Altruism and Noisy Behavior in One-Shot Public Goods Experiments
Instructions and Data Appendix

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September 1999

Abstract. An increase in the common marginal value of a public good has two effects: it increases the benefit of a contribution to others, and it reduces the net cost of making a contribution. These two effects can be decomposed by letting a contribution have an "internal" return for oneself that differs from the "external" return to someone else. We use this framework in a series of one-shot public goods games in which subjects make choices in ten treatments with no feedback. Contributions are generally increasing in the external return and group size, which suggests that altruism in this context is not simply of the "warm glow" variety, i.e. giving only for the sake of giving. Contributions are also increasing in the internal return, indicating that decisions are sensitive to the costs of helping others. We specify a logit equilibrium model in which individuals are motivated by own and others' earnings, and in which choice is stochastic. Maximum likelihood estimates of altruism and logit error parameters are significant and of reasonable magnitudes, and the resulting two-parameter model tracks the pattern of contributions across the ten treatments remarkably well.

Appendix A: Instructions

This is an experiment about decision making. You will be paid for participating, and the amount of money you earn depends on the decisions that you and the other participants make. At the end of today's session you will be paid privately and in cash for your decisions. Several research foundations have provided the funds for this experiment.

You will never be asked to reveal your identity to anyone during the course of the experiment. Your name will never be associated with any of your decisions. In order to keep your decisions private, please do not reveal your choices to any other participant.

At this time, you will be given $6 for coming on time. All the money that you earn after this will be yours to keep, and your earnings will be paid to you in cash at the end of today's experiment.

THIS EXPERIMENT

In this experiment you will be asked to make a series of choices about how to allocate a set of tokens. You and the other subjects will be randomly assigned to groups, and you *will not* be told each others' identities.

In every choice you will be told how many people are in your group. In each choice you will have 25 tokens to allocate. You must choose how many of these tokens you wish to keep and how many tokens you wish to invest. The amount of money that you earn depends on how many tokens you keep, how many tokens you invest, and how many tokens the others in your group invest.

EXAMPLES OF CHOICES YOU WILL MAKE IN THIS EXPERIMENT

Each choice that you make is similar to the following:

Example 1: You are in a group of size 2 (you plus one other). Both of you have 25 tokens to allocate. You will earn 5 cents for each token you keep. For each token you invest, you will earn 4
cents and the other person will earn 3 cents (a total of 7 cents for both of you together).

For each token the other person keeps, this person will earn 5 cents. For each token the other person invests, this person will earn 4 cents and you will earn 3 cents (a total of 7 cents for the group).

To summarize, you will earn:

5 cents times the number of tokens you keep
+ 4 cents times the number of tokens you invest
+ 3 cents times the number of tokens the other person in your group invests.

Keep _____ tokens Invest _____ tokens (These choices must sum to 25 tokens)

You can choose any number of tokens to keep and any number to invest, but *the number of tokens you keep plus the number of tokens you invest must sum to the total number of tokens you have been given to allocate.*

Please feel free to use your own calculator, or one provided by the experimenter, to verify earnings and to ensure that all tokens have been allocated.

To be sure you understand how your earnings would be calculated in this example, please fill out the following. Choose numbers for tokens that you keep, the tokens that you invest, and the tokens that the other person invests. This is only to illustrate how your earnings are calculated. In the actual experiment, everyone will make their own choice and we will calculate all earnings for you.

If I Keep _____ tokens and invest _____ tokens; and the other person in my group invests _ _____ tokens, I will earn:

_____ cents for the tokens that I keep (5 cents each)

_____ cents for the tokens that I invest (4 cents each)

_____ cents for the tokens the other person invests (3 cents each)

For a total of: _____ cents.

Please fill this out, and we will come to each of you individually to answer any questions that you have and to check your answers.

When you are done, you may proceed to the second example:

Example 2: You are in a group of size 4 (you plus 3 others). Each of you has 25 tokens to allocate. You will earn 5 cents for each token you keep. For each token you invest, you will earn 2 cents and each of the other three people in your group will earn 3 cents (a total of 11 cents for all four of you together).

For each token another person in your group keeps, this person will earn 5 cents. For each token this person invests, this person will earn 2 cents, and each of the other people in your group will earn 3 cents (a total of 11 cents for the group).

To summarize, you will earn:

5 cents times the number of tokens you keep

+ 2 cents times the number of tokens you invest

+ 3 cents times the number of tokens the other people in your group invest.

Keep _____ tokens Invest _____ tokens (These choices must sum to 25 tokens)

Again, to be sure you understand how your earnings would be calculated in this example, please fill out the following:

If I Keep _____ tokens and invest _____ tokens; and the other three people in my group invest a total of _____ tokens, I will earn:

_____ cents for the tokens that I keep (5 cents each)

_____ cents for the tokens that I invest (2 cents each)

_____ cents for the tokens the other three people invest (3 cents each)

For a total of: _____ cents.

EARNING MONEY IN THIS EXPERIMENT

You will be asked to make 10 allocation decisions like the examples we have just discussed. We will calculate your earnings as follows:

After all your decision sheets have been collected, we will verify that everyone has completed all decisions and that all 25 tokens have been allocated for each choice. Then we will roll a 10-sided die. The number that appears on the die will determine which *one* of your decisions we will carry out. For example, if we roll a 1 you will be paid for your first decision. If we roll a 0 you will be paid for your 10th decision (the die contains the numbers 0 through 9). You will be paid only for the decisions that you and the others in your group make for this one decision. For example, if a 1 is rolled you will be paid based on the decisions you and the others in your group made in decision 1. You will not be paid for any other decisions.

After determining which decision is chosen, we will randomly assign you to groups of the size specified in this decision. We will do this by drawing numbered ping-pong balls. For example, if a decision is chosen in which you are in a group of size four, we will draw four ping-pong balls. The subjects whose ID numbers correspond to these four draws will be in one group. We would then draw another four balls to determine which subjects are in the second group. This would be repeated until all subjects are assigned to a group.

You will then earn money based on the number of tokens you kept in this decision, the number of tokens you invested in this decision, and the number of tokens invested by the other(s) in your group (the total number invested by each other person in your group) in this decision.

After all choices are made, we will conduct another decision-making experiment. We will compute your earnings for this part during the second experiment. At the end of the second experiment, we will return an earnings report to you so that you may see how much money you earned in this portion of the experiment. You will only be told the total number of tokens invested by the other(s) in your group. You will not be told who you are matched with.

During the experiment, you are not permitted to speak or communicate with the other participants. If you have a question while the experiment is going on, please raise your hand and one of us will come to your desk to answer it. At this time, do you have any questions about the instructions or procedures? If you have a question, please raise your hand and one of us will come to your seat to answer it.

On the following pages are the 10 choices we would like you to make. Please fill out the form, taking the time you need to be accurate. When everyone is done we will collect the forms.

DECISION SHEET

Please fill in all of the blanks for each choice below. Make sure that the number of tokens listed under *Keep* plus the number listed under *Invest* equals 25 tokens.

Choice 1. You are in a group of size _4_ (you plus three others). Each of you have 25 tokens to allocate. You will earn _5 cents_ for each token you keep. For each token you invest, you will earn _4 cents_ and each of the other three people in your group will earn _2 cents_ (a total of 10 cents for all four of you together).

For each token another person in your group keeps, this person will earn 5 cents. For each token this person invests, this person will earn 4 cents, and each of the other people in your group will earn 2 cents (a total of 10 cents for the group).

To summarize, you will earn:

5 cents times the number of tokens you keep
+ 4 cents times the number of tokens you invest
+ 2 cents times the number of tokens the other people in your group invest.

Keep _____ tokens Invest _____ tokens. (These choices must sum to 25 tokens)

(The other nine choices were presnted in a similar manner.)

Appendix B: Individual Data

Individual Token Contribution Decisions: University of Virginia Subjects

	Treatment									
group size	N=2	N=2	N=2	N=2	N=2	N=4	N=4	N=4	N=4	N=4
internal return	$0.02	$0.04	$0.04	$0.04	$0.04	$0.02	$0.02	$0.04	$0.04	$0.04
external return	$0.06	$0.02	$0.04	$0.06	$0.12	$0.02	$0.06	$0.02	$0.04	$0.06
subject 1	10	5	15	15	15	10	25	20	20	25
subject 2	1	7	7	1	0	2	2	6	0	3
subject 2	15	17	20	20	25	0	10	15	5	25
subject 4	0	3	10	15	23	0	5	15	20	25
subject 5	15	0	20	12	23	3	20	17	9	20
subject 6	0	3	5	5	5	0	0	3	3	5
subject 7	0	25	25	25	25	5	20	25	15	25
subject 8	5	5	15	15	15	5	5	10	10	15
subject 9	0	0	0	0	0	0	0	0	0	0
subject 10	0	0	0	0	0	0	0	0	0	0
subject 11	7	0	10	5	18	2	15	7	12	20
subject 12	7	12	17	20	24	1	14	20	15	21
subject 13	20	14	20	20	20	14	18	20	20	22
subject 14	0	0	0	0	0	0	0	0	0	0
subject 15	7	15	15	18	19	1	7	17	13	20
subject 16	10	5	15	18	20	8	12	12	15	18

Individual Token Contribution Decisions: University of South Carolina

	Treatment									
group size	N=2	N=2	N=2	N=2	N=2	N=4	N=4	N=4	N=4	N=4
internal return	$0.02	$0.04	$0.04	$0.04	$0.04	$0.02	$0.02	$0.04	$0.04	$0.04
external return	$0.06	$0.02	$0.04	$0.06	$0.12	$0.02	$0.06	$0.02	$0.04	$0.06
subject 17	14	10	12	12	15	11	14	10	13	14
subject 18	2	5	6	4	2	7	1	3	5	5
subject 19	4	1	5	2	1	3	10	1	5	1
subject 20	19	7	5	8	20	6	16	9	6	15
subject 21	15	14	20	15	10	7	6	8	3	21
subject 22	3	9	25	6	4	7	8	10	25	5
subject 23	15	10	15	15	15	15	20	20	20	20
subject 24	20	1	10	20	23	5	24	12	10	25
subject 25	10	11	20	13	22	8	12	8	12	10
subject 26	11	5	17	25	23	12	18	20	21	20
subject 27	4	0	15	15	25	5	25	10	18	20
subject 28	0	10	10	0	5	0	0	10	5	5
subject 29	2	1	4	5	7	1	3	2	3	5
subject 30	11	11	9	8	14	7	12	12	10	16
subject 31	10	1	13	23	25	2	5	5	13	20
subject 32	9	8	16	15	20	9	10	15	12	12