saying bias as an indication of the influence of the contributions of others. Several papers have investigated the presence of yea-saying; see for example (Blamey et al., 1999; Holmes and Kramer, 1995).

in both Spanish and English. Out of ten solicitors interviewed, we chose five who fulfilled all our requirements. The five solicitors participated randomly in all parts of the experiment. Nevertheless, we control for solicitor effects in the regression analysis. The solicitors underwent extensive, paid training sessions both in the classroom and in the field. Once they were ready to start, we dedicated a whole week to testing their performance and to making small adjustments in the survey instrument. In addition, there were daily debriefing questions and regular meetings with the whole team to make sure that all solicitors were using the same exact wording of the scenarios.

The solicitors approached international tourists after they had visited the volcano crater, which is the main attraction of the park. They were approached at a "station" decorated with the logos of the PNP, the National System of Protected Areas (SINAC), and CATIE,⁴ in the area outside the restaurant and souvenir shop. The solicitors wore uniforms with the logos of the PNP and CATIE, plus formal identification cards that included a photo and signatures of park authorities. The uniforms were very similar to those used by the park rangers at PNP. A formal letter authorizing the collection of contributions/the survey was also clearly visible.

Only international tourists who could speak either Spanish or English participated in the experiment. The subjects were approached randomly, with the exception that two people in the same group of visitors were never approached. The selection was one of the key elements of the training sessions, and we checked daily for subject selection biases. No corrections were required after the pilot sessions.

Initially, subjects were asked if they were willing to participate in an interview about their visit to the PNP. No mention of voluntary contributions took place at this stage, so we expect that participation was not affected by monetary considerations. Overall participation rates were very high (above 85% each day). Once it was established that the subjects were international tourists and that they had already visited the crater, the solicitors proceeded with the interview. Before the experiment, subjects were asked a few questions regarding their visit to Costa Rica and to the national park. The solicitors were provided with standardized replies to the most common questions regarding the survey, the experiment, the institutions involved, etc. For further

⁴ Spanish acronym for the Tropical Agricultural Research and Higher Education Center, which had the main responsibility for data collection.

information the participants were advised to talk to the main supervisor of the contribution campaign.

In total 991 subjects participated in the experiments. We conducted both experiments with hypothetical and with actual contributions. For each type of experiment, we used anonymous and non-anonymous treatments as well as three different reference levels of the stated contributions of others. Table 1 summarizes the experimental design for all treatments. To avoid cross-contamination we decided to conduct the hypothetical and actual treatments during the same period, but never simultaneously. This means that all solicitors worked on hypothetical contributions during one part of the day and actual contributions during the other part of the day. This ordering was randomly decided. All the other different treatments were conducted simultaneously, and they were randomly distributed both in terms of time of day and among solicitors.

<<Table 1 about here>>

The different treatments required slight modifications of the interviewing script, as outlined below, but we were very careful in limiting the differences among the treatments. Subjects also received a card where they could read the scenario and the instructions for the voluntary contribution. The experiment began with the following sentence (the same for all):

"I will now read to you some information about the funding of national parks in Costa Rica. Here is a paper with the information I will read."

After this, the participants were told about the main purpose of the request for a contribution. The wording that is unique for the hypothetical treatment is in parentheses, whereas the corresponding wording for the actual treatment is in brackets.

"The System of National Parks in Costa Rica is now suffering from the lack of funds to achieve a good management of the parks, both for biodiversity conservation and tourism. Available funds are simply not enough and national parks are trying to obtain new funds. We are now (researching) [testing] a system at Poas National Park where visitors can make donations to the park. The entrance fee (would remain) [remains] the same seven dollars, but people (would have) [have] the possibility to make voluntary donations to the park in addition to the fee. Contributions (would) [will] be used to improve the standard of living of park rangers, to provide for better trails and to make sure that this beautiful and unique ecosystem is well taken care of."

The effect of a social reference point was investigated by providing the subjects with information of a typical previous contribution of others. If a reference point was provided, the following sentence was read:

"We have interviewed tourists from many different countries and one of the most common donations has been 2 / 5 / 10 US dollars."

We obtained the monetary reference values from a pilot study conducted at the same park right before the main experiment; thus, the reference information is not based on deception. In the treatments with no mentioned reference amount, we simply omitted the above sentence.

Finally, the actual request for a contribution differed depending on whether the contribution was to be anonymous or not. In the anonymity case, subjects were asked to go into a private area that was part of our interviewing station and write down their contribution/put their contribution, if any, in a sealed envelope and then into a small ballot box. This way their contribution was completely anonymous to the solicitor.⁵ The following text was then read:

"(If there was a possibility, how much would you donate?) [How much are you willing to donate to this fund?] Please go to the booth and (write down the amount of money you would like to donate if you had the possibility) [put the amount of money you would like to donate in the envelope]. Remember that donations will be used exclusively to maintain and improve the Poas National Park, as described before. When you are done, (please fold it up twice) [please seal the envelope] and put it in this box. Do not show it to me, because your (stated donation) [donation] should be completely anonymous. Please put the (paper) [envelope] in the box even if you do not wish to donate anything."

⁵ In order for us to identify the contributions and link them to the other questions in the questionnaire, an ID number was written on the envelope. The subjects were informed about the ID number and the reason for using it. The important feature is that the solicitor was not able to observe the contribution, not even afterwards.

We provided a locked ballot box in which the contributions were put. This box was actually part of the interviewing station used for the experimental session. In the nonanonymous setting, the following text was read:

"(If there was a possibility, how much would you donate?) [How much are you willing to donate to this fund?] Remember that donations will be used exclusively to maintain and improve the Poas National Park, as described before. When you are done reading, please (tell me the amount of money you would like to donate if you had the possibility) [give the envelope and your contribution to me so that I can count and register your donation before sealing the envelope. Please return the envelope even if you do not wish to donate anything]."

Thus, in this treatment the subjects were well aware that the solicitor was observing each contribution. Besides the differences described above, everything else was identical in all interviews and the typical variations of a field experiment (weather, type of tourist, etc) are expected to affect our results randomly.

3. Experimental Results

Table 2 presents the basic results of the experiments.

<<Table 2 about here>>

The most striking finding is the large amount of hypothetical bias. In the actual contribution treatment, 48% of the subjects chose to contribute and the average contribution was \$2.43, while in the hypothetical contribution treatment, 87% of the subjects stated that they would contribute an average of \$7.58.⁶ Thus, the average contribution in the hypothetical treatment is more than three times as large as in the actual treatment, and the difference is highly significant using a simple t-test. The large hypothetical bias came as no surprise. First, there is much evidence suggesting the existence of a hypothetical bias (List and Gallet, 2001) unless certain measures are taken, e.g. the use of so-called cheap-talk scripts (e.g. Cummings and Taylor, 1999). We

⁶ As always in stated preference surveys with an open-ended question, a number of respondents state very high numbers. These responses have a strong influence on the average contribution. We have therefore dropped observations stating contributions larger than \$100. The lowest contribution we deleted was \$450. In the real contribution experiment, the highest contribution was \$50.

did not take any such measures. Second, there is also evidence that the hypothetical bias is particularly large for public goods, compared to private goods (List and Gallett, 2001; Johansson-Stenman and Svedsäter, 2007).

The signs of the effects of different social contexts are largely as expected. For example, if people choose to donate, they will donate substantially more if they are given a \$10 reference point instead of a \$2 reference point. This holds for both the hypothetical and the actual treatments. The effect of anonymity is less clear. In the case of actual contributions, the conditional contribution is larger in the non-anonymous case, as one might expect, whereas the opposite pattern holds in the hypothetical case.

However, the main purpose here is neither to investigate the extent of hypothetical bias nor to quantify the importance of various kinds of social contexts, but instead to investigate the response differences between the hypothetical and actual treatments with respect to these social contexts. Table 3 summarizes these differences.

<<Table 3 about here>>

The first part in Table 3 reports the comparison between non-anonymous and anonymous treatments. For example, for hypothetical contributions, the share of people contributing is 3 percentage points lower in the non-anonymous treatment, and the sample average contribution is \$0.67, or 8 percent, lower. By comparing the second and third column, we can compare the response difference between hypothetical and actual contributions for a given social context treatment. Although there are indeed differences between the hypothetical and actual treatments, they are rather small (in particular compared to the hypothetical bias). More importantly, although we exclude some extreme outliers, the mean values are still rather sensitive to a few observations.

In order to deal with the outlier problem, we also present the results from a regression analysis. The dependent variable, contribution, is censored since it equals zero for a substantial fraction of the subjects. In addition, there are two issues of interest here: whether to contribute anything at all and how much to contribute, given a positive contribution. Since there are good reasons to consider these as two different decisions, a basic Tobit model would be inappropriate. Here we will therefore instead use a simple two-stage model. The decision whether to contribute anything or not is modeled with a standard Probit model. The decision concerning how much to contribute, given a positive contribution, is modeled with a regression model using only subjects with a

positive contribution. For completeness, we present both a standard OLS regression and a robust regression, where the latter puts a lower weight on outliers.⁷ The base case in the regression models is given by actual contributions in the anonymous treatment with no mention of a reference contribution. In Table 4, marginal effects for the two estimated models are presented together with the total marginal effect, i.e. including the effects of the Probit stage. All marginal effects are calculated at sample means.⁸ The total marginal effect is calculated as:

$$\frac{\partial E[C_i]}{\partial x_i} = \frac{\partial P[C_i > 0]}{\partial x_i} E[C_i | C_i > 0] + \frac{\partial E[C_i | C_i > 0]}{\partial x_i} P[C_i > 0]$$

where $E[C_i]$ is the expected contribution of individual *i*, $P[C_i > 0]$ is the probability that individual *i* contributes anything at all, and x_i is a covariate. Both the probit model and the regression models include a constant.

We present four different models for the contribution decision: two where the dependent variable is the contribution (one with a standard OLS and one with a robust regression), and two where the dependent variable is the natural logarithm of the contribution (one with a standard OLS and one with a robust regression). In all models we pool the hypothetical and actual contribution data.

In order to correct for an overall hypothetical bias we include a dummy variable for the hypothetical experiment. To be able to identify response differences between the hypothetical and actual contribution treatments with respect to the different social contexts (the main task of this paper), we create interaction variables between the dummy variable for hypothetical treatment and the dummy variables for each social context. The results are presented in Table 4.

<<Table 4 about here>>

The coefficient associated with the hypothetical experiment is, as expected, large and highly significant in all models, reflecting a large hypothetical bias. The following four

⁷ We use the rreg command in STATA. First a standard regression is estimated, and observations with a Cook's distance larger than one are excluded. Then the model is estimated iteratively: it performs a regression, calculates weights based on absolute residuals, and regresses again using those weights (STATA, 2005). See Rousseeuw and Leroy (1987) for a description of the robust regression model.

⁸ For the probit model, the marginal effect for dummy variables is for a discrete change of the variable from zero to one.

coefficients in Table 4 show the influence of the different social contexts for the actual contribution experiment. Interestingly, there is no difference between the anonymous and non-anonymous treatments. These results can be compared to List et al. (2004) who found that the proportion of subjects voting in favor of a proposal of financing a public good was significantly lower in a treatment where subjects are completely anonymous (20%) compared with a treatment where the solicitor observes the behavior (38%). The likelihood of a positive contribution is also higher in the treatment with a \$2 reference contribution compared with giving no reference information at all, whereas the corresponding effect on conditional contributions is negative. It thus appears that while providing a low reference point increases the probability of a positive contribution, the average size of the contribution is lower compared to not providing a reference point.

Our main interest lies in the last four coefficients. They reflect the difference in social context effects between the hypothetical and actual experiments, where we have controlled for an overall difference between the two experiments. For non-anonymity we do not find any significant difference between the hypothetical and actual experiments for any of the presented models. For reference contributions, we do not find any significant difference between the hypothetical and actual experiments for the \$2 and \$5 reference contributions; this applies both for the probability of a positive contribution and for the size of the conditional contribution. For the \$10 reference contribution, we do not find any significant difference in most models. However, in the case of a robust regression where the dependent variable is the contribution, we do find a significant difference (at the 10 % level). For the \$10 reference level, the increase in contributions is \$1.40 higher in the hypothetical compared with the actual experiments. This finding is far from robust, however, and in the standard OLS regression the sign is reversed (although the effect is insignificant).9 In the two models with the log of contribution as the dependent variable, both the OLS and the robust regression show that the influence of the \$10 reference level on the conditional contribution is about 20% higher in the hypothetical compared to the actual treatment, but the coefficient is insignificant in both cases.

⁹ The underlying reason for this rather large difference between the robust regression and the OLS results is of course the influence of a few large contributions.

4. Conclusions

This paper tests whether people are more influenced by social contexts in a hypothetical experiment than in an experiment with actual monetary implications. We base the test on a natural field experiment with voluntary contributions to a national park in Costa Rica. We find a large hypothetical bias. However, we do not find any significant differences between hypothetical and actual contributions with respect to the effects of social context, with the exception of one treatment and one regression model for which a significant effect at the 10 % level was observed. The results thus suggest that social context is important in general, and is not a phenomenon that is primarily present in situations that do not involve tradeoffs with actual money. This can be compared to the findings by List et al. (2004), who observed similar effects of different information treatments for hypothetical and actual voting treatments. Our results consequently imply a generalization of the findings by List et al. to a field experiment setting most importantly, but also to encompass provided reference contributions.

Our results also have important implications for validity tests of stated preference methods, such as the contingent valuation method. A frequently used test, which is typically considered reliable, is to compare the hypothetical responses from a stated preference method with a corresponding set-up that involves actual money; see e.g. Cummings et al. (1997) and Blumenschein et al. (2007). However, it follows from the results here that treatments that involve actual monetary payments are also vulnerable to framing effects, which calls such tests into question; this conclusion parallels List et al. (2004). Moreover, we have in addition shown that people appear to be just about as vulnerable to framing effects even if they do not know that they are participating in an experiment. Thus, the result of the validity test is not only vulnerable to the framing of the stated preference formulations (use of cheap talk scripts, etc.), but also to the context in which the actual behavior is observed. If the ultimate purpose of the test is to find out the extent to which the stated preference method reflects the valuation in reality, it is thus important that the actual comparison case as closely as possible resembles the social context in which the valuation typically takes place in reality. Future research based on other samples and different situations is encouraged in order to test the extent to which the conclusions here are robust.

References

- Akerlof, G. and R. Kranton (2000). Economics and identity, *Quarterly Journal of Economics* 115, 715-53.
- Alpizar, A., F. Carlsson and O. Johansson-Stenman (2007). Anonymity, Reciprocity, and Conformity: Evidence from Voluntary Contributions to a National Park in Costa Rica, Working Papers in Economics No. 245, Department of Economics, Göteborg University.
- Bertrand, M. and S. Mullainathan (2001). Do people mean what they say? Implications for subjective survey data, *American Economic Review, Papers and proceedings* 91, 67-72.
- Blamey, R.K., J.W. Bennett and M.D. Morrison (1999). Yea-saying in contingent valuation surveys, *Land Economics* 75, 126-141.
- Blumenschein K., Blomquist, G.C., Johannesson, M., Horn, N., Freeman, P. (2007). Eliciting willingness to pay without bias: evidence from a field experiment. *Economic Journal*, forthcoming.
- Cookson, R. (2000). Framing Effects in Public Goods Experiments. *Experimental Economics* 3, 55-79.
- Cummings, R.G. and L.O. Taylor (1999). Unbiased Value Estimates for Environmental Goods: A Cheap Talk Design for the Contingent Valuation Method, *American Economic Review* 89, 649-65.
- Cummings, R., S. Elliot, G. Harrison and J Murphy (1997). Are Hypothetical Referenda Incentive Compatible, *Journal of Political Economy* 105, 609-621.
- Fischbacher, U., S. Gaechter and E. Fehr (2001). Are people conditionally cooperative? Evidence from a public goods experiment, *Economic Letters* 71, 397–404.
- Frey, B. and S. Meier (2004). Social Comparisons and Pro-Social Behavior: Testing "Conditional Cooperation" in a Field Experiment, *American Economic Review* 94, 1717-1722.
- Gächter, S. (2006), Conditional cooperation: Behavioral regularities from the lab and the field and their policy implications, CeDEx Discussion Paper No. 2006-03, University of Nottingham.
- Hanemann, W. M. (1994). Valuing the Environment through Contingent Valuation, Journal of Economic Perspectives 8, 19-43.

- Harrison, G. and J. List (2004). Field Experiments, *Journal of Economic Literature* 42, 1009-1055.
- Heldt, T. (2005). Conditional cooperation in the field: cross-country skiers' behavior in Sweden, Working Paper Department of Economics and Society, Dalarna University.
- Hoffman, E., K. McCabe, J. Shachat and V. Smith (1994). Preferences, property rights, and anonymity in bargaining games, *Games and Economic Behavior* 7, 346–380.
- Holmes, T. and R. Kramer (1995). An Independent Sample Test of Yea-saying and Starting Point Bias in Dichotomous-Choice Contingent Valuation, *Journal of Environmental Economics and Management* 29, 121-132.
- Johansson-Stenman, O. and H. Svedsäter (2007). Self image and the valuation of public goods, Working paper, Department of Economics, Göteborg University.
- Karlan, D. and J. List (2007). Does Price Matter in Charitable Giving? Evidence from a Large-Scale Natural Field Experiment, *American Economic Review*, forthcoming.
- Landry, C., A. Lange, J. List, M. Price and N. Rupp (2006). Toward an understanding of the economics of charity: evidence from a field experiment, *Quarterly Journal* of Economics 121, 747-782.
- Legget, C., N. Kleckner, K. Boyle, J. Duffield and R. Mitchell (2003). Social Desirability Bias in Contingent Valuation Surveys Administered through In-Person Interviews, *Land Economics* 79, 561-575.
- Levitt, S. and J. List (2007). What do laboratory experiments tell us about the real world?, *Journal of Economic Perspectives*, forthcoming.
- List, J. A., P. Berrens, A. K. Bohara, and J. Kerkvliet (2004). Examining the Role of Social Isolation on Stated Preferences, *American Economic Review* 94, 741-752.
- List, J. A., and C. A. Gallet (2001). What Experimental Protocol Influence Disparities Between Actual and Hypothetical Values?, *Environmental and Resource Economics* 20, 241-254.
- List, J.A. and D. Lucking-Reiley (2002). The Effects of Seed Money and Refunds on Charitable Giving: Experimental Evidence from a University Capital Campaign. *Journal of Political Economy* 110, 215-233.

- McCabe, K., V. Smith and M. LePore (2000) Intentionality Detection and "Mindreading": Why does game form matter?, *Proceedings of the National Academy of Sciences* 97, 4404-4409.
- Martin, R. and J. Randal (2005). Voluntary contributions to a public good: a natural field experiment, Unpublished manuscript, Victoria University, New Zealand.
- Mitchell, R. and R. Carson (1989). Using Surveys to Value Public Goods: The Contingent Valuation Method. Resources for the Future, Washington D.C.
- Rousseeuw P.J. and A.M. Leroy (1987). *Robust Regression and Outlier Detection*. Wiley, New York.
- Russel, C., T. Bjorner and C. Clark (2003). Searching for evidence of alternative preferences, public as opposed to private, *Journal of Economic Behavior and Organization* 51, 1-27.
- Schkade, D. A. and J.W. Payne (1994). How People Respond to Contingent Valuation Questions - a Verbal Protocol Analysis of Willingness-to-Pay for an Environmental Regulation, *Journal of Environmental Economics and Management* 26, 88-109.
- Shang, J. and R. Croson (2006). Field Experiments in Charitable Contribution: The Impact of Social Influence on the Voluntary Provision of Public Goods, Unpublished manuscript.
- Soetevent, A.R. (2005). Anonymity in Giving in a Natural Context: An Economic Field Experiment in Thirty Churches, *Journal of Public Economics* 8,: 2301-2323.

STATA (2005). STATA Base Reference Manual, Stata Press: College Station, TX.

Tversky, A., and D. Kahneman (1981). The framing of decisions and the psychology of choice, *Science* 211, 453-8.

 Table 1. Experimental design for all treatment combinations.

	Hypothetical	contributions	Actual con	Total	
	Anonymous	Non-anonymous	Anonymous	Non-anonymous	_
No reference contribution	62 observations	62 observations	62 observations	63 observations	250
Reference contribution: \$2	63 observations	62 observations	61 observations	63 observations	249
Reference contribution: \$5	60 observations	61 observations	62 observations	62 observations	249
Reference contribution: \$10	62 observations	62 observations	62 observations	62 observations	249
Total	247 observations	247 observations	247 observations	250 observations	991

Table 2. Summary results of contributions for different treatments.

Treatment	Nobs.	Share pos. contribution	Conditional average contribution (std)	Sample average contribution (std)
		<u>H</u>	pothetical contributions	
Total	494	0.87	8.73	7.58
			(10.56)	(10.27)
Anonymous	247	0.88	8.97	7.92
-			(11.69)	(11.35)
Non-anonymous	247	0.85	8.49	7.25
-			(9.26)	(9.07)
No Reference	124	0.83	11.76	9.77
			(15.81)	(15.07)
Reference: \$2	125	0.88	6.00	5.28
			(6.94)	(6.80)
Reference: \$5	121	0.88	7.08	6.20
			(5.82)	(5.92)
Reference: \$10	124	0.89	10.22	9.07
			(10.08)	(10.03)
			Actual contributions	
Total	497	0.48	5.09	2.43
			(5.74)	(4.70)
Anonymous	247	0.47	5.00	2.37
2			(5.65)	(4.62)
Non-anonymous	250	0.48	5.17	2.48
•			(5.84)	(4.80)
No Reference	125	0.45	6.48	2.90
			(7.45)	(3.58)
Reference: \$2	124	0.56	3.46	1.92
			(3.81)	(3.32)
Reference: \$5	124	0.44	4.82	2.10
			(3.24)	(3.21)
Reference: \$10	124	0.47	5.92	2.78
			(7.05)	(5.20)

	Contribution differences between samples						
—	Hypothetical contributions	Actual contributions					
	Non-anonymous - anonymous						
Share positive	- 3 percentage points	1 percentage point					
contribution							
Conditional contribution	-\$0.48	\$0.17					
	(-5%)	(3%)					
Sample contribution	-\$0.67	\$0.11					
-	(-8%)	(5%)					
	Reference \$2 - No reference						
Share positive	5 percentage points	8 percentage points					
contribution							
Conditional contribution	-\$5.76	-\$3.02					
	(-49%)	(-47%)					
Sample contribution	-\$4.49	-\$0.98					
1	(-46%)	(-34%)					
	Reference \$5 -	- No reference					
Share positive	5 percentage points	-1 percentage point					
contribution							
Conditional contribution	-\$4.66	-\$1.66					
	(-40%)	(-26%)					
Sample contribution	-\$3.57	-\$0.80					
	(-36%)	(-28%)					
	Reference \$10 - No reference						
Share positive	6 percentage points	2 percentage points					
contribution							
Conditional contribution	-\$1.54	-\$0.56					
	(-13%)	(-9%)					
Sample contribution	-\$0.7	-\$0.12					
•	(-7%)	(-4%)					

Table 3. Contribution differences between different treatments divided along hypothetical and actual contribution treatments.

Table 4. Regression analysis of hypothetical and actual contributions to the national park. The coefficients reflect marginal effects evaluated at sample means. All models include an intercept, solicitor dummy variables and subject characteristics variables. P-values in parentheses.

	Probit	Dependent variable: Contribution			Dependent variable: log(Contribution)				
		OLS-regression		Robust regression		OLS-regression		Robust regression	
		Conditional	Total effect	Conditional	Total effect	Conditional	Total effect	Conditional	Total effect
		effect		effect		effect		effect	
Hypothetical	0.390	5.604	6.649	1.935	4.191	0.613	1.034	0.442	0.920
contribution (HC)	(0.000)	(0.001)	(0.000)	(0.003)	(0.000)	(0.000)	(0.000)	(0.002)	(0.000)
Non-anonymous	0.013	0.072	0.147	-0.119	0.018	0.029	0.040	-0.043	-0.007
treatment	(0.738)	(0.951)	(0.891)	(0.790)	(0.970)	(0.791)	(0.721)	(0.673)	(0.946)
Treatment with a \$2	0.089	-2.944	-1.315	-1.995	-0.679	-0.576	-0.244	-0.699	-0.327
reference contribution	(0.086)	(0.073)	(0.373)	(0.001)	(0.304)	(0.000)	(0.112)	(0.000)	(0.026)
Treatment with a \$5	-0.018	-1.450	-1.104	-0.069	-0.179	-0.106	-0.100	-0.103	-0.098
reference contribution	(0.752)	(0.404)	(0.481)	(0.916)	(0.800)	(0.504)	(0.546)	(0.486)	(0.535)
Treatment with a \$10	0.015	-0.328	-0.111	0.110	0.182	-0.139	-0.070	-0.074	-0.026
reference contribution	(0.791)	(0.848)	(0.943)	(0.865)	(0.793)	(0.372)	(0.666)	(0.612)	(0.866)
HC*Non-anonymous	-0.062	-0.428	-0.750	0.276	-0.278	-0.001	-0.100	0.087	-0.041
treatment	(0.347)	(0.772)	(0.585)	(0.620)	(0.687)	(0.997)	(0.525)	(0.488)	(0.786)
HC*Treatment with a	-0.003	-2.824	-1.911	-0.805	-0.558	-0.045	-0.034	0.035	0.020
\$2 ref. contribution	(0.977)	(0.169)	(0.315)	(0.299)	(0.554)	(0.811)	(0.875)	(0.840)	(0.925)
HC*Treatment with a	0.076	-2.991	-1.437	-0.655	0.128	-0.161	0.014	-0.114	0.046
\$5 ref. contribution	(0.333)	(0.162)	(0.461)	(0.417)	(0.888)	(0.408)	(0.946)	(0.533)	(0.820)
HC*Treatment with a	0.073	-1.145	-0.224	1.420	1.494	0.221	0.265	0.205	0.255
\$10 ref. contribution	(0.359)	(0.586)	(0.907)	(0.074)	(0.101)	(0.248)	(0.206)	(0.252)	(0.206)
Solicitor dummy variables	Included	Included	Included	Included	Included	Included	Included	Included	Included
Subject characteristics variables	Included	Included	Included	Included	Included	Included	Included	Included	Included