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Giving for Glory in Social Dilemmas: The Competitive Altruism Hypothesis

Charlie L. Hardy and Mark Van Vugt

University of Kent at Canterbury

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Word Count: 9840

Abstract

Three experimental studies examined the relationship between altruistic behavior and the emergence of status hierarchies within groups. In each study, group members were confronted with a social dilemma in which they could either benefit themselves or their group. Studies 1 and 2 revealed that when members' contributions were public, the most altruistic members gained the highest status in their group, and were most frequently preferred as cooperative interaction partners. Study 3 showed that high status members behaved more altruistically than low status members. These results support the idea that by behaving altruistically group members "compete" for social status within their group.

Keywords: Altruism, Social Dilemmas, Social Status, Evolutionary Psychology

Giving for Glory in Social Dilemmas: The Competitive Altruism Hypothesis

Humans are social animals. This phrase is often stated in the social and evolutionary literatures (Aronson, 1990; Buss, 2004; Forsyth, 1999), but what does it actually mean? The answer centers on issues of selfishness and altruism. Whereas most other mammals help each other only within small kinship groups, humans have the unique ability to form and cooperate within large social groups, which include many genetic strangers (McAndrew, 2002). For example, humans invest time and energy in helping other members in their neighborhood and make frequent donations to charity (Van Vugt, Snyder, Tyler, & Biel, 2000). They come to each other's rescue in crises and disasters (Van Vugt & Samuelson, 1999). They respond to appeals to sacrifice for their country during a war (Stern, 1995), and they put their lives at risk by helping complete strangers in an emergency (Latane & Darley, 1970).

Altruism, the intention to benefit others at a cost to oneself (Batson, 1998; Van Vugt & Van Lange, in press), is one of the major puzzles in the behavioral sciences today. Across many decades of research, social psychologists studying altruism and cooperation have identified numerous important factors that affect helping behavior, such as empathy (Batson, 1981), closeness (Neyer & Lang, 2003), mood (Isen, 1970), values (Omoto & Snyder, 1995; Van Lange, Otten, De Bruin & Joireman, 1997), rewards for helping and costs for not helping (Piliavin & Charng, 1990; Schroeder, Penner, Dovidio & Piliavin, 1995; Van Vugt, 1998). Yet, social psychological models of altruism often do not address where these basic motivations come from or how they came to be so important in human evolutionary history (cf. McAndrew, 2002). For evolutionary theorists, altruism has always been something of an enigma. How could any organism engage in actions that seem to benefit others, but not themselves?

Over the past decades, two main evolutionary models of altruism have emerged, kin selection theory (Hamilton, 1964) and reciprocal altruism theory (Trivers, 1971). These models are well-founded in mathematical theory and they have received overwhelming empirical support (Axelrod, 1984; Burnstein, Crandall, & Kitayama, 1997; Neyer & Lang, 2003; Van Lange & Semin-Goosens, 1998). Yet questions remain about the extent to which they can fully account for the diversity and ubiquity of altruistic patterns in human society (Fehr & Fischbacher, 2003; McAndrew, 2002). Perhaps as a consequence, social psychologists have found it difficult to relate their theories and findings to the deeper-rooted evolutionary theories of kinship and reciprocity. It appears that something is missing, but what?

In this article, we present a novel theory on altruism, called the competitive altruism hypothesis, which we believe can account for a range of altruistic behaviors among humans in particular, that theories of kinship and reciprocity cannot easily explain. Competitive altruism is the process through which individuals attempt to outcompete each other in terms of generosity. It emerges because altruism enhances the status and reputation of the giver. Status, in turn, yields benefits that would be otherwise unattainable. We present three experiments in which we test various aspects of the competitive altruism hypothesis in small groups involved in a public good dilemma, a task that pits altruistic and selfish motives against each other (Dawes, 1980; Komorita & Parks, 1994; Van Vugt & De Cremer, 1999). *Evolutionary Theories of Altruism: The Missing Link*

Since the inception of evolutionary theory (Darwin, 1859), theorists have struggled to find a satisfactory solution to the altruism problem (cf. Dawkins, 1982). It was recognized that organisms would sometimes engage in self-sacrificial behaviors to benefit others, for example a grandmother caring for a grandchild, but it was not clear how altruism could have been selected for in evolution. After all, natural selection favors traits and behaviors that benefit the reproductive success of their bearers, allowing these traits and behaviors to spread through a population at the expense of less successful designs (Barrett, Dunbar, & Lycett, 2002). The first successful attempt to solve the altruism puzzle was Hamilton's (1964) inclusive fitness theory (kin selection theory). According to this theory, natural selection would favor behaviors that benefit either the organisms themselves or those who share their genes, i.e. closely related kin. Thus, caring for a grandchild could be seen as adaptive given the genetic relatedness between grandmother and grandchild. This theory has received overwhelming empirical support: People behave more altruistically towards those to whom they are more closely related (see for example, Burnstein et al., 1997; Cialdini, Brown, Lewis, Luce, & Neuberg, 1997; Neyer & Lang, 2003). Yet, it is unclear how kin selection theory could account for altruism towards non-related individuals -- a common feature of human societies (Van Vugt et al., 2000) -- unless it is assumed that individuals cannot perfectly distinguish between kin and non-kin (the big mistake hypothesis; Van Vugt & Van Lange, in press).

Reciprocal altruism theory (Trivers, 1971) proposed an alternative solution to the altruism problem. A design for altruism towards genetic strangers could evolve if the altruistic behavior is reciprocated by the receiving party, either directly or at some point in the future. Two neighbors, for example, could decide to engage in reciprocal exchange by looking after each other's pets when the other is on holiday. Although there is some empirical support for this theory, among both humans (Axelrod, 1984) and other social species like vampire bats (Wilkinson, 1984), the stability of reciprocal altruism is problematic, because altruists may be exploited by individuals who fail to reciprocate – for example, one neighbor might move somewhere else before fulfilling his obligation. The ability to detect non-reciprocators or "cheaters" (Cosmides & Tooby, 1992) might provide some assurance against exploitation, but it is hard to see how this theory could account for altruism and cooperation

in one-off encounters, often in large groups of strangers (Batson, 1991; Latane & Darley, 1970; Penner & Finkleston, 1998; Snyder, Omoto, & Lindsay, 2004).

So, the mystery about the origins of altruism remains. Can altruism ever evolve in interactions between genetic strangers if these actions are not reciprocated? We believe it can if we are willing to consider the idea that altruistic actions are in fact a signal about the sender's personal qualities. In this respect, altruism, if publicly displayed, increases the status and prestige of the altruist, which makes it more likely that the altruist is chosen as interaction partner, thus gaining benefits which are not available to non-altruists.

The Competitive Altruism Hypothesis

How might one explain why people would volunteer to care for non-kin, donate large sums of money to charities, take up time-consuming extra-role activities in the organizations for which they work, and fight in wars to protect their country? Kin selection and reciprocity models cannot adequately explain these ubiquitous forms of altruism in humans. A more tenable explanation is offered by costly-signaling theory (Zahavi, 1975). Based on observations from the animal world, Zahavi noted that organisms often engage in behaviors that are costly to themselves in order to signal honest information about themselves. The classic example is the peacock's tail. The tail of a male peacock handicaps the owner, because it is extremely difficult to grow and limits his movement so that he becomes an easy catch for predators. This handicap can be selected for, however, because it advertises the peacock's quality as a rival or mate. "If he can grow a tail like this and be still alive, he must have good genes" is what female peacocks or rival male peacocks might think (if they can). Thus, handicaps like these benefit signalers by increasing the likelihood that they may be chosen as coalition partners or avoided in fights between rivals.

This theory suggests that altruism might qualify as a handicap. By spending excessive amounts of energy, time, and money on activities that are essentially unselfish, altruists

advertise the quality of themselves and their access to resources. An example might clarify this. A person who earns £100 might give £50 away to charity and still keep £50 for themselves; yet a person who only earns £40, cannot give the same amount away. The information that is transmitted can benefit *both* the signaler and the observer of the behavior. The behavior can benefit the signaler by increasing their social status and thus the likelihood that he or she will be chosen as a mate or an ally or that he or she will later be deferred to by would-be rivals. Through this, the altruists are able to recoup the costs of their display in the long run. Costly signals can benefit the observers simply because they provide them with useful social information. Altruism as handicap is likely to create a competition between, on the one hand, observers competing for the most altruistic partners, and on the other hand, actors competing with each other in terms of generosity to advertise themselves as future exchange partners, hence the term "competitive altruism" (Roberts, 1998).

Competitive altruism could be widespread in human societies. The anthropological literature documents various examples of excessive public displays of altruism and generosity. For example, male members of a tribe in Micronesia sometimes engage in torch fishing when other fishing techniques are actually more efficient. Torch fishing is a highly skilled and time intensive activity, but also a highly visible activity that serves to advertise a man's work ethic and skill (Sosis, 2000). In a Melanasian tribe, family members organize a party after a relative's death, which includes giving food and gifts to all guests. Turtle meat is most valued, presumably because turtle hunting is a dangerous and time consuming activity. Therefore, a feast of turtle meat is an honest signal for the quality of the males in a family (Smith & Bliege Bird, 2000). Similarly, chiefs of local Indian tribes in the North-West of America once engaged in fierce battles of generosity by organizing "pot latches," whereby they would distribute food and luxury foods to members of neighboring villages in an attempt to impress them with their wealth (Wright, 2000).

The social psychology literature shows that increased visibility and decreased anonymity of behavior (such as knowing names of co-participants and making public choices) increases co-operative behavior in a range of social dilemmas (Axelrod, 1984; Fox & Guyer, 1978; Jerdee & Rosen, 1974). Finally, mathematical models show that altruism as costly signal might be an evolutionary stable strategy (Grafen, 1990). The aim of this article is to provide a first experimental demonstration of the competitive altruism hypothesis in a controlled laboratory setting in which individuals can behave altruistically or selfishly in the context of a public good dilemma task.

Generosity in Public Good Dilemmas

There are several conditions that must be met in order for competitive altruism to emerge (McAndrew, 2002; Smith & Bliege Bird, 2000; Zahavi & Zahavi, 1997). First, the behavior must be costly for the actor to display. Second, the behavior must be easily observable to others. Third, the signal must be a reliable indicator of some underlying trait or characteristic of the signaler, for example, health, intelligence, or access to resources. Fourth, the behavior must in the long run benefit the actor who displays it. In light of these conditions, we believe that an ideal arena to conduct some initial tests of the competitive altruism theory is the public good dilemma task (Komorita & Parks, 1994).

Why might altruism in a public good dilemma be a good way to advertise oneself? First, a contribution to a public good is personally costly to the actor. Second, contributing to a public good has the potential to attract a large audience of interested observers who all profit if the good is provided. Moreover, they can easily compare among several contributors, which helps in making inferences about the underlying quality of the contributors and also provides a competitive environment for those involved (Henrich & Gil-White, 2001). Finally, although altruistic contributions to public goods are uneconomical, the costs could be recouped in the long term if altruists were likely to gain non-material benefits such as status and prestige, which might yield long-term profits, for example, by being chosen as interaction partners in future reciprocal exchanges (Roberts, 1998).

The Relationship between Altruism and Status

The competitive altruism theory makes a number of different predictions, which we test here, about the emergence of altruism in a public good dilemma. The first prediction is that high contributors (i.e., altruists) should do worse in terms of their immediate outcomes in public good dilemmas than low contributors (Hypothesis 1).

Although altruism is costly in the short run, there must be compensating benefits in the long run for those who behave altruistically. The proximate mechanism through which these long-term benefits may be gained is through an increase in social status. Our second prediction is that high contributors will be seen as higher in status (Hypothesis 2). The altruism-status relationship should, of course, only emerge if contributions are publicly displayed rather than made anonymously (Hypothesis 2a).

Third, high contributors should reap the benefits in the long run of their altruistic displays. Hence, once the task has finished, we expect that they will be more likely to be chosen as group leaders (Hypothesis 3) and as future exchange partners by other group members (Hypothesis 4), thus enabling them to reap the benefits of their altruism.

For competitive altruism to occur, the altruistic behavior must be visible so that others can evaluate and respond to it. We therefore predict that contributions increase once people realize that their contributions are displayed publicly (Hypothesis 5).

The competitive altruism theory suggests that altruism and social status are closely interrelated. According to the theory, status hierarchies are based, in part, on the relative contributions that individuals make towards public goods. Altruism involves long-range thinking, whereby individuals incur initial costs in order to enhance their status and reputation. The decision process might be entirely automatic as individuals may not be aware of the reasons for behaving altruistically or selfishly (cf. Bargh & Chartrand, 1999). The implicit connection between altruism and status gives rise to the final prediction that variations in social status predict variations in altruistic displays. High-status cues might lead individuals to focus more on their reputation and the long-term benefits of altruism, whereas low-status cues might lead to a narrow focus on their immediate benefits (Keltner, Gruenfeld, & Anderson, 2003). As a consequence, assigning individuals randomly to high-status positions (i.e., leaders) will increase their altruistic displays (Hypothesis 6).

The present research comprises three studies to test the competitive altruism theory. In each study, we employed a social dilemma task in small groups, providing an opportunity for people to display altruistic behavior.

Study 1: Competitive Altruism in a Public Good Dilemma

Study 1 comprised an experimental task with the properties of a continuous public good dilemma in which each member of a group of three receives a monetary endowment and decides how much to contribute to the group versus keep for themselves. Any money contributed to the group earns a bonus, which is shared equally between the group members, and is added to the money members kept for themselves (De Cremer & Van Vugt, 1999). We tested our first set of hypotheses by including a manipulation of the visibility of members' contribution and by monitoring their contribution in a further round of the task. In the public condition, participants were given feedback regarding the contribution decisions of the other members, whereas in the private condition they were not given this feedback.

Method

Participants and Design

Sixty six college students (32 females and 34 males, mean age 16.8 years) volunteered to participate. Each participant was randomly allocated to one of two

experimental conditions, public or private. There were 11 groups of 3 participants in each condition.

Procedure

Upon arrival in the classroom, participants were issued with an identification number (based simply on the order that they arrived in the class) and seated in adjacent seats. They were randomly assigned to groups of three using a random number generator to ensure that friends were not in the same group.

Introduction to the public good dilemma. Once everyone was seated the task was introduced as a contribution task to be completed in groups of three in which people could earn money for themselves and for their group. To avoid endgame effects students were not told how many rounds of the task they would complete. Participants were also informed that it was not financially possible to pay every person what they earned in the task, but that the experimenter would pay the ten highest earners the amount they earned. They were informed of their earnings by email after the study had finished and winners were sent their money.

At the start of the session participants received an endowment of 100 pence. They were free to contribute any amount from 0 - 100 pence to the private fund (p), which is kept by the individual, and any amount to the group fund (100-p). The total amount contributed to the group fund would be multiplied by 2 and divided equally among the 3 group members. Thus the total sum an individual (i) would earn would be $p_i + ((100-p_i 1) + (100-p_i 2) + (100-p_i 3))2 / 3$ -- where $p_i 2$ and $p_i 3$ are the other group members. This payoff structure fulfils the criteria for a continuous public good dilemma in that (1) it is financially better for the individual to contribute to the private fund, but (2) if every member did this, they would each be worse off than if they all contribute to the group fund.

Participants were asked to complete a two-part question relating to their contribution choice; "You have 100 pence, (1) how much do you wish to contribute to your personal

(private) fund? (2) How much to do you wish to contribute to the group fund?" The participants were instructed to ensure the total sum added up to 100 pence, which was checked by one of the experimental assistants.

Manipulation of public and private conditions. The public and private conditions were created via the feedback sheets given to each group member after the task had been completed. Eleven of the groups received a feedback sheet that detailed the individual contribution decisions of all the group members (public condition). The other 11 groups received no feedback sheet (private condition).

Dependent measures. At the end of the first task after the feedback sheets had been given out, each member received a two-part questionnaire designed to measure any status differences that may have emerged within the group as a result of the task. The first part asked several questions (on 7-point scales ranging from low (1) to high (7)) regarding the perceived status and influence of each member. For each member (themselves included) they were asked to rate: "Your perception of the ability of each member to earn money for the group"; "Your perception of the effectiveness of each member at earning money for the group"; "Your preference for each group member to act as a representative or spokesperson for the group; "Your preference for each group member to coordinate the group and make a final decision on the group's contribution"; "How legitimate do you feel each group member would be as a representative or spokesperson for your group?", "How willing would you be to cooperate with each group member if they were in charge of deciding the amount of the group's contributions in subsequent trials?"(There was no self measure for this final question).

Secondly, as a further status measure, we asked participants to indicate the group member (themselves included) that they would choose as group leader (this person would organize the group contributions in a future task). The questionnaire also asked for the participants sex and email address (to inform the highest earners to collect their earnings).

After the questionnaires were completed at the end of the first round of the public good task, a second round of the task was completed in which we could measure changes in contribution to the group fund after group members received first round feedback.

Manipulation check of visibility. At the end of the experiment, each participant was asked to indicate how visible they felt by rating eight adjectives on a 7-point scales ranging from not at all (1) to very much (7): e.g., "When I made my decisions I felt concerned" "..conspicuous" "..anonymous" (Jorgenson & Papciak, 1981).

Debriefing. At the end of the study, participants were informed about the nature of the study and given the opportunity to ask questions. They would be informed by email if they were one of the ten highest earners and told how to collect their money. The ten highest earners earned between 270 pence and 300 pence in the experiment.

Results

Manipulation Check

The eight scales relating to the public / private manipulation were turned into one scale ($\alpha = 0.86$). The mean score was subjected to a one-way ANOVA. The result was significant, F(1, 65) = 156.55, p < .01; participants in the public condition felt more visible (M = 4.63, SD = .53) than those in the private condition (M = 2.58, SD = .78). Both scores significantly differed from the scale midpoint (public condition t(32) = 6.9, private condition t(32) = 10.44; p < .001).

Status

A factor analysis was conducted on the six questions pertaining to status, which yielded evidence for one factor explaining 71% of the variance. We averaged the mean ratings across the questions to form one overall status score per participant ($\alpha = 0.92$).

In line with Hypothesis 2, the zero-order correlation between group contributions and perceived status was significant, r = .38, p < .01. Those who behaved altruistically received a higher status rating. As predicted, the correlation for the public condition (r = .60) was significantly higher than the correlation for the private condition (r = .13); z = 3.18, p < .01. This shows that the relationship between altruistic behavior and status was only obtained in the public condition (Hypothesis 2a).

The Social Relations Model (SRM: Kenny, 1998) was used to analyze the roundrobin peer ratings on the status measures. According to the SRM, an individual's perception of another person can be partitioned into three components: a perceiver effect (how a person views others in general); a target effect (the average level of response that a person elicits from others); and a unique dyadic relationship effect. The present study focused only on the target effect of status, that is, do group members agree on who has more versus less status in their group, and is this agreement correlated with altruism? In the public condition only, target variance accounted for 42% of the total variance in peer status ratings indicating that group members did tend to agree on how much status each group member had. Altruism was positively and significantly associated with this target variance, r = .87, p < .05. In the private condition there was no significant target effect (target variance accounted for 0% of the total variance), indicating that group members did not agree on who had the most status in the group.

Bonferroni pairwise comparisons revealed that in the private condition there were no significant differences between the mean status scores for each member. In the public condition, status scores decreased significantly with decreased contributions to the group fund, p < .05. See Figure 1.

Choice of group leader. A chi squared analysis revealed that there was significant association between choice of group leader and visibility condition $\chi^2(1, N = 66) = 14.10$,

p < .01. In the public condition the highest contributor was most frequently chosen as group leader (M = 0.82). In the private condition, there was no agreement on the choice of group leader (highest contributor chosen, M = 0.36, lower contributors chosen, M = 0.64). This is consistent with Hypothesis 3.

Altruism

Is altruism costly? A one-way ANOVA was conducted on the amount earned (amount in private fund plus the group bonus) by each group member. Consistent with Hypothesis 1, the results show that the altruists in each group (those who contributed most to the group fund) earned significantly less (M = 145.84, SD = 25.53) than the other members of their group (M = 166.46, SD = 24.46), F(1, 64) = 10.12; p < .01.

Effect of visibility on altruism. To test Hypothesis 5 (altruism increases when decisions are public), a repeated measures ANOVA was conducted on contribution to the group fund in each round as the within subject factor and condition (public vs. private) as the between subjects factor. The means, displayed in Table 1, support this prediction. The factor round was significant F(1, 64) = 6.04, p < .01. There was also a significant interaction between round and visibility, F(1, 64) = 7.90, p < .01. In round 2 only, contributions were higher in the public condition (M = 68.15, SD = 28.85) than in the private condition (M = 57.24, SD = 26.59). To examine this interaction further, a paired sample t-test was conducted, which revealed that contributions to the group fund increased only in the public condition, $t(32) = 3.11 \ p < .01$. For those in the private condition, contributions remained stable.¹

Study 2: Competitive Altruism in a Resource Dilemma

The results of Study 1 provide preliminary support for the competitive altruism hypotheses. Altruists received higher status within their group, and were chosen as group leaders more often. This relationship was found in the public condition only. The three aims of Study 2 were to (a) test the generalizability of these results by examining a different form of altruism, showing restraint in a resource dilemma, (b) improve the status questions, and (c) test a further hypothesis regarding the long-term benefits of altruism (Hypothesis 4). In a resource dilemma, individuals behave altruistically by taking a very small amount of a shared resource for themselves, and leaving a large amount in the common resource to benefit the group, however, personal interests may induce individual members to take more than their fair share (Van Vugt, 2001).

Method

Participants and Design

One hundred and fifty first year university students (126 females and 24 males, mean age 19.6 years) participated for course credit. There were 50 groups of 3 participants. All participants were assigned to the public condition from study 1.

Procedure

Participants were randomly assigned to groups in the same way as in study 1. The procedure was the also same, with the exception that the group task was a resource dilemma rather than a public good dilemma.

Introduction to the resource dilemma. The task was introduced as a group task in which people could earn money for themselves by harvesting monetary units from a common resource. At the start of the task, participants were informed that their group had access to a common resource of 500 pence. They were then free to take any amount from the common resource and to leave any amount in the common for the group. Participants were informed that they would keep what they took from the resource on the condition that the total amount taken from the resource by the three members was less than or equal to the amount in the resource (500 pence). If the total amount taken exceeded 500 pence then each group member received nothing (Van Vugt, 2001).

The first round then started and participants completed the question, "There is 500 pence in the common resource, how much of it do you wish to take from the resource for yourself? The decision sheets were collected by the experimental assistants who then completed the feedback sheets with information about how much each group member had taken from the resource and returned them to the participants.

Dependent measures. At the same time, a two-part questionnaire designed to measure the perceived status of each member was also given to each participant. The first part comprised four questions (adapted from Anderson, John, Keltner, & Kring, 2001) that measured various status dimensions on 7-point scales, ranging low (1) to high (7). "Please rate each member of your group (yourself included) according to your perception of their *status* within the group?"; "....their prominence..." "...their respect..." and "...their influence...."

In the second part, it was explained that after the resource dilemma task had been completed, there was to be a second, additional task in which for budgetary reasons, only two members could participate and earn money. Participants were told that they were one of the members, and were asked to rate their preference for each of the others to play the second task with (from not at all (1) to very strong preference (7)).

After the questionnaires were completed at the end of the first round of the resource dilemma, a second round was completed with all group members. After this, participants were told this was the end of the study.

Debriefing. Participants were debriefed as in Study 1. The 10 highest earners earned between 200 pence and 400 pence.

Results

Status

A factor analysis was conducted on the four questions pertaining to status (influence, prominence, respect and status), yielding evidence for one factor, explaining 75% of the variance. The variable 'prominence' loaded negatively onto this factor and when it was included in a reliability analysis it produced an alpha of .48. Without this item, the alpha was .90 for the overall status measure.

The overall zero-order correlation between restraint and status was significant, r = -.75, p < .01. As predicted in Hypothesis 2, those who behaved altruistically by taking less from the resource were granted higher status.

SRM analysis revealed that the target variance accounted for 54% of the total variance in peer status ratings indicating that group members did tend to agree on how much status each group member had. Altruism was significantly associated with this target variance, r = -.76, p < .05.

Bonferroni pairwise comparisons revealed that status scores decreased significantly with decreasing altruistic behavior in the dilemma, p < .01. The most altruistic (who took least) gained significantly higher status (M = 5.18, SD = .47) than the second most altruistic who gained significantly higher status (M = 4.61, SD = .50) than the least altruistic of the three (M = 3.87, SD = .83), p < .01.

Preference for future interaction partner. A univariate ANOVA was conducted with position as altruist in the group (took least, took mid amount, took most from the resource) as the within subjects factor and partner preference (1 = not at all, 7 = very strong preference) as the dependent variable to test Hypothesis 4. The factor, position, was significant F(2, 147) = 77.43; p < .01. Bonferroni pairwise comparisons revealed that with decreasing position as altruist in the task, preference for that person as a future partner also decreased. The most altruistic member (who took least) was preferred significantly more (M = 5.77, SD = 0.83) than the mid altruist who was preferred significantly more (M = 4.93, SD = 1.25) than the

least altruistic person who was the preferred the least (M = 3.21, SD = 1.49), all significant at p < .01. This suggests that there are long-term benefits for altruists in terms of being preferred as co-players in future interactions (Hypothesis 4).²

Altruism

Is altruism costly? A one-way ANOVA was conducted on the amount earned (amount taken if the group did not take more than 500 pence in total). The results show that the altruists in each group earned significantly less (M = 147.45, SD = 93.15) than the other members of their group (M = 207.94, SD = 126.15), F(1, 148) = 9.02; p < .01. This supports Hypothesis 1.

Effect of visibility on altruism. A repeated measure ANOVA was conducted with round as the within subjects factor, which revealed a significant main effect of round F(1, 149) = 52.49, p < .01. The amount removed from the group resource decreased from round 1 (M = 141.99, SD = 87.0) to round 2 (M = 126.31, SD = 89.2), once it was clear that the resource decisions were made public. This result supports Hypothesis 5.

Study 3: Status Predicts Altruism

The results of Study 2 provide further support for the competitive altruism hypothesis with a different form of altruism, showing restraint in a resource dilemma. The final study extends the previous research by examining the effect of status on altruistic behavior in a public good dilemma much the same as in Study 1. We randomly assigned participants to either a high status (group leader) or low status position (ordinary member) in their group. We expected a competitive altruism "schema" to be activated by the status manipulation such that high status members contributed more to the group fund than low status members (Hypothesis 6).

Method

Participants and Design

Fifty seven university students (38 females and 19 males, mean age 20.6 years) participated for course credit. Each participant was randomly allocated to one of two experimental conditions, high status (n = 27) or low status (n = 30). The experiment comprised six practice rounds and six trial rounds.

Procedure

Participants were randomly assigned to one of two experimental conditions (high status or low status). Participants were individually seated in cubicles with a computer and all instructions for the task were presented on this screen. They were led to believe that they participated in groups of four, but in reality the computer predetermined the responses of the other three members.

The public good dilemma. Participants then received instructions, informing them of the nature of the public good task. The task was essentially the same as in study 1 with one exception: Each group member was given 300 pence, and had to decide, per round whether to invest all or nothing in the group fund.

Manipulation of status. Participants were informed that they were to play the game in leader-led groups. The group leader would inform group members about how well the group performed on the task. The leader would be arbitrarily selected from the group.

In the high-status condition, the participant was selected as group leader and was given the following information; "You have been selected as the coordinator of the group. You have the responsibility of communicating to the group how the group has performed on each of the rounds. The experimenter will inform you of the group's performance and then you will inform the rest of the group by email."

In the low-status condition, the participant was not selected as coordinator and was given the following information; "After each round you will receive an email from your group's coordinator informing you of your group's performance on that round.

Rounds. The group task contained six rounds in total. Each round required the participant to make a decision of whether or not to invest their 300 pence.

Manipulation check. After the sixth and final round, participants answered four questions to check the status manipulation (on a 7-point scale from not at all (1) to very much (7)), for example: "To what extent did you feel like a high status group member? "To what extent did you feel important in the group?"

Debriefing. At the end, participants were given a debrief information sheet and the opportunity to ask any questions. No suspicions were raised regarding the nature of the manipulations.

Results

Manipulation Check

The status items were aggregated into a single status scale, with a reliability of 0.70. The status score was subjected to a one-way ANOVA with status position as between subject factor. As expected, F(1, 55) = 11.06, p < .05, participants in the high-status condition felt they had more status (M = 5.78, SD = 2.05) than those in the low-status condition (M = 4.10, SD = 1.75). Both scores significantly differed from the scale midpoint (high-status t(26) = 5.8, low-status t(29) = 3.8; p < .05).

Altruism

For reasons of simplicity, we decided to regroup the six rounds into three time categories: Early (rounds one and two), middle (rounds two and three) and late (rounds four and five). A repeated measures ANOVA was conducted with Time as the within subjects factor and status position as the between subjects factor. The results show significant main effects of time F(1, 55) = 32.41, p < .01, status position F(1, 55) = 11.44, p < .01, and an interaction between status position and time F(1, 55) = 4.60, p < .05. Consistent with

Hypothesis 6, members in the high-status condition contributed more often (M = .81, SD = 18.89) than in the low-status condition (M = .65, SD = 19.25).

In addition, paired t-tests revealed that in the Early rounds, there was no significant difference between status conditions, t(55) = 1.07, *ns*. In the Middle rounds this difference was marginally significant t(55) = 1.8, p < .06. In the late rounds there was a clear difference between the high status and low status members in terms of the contribution percentage, t(55) = 3.72, p < .01. The contribution percentage means are displayed in Figure 2. *Status*

In an exploratory vein, we examined if perceived status was a mediator of the relationship between status position and altruism. Hence we followed the steps outlined in Baron and Kenny (1986). We first established that status position (the predictor) was related to altruism (the outcome) by regressing altruism on the status position variable (b = 15.86, t(3.13), p < .01). To establish that group position was related to perception of status (the hypothesized mediator), we regressed status perception on the status position variable, which was also significant (b = 1.68, t(3.33), p < .01). To test whether status perception was related to altruism, we regressed altruism simultaneously on both the status perception and status position variables. This third regression provided an estimate of the relation between group position and altruism, controlling for perception of status (as the potential mediator). The result showed that this relationship was still significant but weakened (b = 11.59, t(2.4), p < .05. A Sobel test concluded that this relation was significantly weakened when perception of status was added as a mediator, z = 2.09, p < .05. Thus, perceived status appeared to mediate, partly but not completely, the relationship between status position and altruism.

Discussion

In three studies we found support for several predictions derived from the competitive altruism hypothesis. Here we interpret the main research findings in light of this novel idea, and discuss some implications from this research.

Altruism is Costly in the Short-run, but Beneficial in the Long-run

To explain how altruism in larger groups might come about, we argued that people sometimes compete with each other in terms of generosity because being seen as an altruist might produce long-term benefits. To invoke a competitive altruism explanation first requires that altruism must be costly in the short run. This is true by definition (Penner et al., 2005; Van Vugt & Van Lange, in press) and it was confirmed in the first two experiments in which the most altruistic group members earned the least in the games, either because they contributed relatively more to the group fund (Study 1) or they took relatively less from a common resource (Study 2). Thus, there are significant short-term costs associated with altruism which might prevent opportunists from engaging in such actions.

Second, for competitive altruism to evolve at all, there must be compensating benefits in the long run. In our studies, we have tapped into these long-term benefits by examining the status effects of altruism: Would altruists be seen as high status group members? Again, our findings clearly show that altruistic group members were granted more status than selfish members. They were more respected, held in higher esteem, and were more likely to be chosen as group leaders. Many benefits accrue to those who occupy high status positions in society such as power, wealth, a better health, a more positive mood and higher self-esteem, and reduced stress levels (Bass, 1990; Keltner et al., 2003; Marmot, 2004; Van Vugt, 2005). Obviously, we were not able to measure these long-term beneficial effects in our experiments. In one study we found that altruists were preferred above more selfish partners in a follow-up dyadic investment task in which both partners were likely to earn extra money. Whether altruists would earn enough in the subsequent task to compensate for their monetary losses in previous rounds remain to be seen. A follow-up study should examine more closely the long-term consequences of altruism in the field and the laboratory.

The Altruism must be Observable

To invoke a competitive altruism account also requires that others must be able to monitor someone's generosity. People should be keener to act altruistically in a public setting than in a private situation. In support of this, group contributions increased in our experiments when people knew that their decisions were visible to others. Furthermore, only in the public was there a correlation between altruism and perceived status. Thus the public nature of the situation provides a good opportunity to advertise one's generosity (Henrich & Gil-White, 2001). This implies that people should show a preference for showing altruism in situations that facilitate such broadcast opportunities, and the provision of public goods is certainly one such domain (Smith & Bliege Bird, 2000).

Altruism is an Indicator of an Underlying Quality or Trait

A fourth condition is that altruism must be a reliable indicator of some underlying personality trait or quality. We have not looked into this systematically in our studies, but our findings suggest the following. First, altruists were more preferred as interaction partners by the participants. This is not surprising because people who are cooperative and resourceful are generally viewed as more desirable group members (Moreland & Levine, 1982). Thus, altruism might be an indication of being a good and cooperative group member, which is important for most group goals, for example, in business, politics, and team sports. Second, our findings show that altruists were preferred as group leaders, suggesting that people might attribute leader-like attributes to altruists. Generosity, honesty, responsibility, fairness, and intelligence are indeed seen as prototypical leadership qualities (Lord & Maher, 1991). In sum, people who display altruistic actions might be seen as possessing a broad class of desirable traits and qualities for groups.

The specific quality of the altruism signal might well depend upon the interaction goal. For example, somebody who helps ingroup and outgroup members indiscriminately might not always be seen as a desirable group member, especially in an intergroup conflict (cf. black sheep; Marques, Abrams, Paez, & Martinez-Taboada, 1998). Furthermore, altruism might be a desirable quality in a social dilemma task, but in opinion tasks groups might look for other qualities in members (e.g., predictability, conformity).

Status Increases Altruism

In Study 3 those assigned to a high status position in the group contributed more to the group than those assigned to a low status position, despite the random assignment of status positions. One way to look at this effect is to suggest that status activates a competitive altruism heuristic in which group members, consciously or subconsciously, start to contribute more to a group when they find themselves in a high status position. As Tooby and Cosmides (1996) suggest status is related to the desire to get other people to think about us in ways that ultimately benefit us. This may be especially important for high status people who are keen to maintain their privileged position in a group. By behaving altruistically high status members can strengthen their position, which might be particularly important if their position lacks a legitimate basis (as in Study 3).

This finding is in line with Ostrower's (1995) research into philanthropic giving among American elites. He describes philanthropy as a competitive race among the elites in which altruistic giving elevates a family's status and the absence of giving lowers it. Most of the philanthropists Ostrower interviewed agreed that for those within their elite group philanthropy was an obligation. When someone in the elite group is thought to give too little, they are looked down on with disdain and are often criticized. It is also consistent with Berger, Cohen, Zelditch's, (1972) expectation states theory, which claims that performance expectations are associated with high status positions. Thus, when people are assigned as leaders they are expected to be generous and responsible, and these expectations are internalized. Competitive altruism may therefore not only produce status differences in groups but maintain them as well through a set of internalized beliefs and values. *Limitations, Strengths, and Implications of Research*

There are several limitations of this research. First, the amount of money in the experiments was rather small with participants receiving endowments of as little as 100 pence (Study 1). If the earnings would be trivial then we would expect everyone to give away their full endowment to the group. Yet, on average, group members contributed about 60% of their endowment to the group, and many people contributed nothing at all. Furthermore, differences in altruism were consistently related to whether the displays were public versus private, suggesting that participants acted as if the money was valuable to them. Nevertheless, future research could investigate the size of the costs. The competitive altruism theory would predict that as the costs for the altruist increase, the status benefits they receive should be higher.

A second limitation is that we cannot completely rule out that people might prefer altruists as future interaction partners in order to exploit them later on. Hence, there might be long-term costs rather than benefits for the altruist. In Study 2, for example, it is possible that people may have chosen the altruist as partner in the follow-up game, because they could then exploit their benevolence. We can effectively rule out this explanation, for two reasons. First, a posthoc analysis of the data in Study 2 shows that there is no correlation between the participant's own altruistic behavior in the game and their preference for the altruist (r = -.11, *ns*). Furthermore, this interpretation cannot account for why participants "rewarded" altruists with status, prestige, and group leadership. Nevertheless, to rule out this selfish explanation completely, we plan to conduct a study in which participants play a second-round Dictator game with either an altruistic or selfish partner and examine how much they give each. A strength of this research is also worth discussing. In our view, competitive altruism provides a better account of how cooperation in large groups might have come about than evolutionary models based on kinship altruism or strict reciprocal altruism. These models have much difficulty in explaining altruism beyond the family or dyad (Roberts, 1998). Yet there is overwhelming evidence that humans engage in self-sacrificial behaviors to help others, sometimes in very large groups (Batson, 1998; Penner et al., 2005; Van Vugt et al., 2000). Competitive altruism provides one explanation. By being generous in public, people can advertise their qualities as potential exchange partners, reaping the benefits later on. Also, the larger the group, the better the advertisement opportunities for altruists are. Competitive altruism might also explain helping and altruism between groups. Nadler (2002) recently showed that high status groups sometimes provide help to lower status groups in order to maintain their privileged position in the social hierarchy. This suggests that competitive altruism might operate at both intragroup and intergroup levels, providing further support for our theory.

The competitive altruism hypothesis has various implications for theory and practice. A first implication is that it provides a rationale for why altruists might ultimately be better off than non-altruists in society – a pleasing thought. There has been much scientific debate about whether "nice guys (girls) finish first or last" (Axelrod, 1984; Dawkins, 1976). Our research suggests that niceness pays because in a competitive market for interaction partners, altruists create more opportunities for themselves than selfish people.

A practical implication is that altruism in society can be fostered by encouraging people to publicly display their generosity. For example, naming the identity of donors and revealing the amount they have given should set up a competitive altruism process in which people try to outcompete each other in generosity. This is the mechanism on which many forms of philanthropy are based and it is good for society.

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Author Note

Charlie L. Hardy and Mark Van Vugt, Department of Psychology, University of Kent at Canterbury.

This paper is based on doctoral research of the first author and was supported by an award from the ESRC. Both authors contributed equally to the research.

Correspondence concerning this article should be addressed to Charlie Hardy, Department of Psychology, University of Kent at Canterbury, Canterbury, Kent, CT2 7NP, UK. E-mail: ch89@kent.ac.uk

Footnotes

¹ No specific predictions were made in our studies regarding sex differences in altruistic behavior. In Study 1, a repeated measures ANOVA was conducted with sex as a between subjects factor. The results show a marginally significant main between subjects effect for sex, F (1, 62) = 3.67, p < .06. Men tend to contribute more (M = 65.02, SD = 3.42) than women (M = 54.43, SD = 3.52), but this was not affected by visibility, F (1, 62) < 1. In Studies 2 and 3, there were no sex differences in altruism.

² In nine group sessions two group members removed the same amount from the resource. In these instances the two members concerned were randomly assigned their rank.

Table 1

	Mean contribution to the group fund (pence)					
Condition	Round 1	Round 2	Round 1	Round 2	Round 1	Round 2
			female	female	male	male
Public	58.7	68.2	52.9	65.6	62.5	69.8
Private	56.6	57.2	52.3	49.9	62.6	64.2

Figure Captions

Figure 1. Interaction between contribution to the group fund and mean status score by condition (Study 1)*Figure 2*. Percentage of contributions as a function of task round and status position in the

group (Study 3)

Figure 1.



Figure 2.

