



Altruism and anonymity: A behavioral analysis



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ABSTRACT

The effect of anonymity on altruism was examined in a social discounting task with hypothetical rewards. Social discounting – the rate at which increases in social distance decrease value to the participant – was compared across three groups. Participants in the Anonymous group were told that recipients would not know who they were. Participants in the Observed group were asked to imagine that each of their choices was being observed by the recipient. Participants in the Standard group were given no special instructions with respect to anonymity or identity. Social discounting was measured at each of 7 social distances ranging from first closest friend or relative to the 100th closest. Social discount rates for all three groups were well described by hyperbolic functions. Participants in the Observed group were willing to forgo more money for the benefit of others (were more altruistic) than were those in the other two groups. Although participants in the Anonymous group, with no prospect of reciprocation, were willing to forgo less money for the sake of others than were those in the Observed group, they did express willingness to forgo significant amounts. This is some evidence that individual altruistic acts cannot be explained wholly by the possibility of reciprocation.

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1. Introduction

1.1. Altruism and anonymity

Behavior is said to be altruistic when it benefits others at a cost to the individual engaging in that behavior. In the laboratory, altruism is often studied in the context of game theory – e.g., prisoner's dilemma games, ultimatum games, or dictator games (see [Camerer, 2010](#) for a review). In dictator games, for example, participants are given a sum of money that they may divide between themselves and a recipient. Each participant may give the entire amount, any part of it, or nothing at all to the recipient. Numerous studies have found an effect of anonymity on generosity in such games ([Bolton et al., 1998](#); [Bolton and Zwick, 1995](#); [Charness and Gneezy, 2008](#); [Dufwenberg and Muren, 2006](#); [Frey and Bohnet, 1995](#); [Frohlich et al., 2001](#); [Hoffman et al., 1994](#)). In one experiment ([Hoffman et al., 1994](#)), twelve dictators entered a private cubicle one-by-one where they found an envelope containing 20 slips of paper; half were \$1 bills, the other half were the same size as the bills but blank. The dictators were instructed to take exactly 10 slips in any com-

bination of bills and blanks and then place the envelope containing the remaining 10 slips in a box. After all the dictators had taken their 10 items, the envelopes were given randomly to 12 recipient participants in another room. The experimenter could determine how many bills were left in each envelope, but could not identify which dictator had taken the bills from any particular envelope. In this anonymous situation, dictators were significantly less generous than they were in the standard experimenter-observed version of the procedure.

Providing a behavioral account for such results presents a serious challenge. Even without the anonymity component, a behavioral account of altruism would require identifying the reinforcers of altruistic acts. But individual altruistic acts cannot be reinforced. If psychologists should discover some occult reinforcer that follows an apparently altruistic act, then the act would, by definition, not be altruistic. How can a discipline that relies, for its explanatory power, on the concept of reinforcement explain acts which are, by definition, unreinforced? [Rachlin, 1994, 2002, 2003](#) has proposed a solution that parallels the solution to a corresponding problem in explaining self-control ([Rachlin, 1992, 2000](#)).

1.2. Analogy to self-control

Some self-controlled acts may be explained in terms of strict commitment ([Ainslie, 1992](#)) but most everyday-life instances of

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self-control cannot be so explained. Suppose I am walking down the street in a strange neighborhood and pass a bakery with an enticing smell wafting out the door. I am sorely tempted to go in, buy a cupcake, and eat it as I go on my way. It is too late to institute a commitment procedure such as putting a clothespin on my nose or walking down a different street. Nevertheless I do not give in to temptation; I walk straight ahead. What reinforces that act? Sometimes reinforcement of self-control is said to be delayed, but no particular delayed reinforcer is contingent on that particular act. Being healthy is correlated with a healthy pattern of eating and exercise, but not in a 1:1 manner with individual acts. The pattern of acts constituting healthy living is valuable in itself but no individual act comprising the pattern is either valuable or individually reinforced – unless you conceive that the entire pattern reinforces each of its own components. That is, the entire pattern serves as an Aristotelian *final cause* of its components (Rachlin, 1994).

A delay discount function plots the decline in the present value of a reward as a function of the delay to its receipt. The slope of the delay discount function is correlated with the temporal extent of the reinforced pattern. When the slope is steep, the temporal extent is narrow and the organism lacks self-control; when the slope is shallow, the temporal extent is wide and the organism behaves in a self-controlled manner. Thus, people with various addictions (alcohol, gambling, heroin, cocaine, cigarettes, etc.) have steeper delay discount functions than those without identified addictions (Bickel and Marsch, 2001); and children have steeper delay discount functions than adults (Green et al., 2006; Mischel et al., 1989).

1.3. Altruism as a behavioral pattern

Altruism may be viewed in a corresponding way. While it is illogical to say that an altruistic act is done because it is valuable in itself or externally reinforced, it is perfectly logical to say that such an act is part of a valuable pattern. Giving a dollar to a panhandler on the street may never be reinforced as such but being a generous person may be reinforced. It would be highly inefficient for a donor to determine the probability of reinforcement on each occasion for each individual donation; rather, the habit of giving may be reinforced. That habit may be highly valuable even though no single component of the habit is valuable (just as being a non-smoker is valuable although each single act of cigarette refusal may be of very low value and perhaps never individually reinforced). A social discount function measures the decline in value of a reward as the social distance increases between the giver and the recipient. Just as shallow delay discount functions have been found to correlate with self-controlled behavior, shallow social discount functions have been found to correlate with altruistic behavior in other contexts. For example, in previous social discounting research, people whose social discount functions were shallower tended to behave more altruistically in public goods and dictator games than people whose social discount functions were steeper (Jones and Rachlin, 2009); people with steeper delay discount functions – who valued future rewards less – tended also to have steeper social discount functions – valued rewards to others less (Rachlin and Jones, 2008a); and people valued money given to relatives more than they valued money given to nonrelatives at the same social distance (Rachlin and Jones, 2008b).

The conceptual basis for the analogy between self-control and altruism is the notion that people's relation to their future selves is analogous to their relation to other people (Ainslie, 1992; Rachlin, 2000; Trope and Liberman, 2003). But this analogy only goes so far. On an empirical level, human delay discount functions are steeper when higher-valued rewards are discounted than when lower-valued rewards are discounted (e.g., Green et al., 1997) while the reverse is the case for social discounting (Rachlin and Jones, 2008a). On a conceptual level, first, there is no process in social discounting

analogous to commitment in delay discounting. You can commit to give so much money to such and such a charity in the future, but that commitment operates over time not social space. Of more relevance to the present experiment, anonymity cannot be controlled in delay discounting. The donor and recipient are the same person. A participant in a delay discounting task might be asked to choose hypothetically between \$200 right now and \$1000 in 10 years. The participant is assumed to believe that 10 years hence she will remember that, in the past, she herself chose to forgo a smaller reward for the \$1000. It is conceivable that, with long delays, a person might forget a prior choice and be surprised at the sudden windfall; such forgetfulness might even be anticipated at the point of choice. But it would be difficult if not impossible to vary participants' knowledge of their own past sacrifices independently of delay itself. However, with social discounting, it is relatively easy to vary hypothesized knowledge by the recipient of the participant's identity – as in the present experiment.

1.4. Social discounting

Like delay discounting, social discounting is hyperbolic:

$$v = \frac{V}{1 + kN^s} \quad (1)$$

where V is the value of the undiscounted reward, v is the discounted value, N is the social distance, k is a constant measuring degree of discounting, and s is a constant measuring sensitivity to social distance (Jones and Rachlin, 2006). Unlike delay discounting, where sensitivity (s) has usually been found to be less than unity (e.g., Green and Myerson, 1996), social discount functions have almost always been well fit with $s = 1$. We do not ignore s in Eq. (1), however, because in the Observed condition of the present experiment it was found to be less than unity.

The general procedure for assessing social discounting was essentially the same across all prior studies. First, participants were asked to imagine making a list of the 100 people closest to them with #1 as the closest and #100 perhaps a person they barely knew. Then (in a booklet format) participants were asked a series of hypothetical questions of the form: "Which would you prefer, \$ X for yourself or \$75 for the N th person on your list?" X varied from question to question on a page, typically from 0 to 85 in either ascending or descending order. The rank order of social distance (N), varied from page to page, between 1 and 100. This method, very similar to that used to assess delay discounting (e.g., Green et al., 1997; Rachlin et al., 1991), generated crossover points that were used to fit Eq. (1). In all cases, the fit was quite good (R^2 between 0.97 and 0.99).

In previous studies of social discounting, degree of anonymity has not been specified in the instructions. Do participants imagine that recipients of money they chose to give will know who they are? Or will their generosity be anonymous? Does a participant imagine that her father will somehow be notified if she chooses \$50 for herself rather than \$75 for him? What if she is imagining that he is actually watching over her shoulder while she makes these choices? The present experiment examines how two contextual variables, anonymity of reward delivery and observation of choice, affect social discounting. Participants completed social discounting questionnaires that were virtually identical to those used in past experiments (e.g., Jones and Rachlin, 2006, 2009; Rachlin and Jones, 2008a,b, 2009). However, participants in one group (Anonymous) were told to assume that the rewards chosen for another person would be delivered anonymously. Participants in another group (Observed) were told to assume that when making choices (of the type, "Which would you prefer, \$ X for yourself or \$75 for the N th person on your list?") the relevant person (N) was watching them.¹

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