Altruism among kin vs. nonkin: effects of cost of
help and reciprocal exchange

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Abstract

Evolutionary principles suggest that there will be differences in the nature of altruism directed toward kin vs. nonkin. The present study sought to explore these differences. Participants were 295 undergraduate students who each completed a questionnaire about help exchanged with siblings, cousins, acquaintances or friends. For siblings, cousins and acquaintances, greater relatedness was associated with higher levels of helping. Friends were an exception, however, receiving as much or more help than kin. Consistent with an evolutionary analysis, as the cost of helping increased, kin received a larger share of the help given, whereas nonkin received a smaller share. For low-cost help, people helped friends more than siblings; for medium-cost help, they helped siblings and friends equally; and for high-cost help, they expressed a greater willingness to help siblings than friends. As expected, the level of reciprocal exchange was higher among acquaintances than among friends; however, there was also an unexpectedly high level of reciprocal exchange among kin.
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1. Introduction

In many species, greater relatedness is associated with higher levels of altruism, a pattern that makes good sense in light of Hamilton's (1964) kin selection theory (KST). Data from various sources indicate that humans are no exception (Burnstein et al., 1994; Daly & Wilson, 1988; Essock-Vitale & McGuire, 1985; Korchmaros & Kenny, 2001, 2006; Neyer & Lang, 2003; Tooley et al., 2006; Webster, 2003). Considered in isolation, however, KST is unable to explain much of the data on human altruism. First, although unrelated acquaintances receive less help than kin (Burnstein et al., 1994), they do typically receive some help. In addition, certain categories of nonkin are exceptions to the general rule that people help kin more than nonkin. This includes friends, who often receive as much or more help than kin (Cialdini et al., 1997; Essock-Vitale & McGuire, 1985; Kruger, 2003). The present study explored some of the ways in which these findings can be reconciled with KST.

1.1. Cost of helping

An initial suggestion concerns the cost of help. Although KST does not rule out the evolution of nonkin altruism, it

does imply that it cannot be selected unless there is a return benefit to the altruist or the altruist's kin (but see Fehr & Henrich, 2003; Gintis, 2000; Richerson et al., 2003, for discussion of how genetic or cultural group selection could produce altruism in the absence of any such benefit). There are various channels through which return benefits could come, e.g., through the reciprocation of help, an increase in mating opportunities, or an enhancement of the altruist's reputation (Gurven, 2004). However, it is never guaranteed that altruism will bring a return benefit, and the greater the cost of altruism, the greater the net direct fitness cost if it does not. This is less problematic when the recipient is a genetic relative, because the direct fitness cost may be compensated by the indirect fitness benefit associated with aiding relatives. So, although people may be altruistic toward nonkin, one would expect that this would be somewhat dependent on the cost of help. This leads to the following hypothesis:

> *Hypothesis 1.* As the cost of helping increases, the share of help given to kin will increase, and the share given to nonkin will decrease.

1.2. Levels of reciprocal exchange

A second suggestion involves considering KST in tandem with Trivers's (1971) reciprocal altruism theory

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(RAT), according to which altruism can enhance direct fitness as long as there is sufficient probability that it will be reciprocated. Again, reciprocation is less important among kin than among nonkin, because the indirect fitness benefits of helping kin can outweigh the direct fitness costs of unreciprocated help. This has led to the suggestion that kin will exhibit a lower level of reciprocity than nonkin, a hypothesis that has found some support (Berté, 1988; Essock-Vitale & McGuire, 1980, 1985; Hames, 1987; but see Gurven et al., 2001). There is a complication, however. Some commentators argue that RAT does not provide an adequate explanation for altruism among close friends (Roberts, 2005; Silk, 2003; Tooby & Cosmides, 1996). People are often angered by the suggestion that their friendships are founded on the exchange of favors, and deny that when they help their friends they do so with the expectation of immediate repayment. This rules out strict tit-for-tat reciprocity as a model for altruism among friends. However, equity and reciprocity are nonetheless important in friendships (Silk, 2003). It remains possible, therefore, that friendships are founded on reciprocity but that exchanges of help among friends take place within an extended timeframe, with friends tolerating longer periods of imbalance. This leads to the hypothesis that there will be a higher level of reciprocity among acquaintances than among friends. However, because kinship reduces the need for reciprocation, the level of reciprocity found among kin will be lower still than that among friends.

> Hypothesis 2. The association between help given and help received will be larger for acquaintances than for friends, and larger for friends than for siblings or cousins.

2. Method

2.1. Participants

Participants were 295 undergraduate psychology students: 146 (49.5%) males and 149 (50.5%) females. The minimum number of participants needed for each experimental condition was determined in advance using the computer program GPOWER, with alpha set at .05 and power at .8, and assuming a medium effect size. Ages ranged between 16 and 46 (mean=18.71; S.D.=2.58), with no significant age difference between the sexes (t_{293}=1.46, p=.15).

2.2. Materials and procedure

Participants were recruited online from the pool of undergraduate psychology students and received course credit for their participation. Some were tested alone, but most were tested in groups of up to 30 people (median=25). Participants reported to a classroom and sat in forward-facing desks, spaced apart from one another. The materials for the study consisted of a booklet of questionnaires titled "Understanding Behavior" (available on request from the

author). After providing general biographical information, participants completed the following questionnaires:

2.2.1. Finding Person A

This questionnaire assigned participants to one of eight conditions, each of which involved answering questions about one member of their social network ("Person A"). The eight conditions were defined by (a) the sex of the target individual, and (b) the relationship of the target individual to the participant: full sibling (r=.5), cousin (r=.125), acquaintance (r=0) or close friend (r=0). Siblings and cousins were chosen to represent kin because, like acquaintances and friends, they are typically similar in age and of the same generation. Second-degree kin (r=.25) were not represented in this study because the most common second-degree kin (i.e., aunts, uncles, nephews and nieces) are usually not of the same age or generation, whereas second-degree kin who are of the same age and generation (i.e., half-siblings) are relatively uncommon. Following Cialdini et al. (1997), an acquaintance was defined as someone whose name you know and who you would stop to chat with for a few minutes, but not someone you ever arrange to meet and go out with.

Because not everyone has a sibling or cousin, the assignment of participants to conditions was based on a decision procedure embodied in eight questions. The first question might ask, for example, whether the participants had a full sister. If they did, they were informed that they would answer questions about their full sister (or, if they had more than one full sister, about the one whose first name came first alphabetically). They were then directed to the next section of the booklet. If, on the other hand, they did not have a full sister, they moved on to the next question, which asked about a different category of individual (e.g., a full brother or a close female friend). Participants continued answering questions until they came to a person whom they did have in their social network. The order of the questions varied across different versions of the questionnaire.

2.2.2. Word Meaning Task

Participants next completed a Word Meaning Task. Although ostensibly exploring the different ways in which people define words, the task was in fact a priming task and was included because it has been shown to increase the accuracy of responses to self-report surveys (Rasinski et al., 2005). Participants were presented with a series of six words, each of which was followed by three synonyms. For each word, they chose the one synonym they viewed as closest in meaning to the original word. Half the words were related to honesty (e.g., "honest," "genuine," "correct"). The task is based on the idea that semantically processing these words primes more honest responding.

2.2.3. Social relationships

The next questionnaire focused on the target individual assigned to participants earlier. In addition to gathering