

# Groups Reward Individual Sacrifice: The Status Solution to the Collective Action Problem

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*One of sociology's classic puzzles is how groups motivate their members to set aside self-interest and contribute to collective action. This article presents a solution to the problem based on status as a selective incentive motivating contribution. Contributors to collective action signal their motivation to help the group and consequently earn diverse benefits from group members—in particular, higher status—and these rewards encourage greater giving to the group in the future. In Study 1, high contributors to collective action earned higher status, exercised more interpersonal influence, were cooperated with more, and received gifts of greater value. Studies 2 and 3 replicated these findings while discounting alternative explanations. All three studies show that giving to the group mattered because it signaled an individual's motivation to help the group. Study 4 finds that participants who received status for their contributions subsequently contributed more and viewed the group more positively. These results demonstrate how the allocation of respect to contributors shapes group productivity and solidarity, offering a solution to the collective action problem.*

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A central problem in social theory since at least Hobbes ([1651] 1972) is the question of what makes collective action possible—be it the mobilization of a social movement, the activities of a voluntary association, or even just the maintenance of social order. Chronically, situations arise in which individuals can gain more by not contributing to the public good but instead “free-riding” on the contributions of others. If individuals always act in their own self-interest, it would seem impossible to produce public goods. Yet people do overcome the collective action problem; society is possible (Hardin 1982; Ostrom 1990).

Generations of theorists have sought to explain how collective action is achieved in practice. Where Enlightenment philosophers invoked an implicit social contract that citizens agree to, social scientists have proposed cultural, interactional, and institutional mechanisms that lead individuals to transcend narrow self-interest. Marx, for example, focused on class interests, Durkheim emphasized solidarity, Parsonian theory stressed the inculcation of common ends, and so on.

Here I propose and test another solution to the collective action problem based on the premise that groups pay respect to individuals for their contributions to the group's efforts. By contributing, individuals display their concern for the group. The group, in turn, conveys respect for the individual. Receiving that respect further motivates the individual to contribute. Below, I demonstrate how these processes encourage group-oriented behaviors, with individuals' concerns for respect and social standing binding them together in collective actions. I also investigate how these dynamics affect macro-level phenomena of broad relevance to the collective

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action literature: solidarity, productivity, and feelings of collective identity.

The present research makes several contributions to the vast, multidisciplinary body of research on the collective action problem: (1) a theory that shows how the dynamics of status attainment in groups help solve the problem; specifically, how successful collective action and status for contributors stimulate one another; (2) empirical demonstrations of how groups reward those who sacrifice for the group (Studies 1 and 2); (3) evidence that groups do so because they see contributors as group-motivated (Studies 1, 2, and 3); (4) elimination of alternative explanations (Studies 2 and 3); and (5) a demonstration that individuals who receive status for their contributions give more in the future, and they do so because that experience increases their group motivation (Study 4).

I conducted a series of laboratory experiments to test predictions derived from the theory. In natural collective action settings, such as activist groups, where the reciprocal relationships between contribution and status are already under way, determining causality is difficult. Experiments permit me to manipulate the critical variables of interest in isolation from other variables, allowing careful scrutiny of the validity of the theory's predictions with limited concern that other, unmeasured variables (e.g., personality, skills, and occupational status) are actually responsible for observed relationships between status and collective action contribution (Lucas 2003). Random assignment to experimental conditions helps control for the potential contaminating effects of individual differences. The present methodology thus provides for strong initial tests, although the theory's validity, in the end, is a function of the number, proportion, quality, and diversity of empirical tests supporting it.

## THEORY

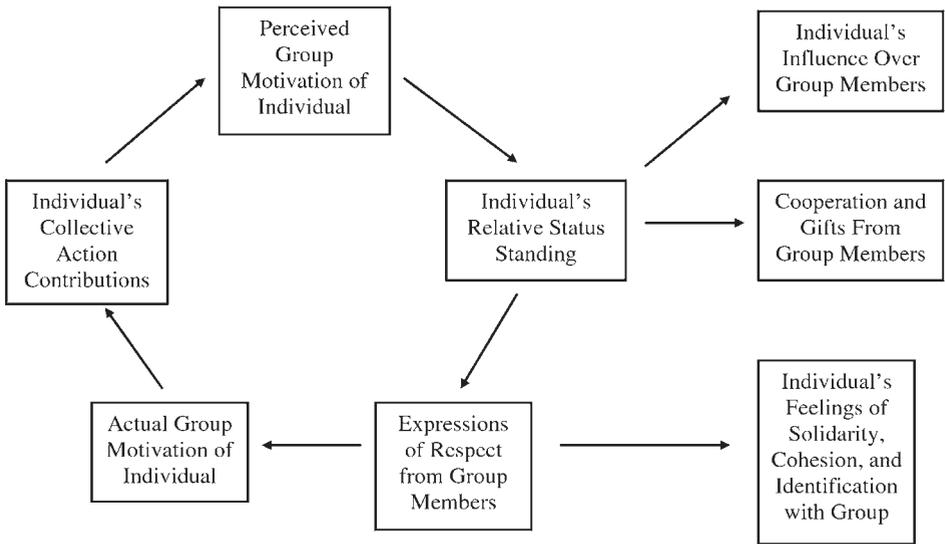
There are many solutions to the collective action problem, reflecting different methodologies, theoretical approaches, and levels of analysis (for reviews, see Kollock 1998; Ledyard 1995; Oliver 1993; Yamagishi 1995). Perhaps the most intuitive solution is that groups provide selective incentives to individuals to encourage contributions and to discourage free riding (Olson 1965). Examples of selective incentives range

from the material to the social (Clark and Wilson 1961), including paying blood donors, "I Voted" stickers given out to voters, tote bags and bumper stickers given to public-television donors, prosecution of tax evasion, and economic sanctions for violating international treaties.

The solution I propose considers status in the group as an implicit, selective incentive. Olson (1965:60) notes that "people are sometimes also motivated by a desire to win prestige, respect, friendship, and other social and psychological objectives." I elaborate here on Olson's observation by theorizing a reciprocal relationship between status hierarchies and collective action. Status and other social and material benefits are allocated to individuals for contribution to collective action to the extent that individuals successfully signal their motivation to help the group. These status rewards in turn increase that motivation, leading to greater giving and more positive views of the group.

I define status as an individual's relative standing in a group based on prestige, honor, and deference (Berger, Cohen, and Zelditch 1972). Status hierarchies are typically conceptualized as relative and zero-sum. Research shows that group members tend to agree on the group's status hierarchy (Anderson et al. 2006; Ridgeway and Walker 1995), evaluate higher status members more favorably than others (Foschi 1992), defer to them more often (Berger et al. 1972, 1977; Wagner, Ford, and Ford 1986), give them more chances to speak and act (Cohen 1994), and allocate more resources to them (Berger et al. 1985). In all these ways, being accorded high status in a group is valuable to individuals. Furthermore, status research shows that group members voluntarily—and nonconsciously (Rashotte and Webster 2005)—reorder status hierarchies based on new, salient, status-relevant information (Cohen 1994; Fiske, Berger, and Normon 1991; Markovsky, Smith, and Berger 1984; but see also Foschi 1992, 1996).<sup>1</sup>

<sup>1</sup> Traditionally, theories of collective action invoking selective incentives have had to answer the "second-order free-rider problem" (Oliver 1980) of "who will contribute to the administration of selective incentives?" However, if status-relevant information is automatically processed as part of normal impres-



**Figure 1.** Causal Diagram of a Status Theory of Collective Action

Note: All arrows indicate positive relationships.

### THEORETICAL SCOPE AND PROPOSITIONS

The scope of the theory encompasses collective action situations as conventionally defined, that is, situations where a public good that is (1) non-excludable (i.e., it benefits all group members) and (2) valued by all group members (3) requires costly contributions from individuals to be produced. Contributions to a public television funding drive would be within the scope, but investments in a corporation would not, because free riders are excluded from resulting benefits.

I assume that individuals value higher status. This assumption is widely held in sociology (e.g., Sewell, Haller, and Portes 1969) and experimental research shows that people will forgo material profits to gain status (Ball and Eckel 1996, 1998; Ball et al. 2001; Huberman, Loch, and Onculer 2004). Andreoni and Petrie (2004) demonstrate that there is greater giving to public goods when contributions are made public than when they are anonymous, suggesting that people value status in public good settings. Figure 1 presents the theory as a whole.

*Proposition 1:* The more highly group members evaluate (1) the cost of an individual's contributions to the group, and (2) the benefits

to the group of an individual's contributions, then the more highly members will evaluate the individual's level of "group motivation."

I define individuals' *group motivation* as how much they value the group's interests relative to their own. Individuals perceived to have greater group motivation will be expected to sacrifice more for the group's benefit. Significantly, the group's estimate of an individual's group motivation is the product of both how much the group benefits and how much group members believe the contribution costs the individual. This is evaluated as a matter of how much the group believes the individual *could* contribute, that is, how much was sacrificed. For example, members of a club would assess an hour's volunteer work by a busy professional as indicative of more group motivation than the same amount of time donated by a retiree.

*Proposition 2:* The greater an individual's perceived group motivation, the greater the individual's relative status standing.

Ridgeway (1978, 1982) shows that a member's status in a group depends not only on specific contributions, but also on whether the individual conveys an impression of being concerned with group welfare. Related anthropological field research and experimental

economics research find that groups show greater esteem toward members who make greater contributions to the collective good.<sup>2</sup>

*Proposition 3:* The greater an individual's status standing, the more group members will yield to the influence of the individual, cooperate with the individual, and give the individual gifts of greater value.

Proposition 3 proposes several behavioral consequences of improved status standing. Past research on status characteristics theory consistently shows a strong and reliable relationship between status and influence (Berger et al. 1972, 1977). Additionally, past theory and research suggest that material benefits accrue to higher status individuals (Berger et al. 1985; Hardy and van Vugt 2006; Henrich and Gil-White 2001; Thye 2000). Here I reason that higher status people will be cooperated with more and receive gifts of greater value from group members because the respect that they command leads them to be perceived as more trustworthy and makes them less likely targets of self-interested exploitation.

*Proposition 4:* The greater the status an individual receives for past contributions, the more the individual's group motivation will increase and the more the individual will tend to view the group positively—including identifying with the group more and seeing it as having more solidarity and cohesion.

*Proposition 5:* The greater an individual's group motivation, the more the individual will contribute to the group.

Propositions 4 and 5 make new predictions about the effects of receiving status rewards on collective action contribution. They link the

micro-level dynamic of rewarding contributions with status to macro-level phenomena such as group productivity, identification, and solidarity.

On the basis of these theoretical propositions, I make the following derivations tested in Studies 1, 2, and 3: the more that individuals contribute to collective action, relative to other group members, the greater their status in the group and the more they will (1) exert influence over other group members, (2) enjoy cooperation from other group members, and (3) receive gifts from other group members. I also make the following derivations to be tested in Study 4: the greater the status that individuals receive for past contributions, the more they contribute to the group in the future and the more positive their perceptions of it.

As shown in Figure 1, individuals' contributions to collective action lead them to be viewed as more group motivated and, as a result, higher status. Individuals who achieve higher status are then predicted to wield more influence, be cooperated with more, and receive gifts of greater value in interactions with other group members. Additionally, as group members express greater respect to high contributing individuals, high contributors tend to view the group more positively, as indicated by their greater motivation to help the group, feelings of group solidarity and cohesion, and identification with the group. Self-sacrifice for group goals thus earns a contributor a diversity of benefits, both social and material. Further, the theory outlines a "virtuous" cycle, wherein costly contributions to group efforts signal one's concern for the group, leading to expressions of respect, which enhance one's motivation to help the group, thereby increasing subsequent contributions, and so on.

## STUDY 1: SOCIAL AND MATERIAL BENEFITS FOR CONTRIBUTION

I conducted a series of laboratory experiments to study the behavior of individuals in settings where group- and self-interest were at odds. In Study 1, I predict that group members will reward a higher contributor to collective action with higher status, greater influence, greater cooperation, and greater gift-giving. In addition, I predict that perceptions of a contributor's

<sup>2</sup> Ethnographic research shows contributions to public goods, such as food production (Lemonnier 1996; Price 2003) and military service (Chagnon 1988; Patton 1996), can determine status standing, as does research in organizational settings (Flynn et al. 2006). Experimental research from evolutionary biology and economics finds that group members reward generous group members with resources (Barclay 2004; Wedekind and Milinski 2000) and leadership status (Hardy and van Vugt 2006; Milinski, Semmann, and Krambeck 2002a).

group motivation will mediate the effect of contribution on status.

In this study, participants first worked in a computer-mediated task (a Public Goods game) that created the structural conditions of the collective action problem (group and individual interests were at odds). Afterward, they were paired with a specific other group member, either a high or low contributor from the collective action setting. Participants rated their assigned partners on several survey questions designed to measure perceived group motivation and status. Following these ratings, participants and their assigned partners collaborated in a "contrast-sensitivity" task, a standard experimental setting used for assessing interpersonal influence in research on status characteristics theory (Moore 1965; Troyer 2001; Wagner et al. 1986). Next, participants and their partners were paired in two uniquely structured dyadic economic exercises reflecting different motives for possible non-cooperation. Finally, participants completed a gift-giving opportunity in which they divided a pool of resources between themselves and their partners.

## METHODS

**DESIGN AND PARTICIPANTS.** The study features a two-condition (partner was a high/low contributor), between-subjects design. Seventy-one undergraduates (44 women, 27 men)<sup>3</sup> at a large, private university participated in the study in return for pay, plus an option of extra credit in a sociology class.<sup>4</sup> Five participants reported either high levels of suspicion regarding the design or not paying attention at all in phase 2 of the study, so I excluded them from the analysis. Alternate analyses including suspicious participants produced qualitatively identical results. Eliminating participants who did not pay attention or were heavily suspicious of the setting is

standard in experimental research on influence (e.g., Wagner et al. 1986).

**PROCEDURE.** Participants arrived at a computer classroom in groups of six at a time to participate in a "Group Interaction Study." A research assistant seated participants at separate computer terminals with dividers arranged to prevent communication between participants. I introduced participants to the study via instructions on their computer terminals. They were told that the researchers were interested in processes of group interaction in general and that they would participate in a series of group tasks, each with its own instructions. In actuality, each participant engaged with preprogrammed, fictitious "group members."

**PHASE 1: THE PUBLIC GOODS GAME.** In phase 1 of the study, participants were introduced to a six-person Public Goods game. In the game, they were given an initial endowment (\$5) to contribute to a public fund across five rounds. In each of the five rounds, participants simultaneously decided how much of \$1 they would contribute. The public good was then doubled and divided equally between all participants (Yamagishi and Kiyonari 2000). Thus, if everyone contributed their entire endowment to the public good, then everyone would receive \$10 in study pay ( $6 \times \$5 = \$30, \times 2 = \$60, / 6 = \$10$ ). But if no one contributed anything, everyone would leave with only their initial \$5 endowment. Each person was presumably tempted to free-ride on the efforts of others, saving their \$5 endowments for themselves, but also receiving their share of everyone else's contributions to the public good.

This situation is a social dilemma and meets the mathematical definition of an "N-Person Prisoner's Dilemma" (Hardin 1971; Komorita 1976). During these rounds of the Public Goods game, the five simulated group members contributed an average of \$.49 per round, ranging from a high contributor who gave \$.95 on average to a low contributor who gave \$.05 on average. These contribution levels are generally consistent with observed contribution levels in past public goods research (Ledyard 1995).

At the conclusion of five rounds, the computer program displayed the total contributions and earnings of each group member.

<sup>3</sup> Gender of participants does not significantly interact with any of the results of the studies reported here, so I do not discuss it further.

<sup>4</sup> Across all studies, I assured those who participated for extra credit and money that simply showing up was sufficient to earn the credit. The credit incentive should thus not affect their behavior within the study.

Participants were asked to write the information on formatted totals sheets provided at each terminal. Following the results, participants were told that in phase 2 of the study they would collaborate with another participant in a two-person group task. They were then “randomly assigned” one of the other five group members to be their partner. In fact, participants were randomly assigned either the second highest or the second lowest simulated contributor from phase 1.

Before phase 2 started, participants were asked on their computers to indicate how well a series of qualities described their assigned partner using click-and-drag 100-point scales. As measures of perceived status, participants indicated how “honorable,” “prestigious,” and “respected” they perceived their pseudo-partner to be (Ridgeway and Erickson 2000). To measure perceived group motivation—the extent to which partners were perceived to value the group relative to themselves, and could therefore be expected to act to benefit the group in the future—I asked participants to rate their partners on a series of individual trait dimensions (e.g., “generous,” “selfish,” and “cooperative”), as well as scales assessing more group-relevant qualities (how much the partner “valued others” in general, “valued the group,” and was a “team player”).<sup>5</sup> The anchors for all scales range from “a great deal” to “not at all.”

**PHASE 2: MEASURING INFLUENCE.** In phase 2, participants worked with their assigned partners on a “contrast-sensitivity task.” During the task, participants and their fictional partners made initial decisions on which of two checkerboard designs on the screen contained more white area. After submitting their initial answers, participants were shown their (simulated) partner’s choices and given the opportunity to change their choices to agree with those of the partner. The two designs in fact contained approximately equal amounts of white space. The partners were programmed to disagree with the participant’s initial choice on 20 of 25 trials.

<sup>5</sup> I reran all analyses involving the group motivation composite using composites for either the individual trait ratings or the group-relevant ratings. Results were qualitatively identical to those reported here.

I measured the influence of the programmed partner as the proportion of trials in which participants switched from their initial decision to that of the partner. Following this task, I asked participants how motivated they were to do well on the task and whether they paid attention to their partner’s answers. These are considered preconditions for interpersonal influence in past research using this setting (e.g., Berger et al. 1977; Troyer 2001).

**PHASE 3: COOPERATION AND GIFT-GIVING.** Upon the completion of phase 2, all participants were given a packet of materials that included instructions and three economic exercises. The instructions indicated that their answers (in combination with their partner’s answers) would lead to real money payoffs for themselves and their partner. The first exercise, the Greed game (Simpson 2003), features a symmetric payoff structure (see Table 1, panel A). In the game, participants profit from defecting on a partner who is expected to cooperate, but if their partner is expected to defect, then participants should be indifferent to the decision as it does not affect their own payoff. Thus, defection by participants in the game reflects a motivation to exploit their partner’s cooperation.

The Fear of Greed game (Kuwabara 2006) features a more complex, asymmetric payoff structure (see Table 1, panel B). In this game, participants profit from defecting on a partner who they expect will defect on them. If a partner is expected to cooperate, however, participants should be indifferent to the cooperation decision because it does not affect their payoffs. At the same time, the partner faces an incentive to defect on the participant if the partner expects the participant to cooperate. Defection by participants in the game thus reflects fear of exploitation from the partner. I used these two games as measures of cooperation, rather than the classic Prisoner’s Dilemma, to separately analyze the two motives for defection—fear of exploitation and greed—that are normally confounded in the Prisoner’s Dilemma (Simpson 2003).

Finally, participants played a Dictator game with their partner, wherein they were asked how they would like to divide a pool of money (\$3) with their partner. The person assigned to allocate money in the Dictator game (the dictator) is free to take the entire pool, so the amount of

**Table 1.** Incentive Structures of the (A.) Greed (Simpson 2003) and (B.) Fear of Greed Games (Kuwabara 2006)

A. Greed Game		Cooperate		Defect	
Cooperate	\$1	\$1	\$2	.50	.50
	Defect	\$2	\$.50		
B. Fear of Greed Game		Cooperate		Defect	
Cooperate	\$2	\$1	\$2	.50	.50
	Defect	\$2	\$.50		

*Note:* Participant chooses between rows, partner chooses between columns. Participant's payoff is given in the lower left of each cell and partner's is given in the upper right.

**Table 2.** Means by Condition for Survey and Behavioral Dependent Measures from Study 1

	Partner was High Contributor Condition	Partner was Low Contributor Condition	Mean Difference	Significance
Rating of partner's group motivation	78.6 (11.8)	26.9 (19.8)	51.7	<.001
Rating of partner's status	66.1 (14.8)	35.8 (19.3)	30.3	<.001
Partner's influence rate	.406 (.471)	.302 (.143)	.104	.009
Participant's cooperation rate in Fear of Greed game	.313 (.471)	.177 (.387)	.136	.203
Participant's cooperation in Greed game	.625 (.492)	.294 (.463)	.331	.006
Participant's donation in Dictator game (% given)	.403 (.167)	.250 (.215)	.153	.002

*Note:* Standard deviations shown in parentheses.

money allocated to the other person represents a simple, continuous measure of gift-giving. These three economic exercises provide behavioral measures of participants' motivation to exploit (the Greed game), trust (Fear of Greed game), and be generous (Dictator game) toward their assigned partner.<sup>6</sup> In sum, the experiment exposes participants to group members who vary greatly in their contributions to the group; measures participants' evaluations of their assigned partners; and assesses how much par-

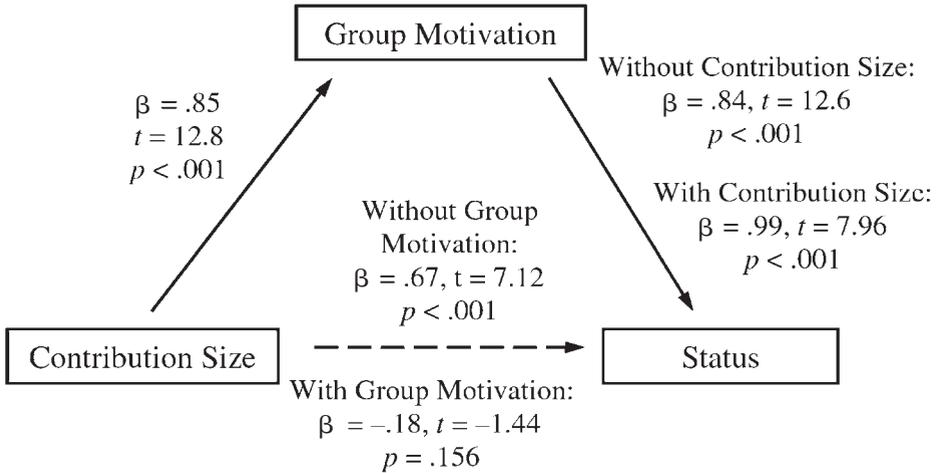
ticipants accept the influence of their partners, cooperate with them, and are generous toward them. These steps test predictions derived from Propositions 1 to 4.<sup>7</sup>

## RESULTS

PERCEPTIONS OF HIGH AND LOW CONTRIBUTORS. I created composite measures for group motivation and status by averaging the results for each constituent item. Reliability analyses justify the use of these composites as measures of common, underlying factors (Cronbach's alpha = .97 and .90, respectively). Table 2 gives results of t-tests comparing how participants rated their partner's group motivation and status depending on whether the partner was a high or low

<sup>6</sup> Participants were given no feedback on their partner's decisions after completing the economic exercises. At the completion of each session, I used a funnel debriefing procedure to assess levels of suspicion regarding deception in the study. I carefully explained the goals of the research and the reasons for not revealing the true nature of the study. Finally, I paid participants and thanked them for their participation.

<sup>7</sup> All data files are available from the author on request.



**Figure 2.** Results of Mediation Analyses for Study 1

*Note:* A dotted arrow indicates that a relationship is statistically insignificant ( $p < .05$ ) in the full model.

contributor. As the table shows, participants rated high contributing partners to be both more group motivated and higher status than low contributing partners. These data show that participants viewed partners who had contributed more to collective action in phase 1 as more motivated to help the group and as more respected than lower contributing partners.

**MEDIATION ANALYSIS: THE IMPORTANCE OF PERCEIVED GROUP MOTIVATION.** To investigate whether participants awarded high-contributors status because their high contributions imply group motivation, I conducted a mediation analysis (Baron and Kenny 1986) (results are given in Figure 2). First, regression analyses show that partner's contribution level predicts participant ratings of the partner's group motivation and status. Further, ratings of group motivation predict the partner's status. Finally, in a regression analysis including both contribution level and perceived group motivation as independent variables, only group motivation is significantly related to perceived status. This indicates that the effect of contribution level on the partner's status operates through perceptions of the partner's group motivation. This supports the idea that contributions to the public good increase group members' status to the extent that they increase perceptions of their group motivation.

**INFLUENCE.** I next analyzed the effects of partner's contribution level on the influence the partner had over the participant during the contrast-sensitivity task. I calculated the rate of partner's influence as the proportion of trials where participants and their programmed partner initially disagreed but participants decided to switch their answers to agree with those of their partner. As Table 2 shows, participants who interacted in the contrast-sensitivity task with a previously high contributor were influenced at a significantly higher rate than were participants who interacted with a previously low contributor.<sup>8</sup>

<sup>8</sup> None of the main effects of partner's contribution level reported in Studies 1, 3, and 4 interact with participant's contribution level in the Public Goods game. The only exception is the effect of partner's contribution level on influence over the participant in Study 1. This significantly interacts with participant's contribution level such that the greater influence of generous partners over participants is more pronounced among selfish participants. While it is possible that higher contributing participants are less impressed by the contribution behavior of generous partners, I detect no comparable pattern in status and group motivation ratings across Studies 1, 3, and 4. It is therefore more likely that this interaction effect is anomalous.

COOPERATION AND GIFT-GIVING. Table 2 shows the results for the three economic exercises. In the Fear of Greed game, participants interacting with partners who were previously high contributors did not cooperate at significantly higher rates than participants interacting with low contributors, although the difference was in the predicted direction. Results of participants' behavior in the Greed game conform to predictions: participants interacting with partners who were high contributors in phase 1 of the study cooperated with them at higher rates than did participants interacting with partners who were previously low contributors. This result shows that participants behaved as though they had less desire to exploit high contributors than low contributors.

I also found that participants allocated a substantially higher proportion of the Dictator game pool to high contributing partners than to low contributing ones. This result suggests that participants felt a greater desire to be generous toward high contributors than toward low contributors.

## DISCUSSION

Results of Study 1 strongly support predictions derived from the theory. Participants perceived the simulated higher contributors as more group motivated and higher status than their lower contributing counterparts. The extent to which participants perceived their partners as group motivated mediates the effect of earlier contribution level on status standing. In addition, participants submitted more to the views of relatively high contributors than to low contributors. This is important in part because it suggests the promise of further social and material benefits for the high contributor. This study also shows the material benefits that accrue for contributions. Participants were more likely to cooperate with high contributors in a Greed game that measured participants' desire to exploit their partners for material gain. This result is especially impressive because the high contributing partners logically could be expected to cooperate at higher rates and were therefore more vulnerable to exploitation. Participants were also more generous toward previously high contributing partners in a Dictator game. In the Fear of Greed game, however, participants did not cooperate at significantly

higher rates with high contributors. In this game, participant defection indicates fear of exploitation by one's partner. This is somewhat surprising because participants could logically assume that partners who previously contributed at high levels to the public good would be less interested in exploiting them in the ensuing Fear of Greed game.

## STUDY 2: OBSERVERS ALSO REWARD CONTRIBUTION

Alternative explanations for the results of Study 1 are possible, such as an exchange-theoretic explanation based on direct reciprocity (Bienenstock and Bianchi 2004; Blau 1964; Homans 1974; for a review, see Molm and Cook 1995). It could be that high contributors to collective action in Study 1 earned greater status than low contributors, not because group motivation is a respected trait, but instead through a reciprocal exchange of resources for improved status.

How can we discern an exchange-theoretic account from one based on the idea that giving to a group conveys group motivation, a characteristic that is considered meritorious? The two accounts diverge on whether an observer of apparently group motivated behavior would hold a high contributor in high esteem. The exchange-theoretic account argues that people give respect as direct reciprocity for resources received, and therefore would not give respect for contributions they do not benefit from. My theory predicts, however, that to respect individuals for their contributions, people need only have reliable information regarding an individual's group motivation and value the public good. For example, people who do not directly benefit from a charitable donation still respect those who give to charity.

## METHODS

To empirically test these two explanations against one another, I altered Study 1 in a few important respects. Most significantly, participants no longer actively participate in a collective action setting; instead, they simply observe the other five study participants. To maximize the contrast between high and low contribution, participants in Study 2 were paired with either the highest or lowest contributor from

**Table 3.** Means by Condition for Survey and Behavioral Dependent Measures from Study 2

	Partner was High Contributor Condition	Partner was Low Contributor Condition	Mean Difference	Significance
Rating of partner's group motivation	85.1 (12.7)	22.4 (21.9)	62.7	<.001
Rating of partner's status	70.7 (16.7)	39.6 (16.0)	31.7	<.001
Participant's cooperation rate in Fear of Greed game	.476 (.512)	.150 (.366)	.313	.025
Participant's cooperation in Greed game	.619 (.498)	.100 (.308)	.519	<.001
Participant's donation in Dictator game (% given)	.371 (.180)	.171 (.194)	.200	.001

Note: Standard deviations shown in parentheses.

the Public Goods game. Finally, I dropped the contrast-sensitivity task from the follow-up study because it involved much of the deception in the study, and therefore created relatively high rates of suspicion. Apart from these changes, all other aspects remained the same as in Study 1. The study features a two-condition (partner high/low contributor), between-participants design. Forty-one undergraduates (25 women, 16 men) at a large, private university participated in return for pay, plus an option of extra credit in a sociology class.<sup>9</sup>

## RESULTS

Composite measures for group motivation and status show acceptable levels of reliability (Cronbach's alpha = .98 and .78, respectively). Table 3 gives results of t-tests for all dependent measures in Study 2. Participants rated high contributing partners as significantly more group motivated and higher status than low contributing partners.

As in Study 1, I investigated whether perceived group motivation mediates the relationship between contribution levels and perceptions of the partner's status. Figure 3 shows the results of this analysis. As in Study 1, partner's contribution level significantly predicts participants' ratings of their partner's group motivation and status. In a regression analysis with perceptions

of partner's status as the outcome variable, and partner's contribution level and perceptions of the partner's group motivation as independent variables, only perceived group motivation has a significant effect. These findings suggest that the effects of contribution level on partner's status operated through perceptions of the partner's motivation to help the group.

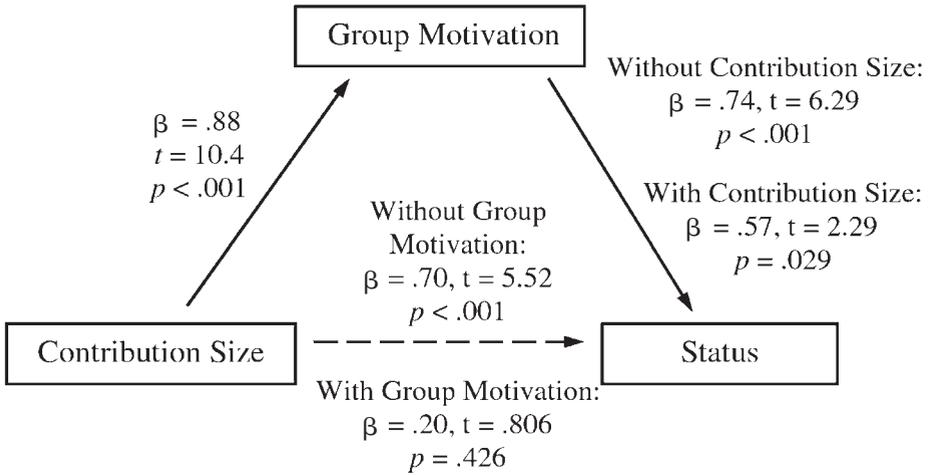
In the Fear of Greed game, participants cooperated at higher rates with high contributors than they did with low contributors. This replicates a prior study that found high contributors to public goods were more trusted than low contributors (Barclay 2004). Results of participants' behavior in the Greed game also confirm predictions. Participants who interacted with high contributors cooperated with them at higher rates than did participants interacting with low contributors. These results show that participants behaved as though they had less desire to exploit, and less fear of exploitation from, high contributing partners.

I also found that participants allocated a substantially higher percentage of the Dictator game pool to high contributing partners than to low contributing partners. This result indicates that participants were more inclined to be generous toward high contributors than toward low contributors, which is consistent with past research on indirect reciprocity (Milinski, Semmann, and Krambeck 2002b; Semmann, Krambeck, and Milinski 2005; Wedekind and Milinski 2000).

## DISCUSSION

The results of Study 2 support my claim that the status and material benefits earned by high contributors in Study 1 are attributable to the respect accorded to individuals who signal high group

<sup>9</sup> One participant reported high levels of suspicion in the study and was removed from data analysis. Additionally, survey response results for six participants were lost due to a computer malfunction. Thus, analyses of all survey responses are limited to 34 participants, while analyses of behavior on the economic games reflect all 40 valid participants.



**Figure 3.** Results of Mediation Analyses for Study 2

*Note:* A dotted arrow indicates that a relationship is statistically insignificant ( $p < .05$ ) in the full model.

motivation, rather than the result of a direct reciprocity process. These results further indicate that high contributors to collective action may enjoy social and material benefits even outside the group from others who do not directly benefit from the collective action. This suggests broader benefits for contribution to collective action than just those available within the group, further highlighting how status may resolve the collective action problem.

### STUDY 3: THE SIGNIFICANCE OF SELF-SACRIFICE

I argue that contributions to collective action lead to increased status by signaling an individual's underlying group motivation. Alternative explanations are possible, however. Although the mediation analyses from Studies 1 and 2 support the group motivation account, studies in which a mediator is experimentally manipulated—rather than measured and analyzed statistically—constitute stronger evidence for claims of mediation (Spencer, Zanna, and Fong 2005). Therefore, one purpose of Study 3 is to manipulate how group motivated an individual's contributions to collective action are (versus how much underlying resources they signal) in order to determine whether the social and material benefits documented in these first two studies are in fact attributable to the signaling of group motivation.

Additionally, the theory presented here argues that contributions lead to greater perceived group motivation to the extent that they entail group benefit and self-sacrifice. In Studies 1 and 2, however, these two factors were confounded in the experimental manipulations of partner's contribution size. An additional purpose of Study 3, therefore, was to address this gap. To do so, I manipulated how self-sacrificing a contribution was while holding constant how group beneficial it was. This allowed me to study the effects of self-sacrifice on resulting status standing independent of group benefit.

To address these issues, Study 3 manipulated the proportionality of the partner's contribution behavior (see Hardy and van Vugt 2006). Half of the participants were asked to evaluate a partner who contributed a high proportion of his available resources; the other half evaluated a partner who contributed a more moderate proportion. In both cases, the actual amount contributed was held constant. This allowed me to manipulate how self-sacrificing a contribution was, while holding constant how much it benefited the group.

### METHODS

Study 3 was identical to Study 1 except for a few changes. First, rather than all endowments being set at \$5, at the beginning of the Public Goods game participants were told that group members would be randomly assigned different sized

**Table 4.** Means by Condition for Survey and Behavioral Dependent Measures from Study 3

	Partner was High Proportional Contributor Condition	Partner was Moderate Proportional Contributor Condition	Mean Difference	Significance
Rating of partner's group motivation	77.1 (13.2)	59.7 (15.6)	17.3	<.001
Rating of partner's status	63.5 (14.1)	53.0 (10.9)	10.5	<.001
Participant's cooperation rate in Fear of Greed game	.408 (.497)	.213 (.414)	.195	.039
Participant's cooperation in Greed game	.571 (.500)	.423 (.500)	.146	.156
Participant's donation in Dictator game (% given)	.394 (.177)	.366 (.183)	.028	.443

Note: Standard deviations shown in parentheses.

endowments, which would be known to all group members. Participants could contribute up to a fifth of their endowments in each of the five rounds of the game. As in Study 1, participants contributed to the public good throughout phase 1, rather than acting as observers as in Study 2. Participants were always assigned a \$6 endowment. For half of the participants, the group member who would become their partner was assigned a \$5 endowment; for the other half, their partner was assigned a \$9 endowment. The partner always contributed a total of \$4.35 to the public good.

In phase 2, all experimental participants rated their partner on survey measures of status and group motivation. They then played the three economic exercises with their partner. As in Study 2, to reduce suspicion and the length of study sessions, I again did not use the contrast-sensitivity measure of influence from Study 1. The procedure is otherwise the same as in Study 1, featuring a two-condition (partner was a high versus moderate proportional contributor), between-participants design. Ninety-seven undergraduates (69 women, 28 men) at a large, private university participated in the study in return for pay, plus an option of extra credit in a sociology class.

## RESULTS

The composite measures for group motivation and status are reliable (Cronbach's alpha = .93 and .88, respectively). Table 4 gives results for all dependent measures in Study 3. Participants rated partners who contributed a high proportion of their resources to be significantly more group motivated and higher status than those who contributed a moderate proportion. These

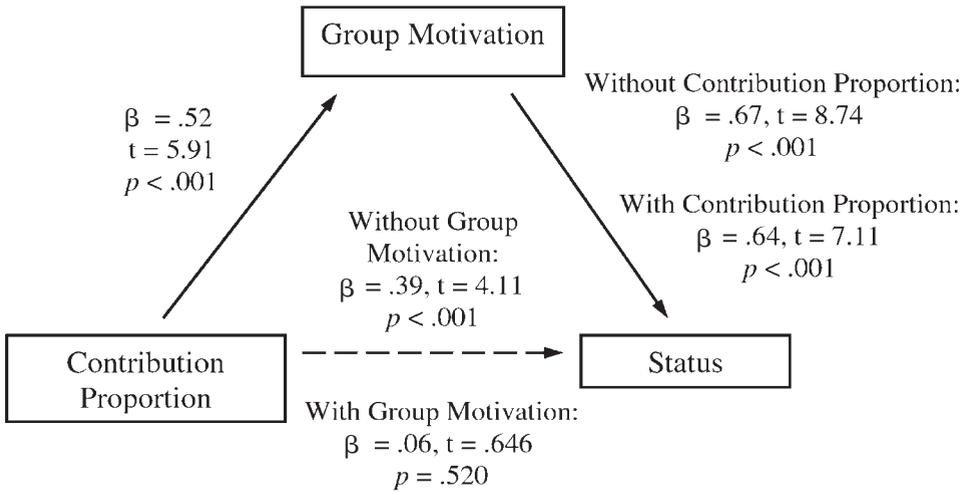
findings show that the greater apparent sacrifice made by the high proportional contributors earned them higher status and perceived group motivation.

I again conducted a mediation analysis, this time of the relationships between partner's proportion contributed and participants' ratings of the partner's group motivation and status. Figure 4 shows that participants granted higher status to partners who contributed a higher proportion of their resources, to the extent that they were seen as more group motivated.

Participants cooperated with high proportional contributors at higher rates in the Fear of Greed game, but not in the Greed game. High proportional contributors also were not allocated more resources in the Dictator game. These findings suggest that participants who interacted with high proportional contributing partners had less fear of exploitation, but they were not less inclined to exploit nor more generous.

## DISCUSSION

Overall, the findings of Study 3 support the group motivation-signaling account of why participants granted partners high status for their contributions. Contributions that represented a higher proportion of a group member's available resources were more respected and viewed as indicating greater group motivation because they represented greater individual sacrifices for the group. The results of Study 3 are less pronounced than those of Studies 1 and 2, with two of three behavioral measures showing non-significant differences. While this may indicate limitations to the material benefits enjoyed by very generous group members, it may be



**Figure 4.** Results of Mediation Analyses for Study 3

*Note:* A dotted arrow indicates that a relationship is statistically insignificant ( $p < .05$ ) in the full model.

because Study 3 manipulated high versus moderate proportional giving, as opposed to the prior studies that manipulated contribution level at high versus low levels.

It could be argued that the insignificant differences observed in the Greed and Dictator games are consistent with an exchange-theoretic account because the partner contributed the same absolute amount across the two conditions. Study 2, however, offers strong evidence against this account, and the smaller and less significant mean differences observed in Study 3 are more likely attributable to the smaller contrast in partner's contribution behavior across conditions, as compared with Studies 1 and 2. The main effects of Study 3, combined with the mediation findings from Studies 1, 2, and 3, all support the theoretical claim that contribution to collective action earns a contributor status because it indicates the contributor's underlying motivation to help the group, a trait that others view as meritorious.

#### STUDY 4: GAINING STATUS ENCOURAGES GROUP CONTRIBUTIONS

Studies 1, 2, and 3 establish part of my status theory of collective action. They show that group members (in these studies, experimental participants) reward other members (here, programmed partners) for displaying group moti-

vation by granting them status, deferring to them on tasks, cooperating with them, and being generous toward them. But, I have not yet closed the circle by demonstrating that status rewards for contribution in turn enhance group members' real motivations to help the group and, as a result, their future willingness to contribute. Status rewards for contribution should also engender positive feelings from the rewarded member toward the group—including identification, solidarity, and cohesion.

Study 4 was designed to test these predictions. I changed the design of the previous studies in a few important respects. Most significantly, after participants rated other group members, they received prefigured feedback on how the other group members rated them. I told half the participants that the other members held them in very high esteem, and half that the other members held them in moderate esteem. Participants then went through more rounds of the Public Goods game before answering several survey questions regarding their group motivation, identification with the group, perceptions of group solidarity, and perceptions of group cohesion. Importantly, the key question of this study is not how the experimental participants perceived their partners, but how they behaved in response to their partners' perceptions. Did receiving respect from others increase group motivation and contributions?

## METHOD

Study 4 is identical to Study 1 except for a few changes. First, following phase 1, all participants rated both the second highest and second lowest contributors' group motivation and status.<sup>10</sup> To minimize participant fatigue, I removed two of the group motivation questions and the three economic exercises. After rating the two group members, participants saw the average ratings that two other anonymous participants submitted about them so that they could "know a little more about the perspective of the other participants." In fact these ratings were simulated. Participants were shown either high or moderate level ratings for how prestigious (ratings of 92 or 47), honorable (90.5 or 45.5), and respected (94.5 or 48.5) they were seen to be by the two other group members. Participants then continued to phase 2, in which they participated in five more rounds of the Public Goods game.

Following new rounds of the Public Goods game, participants answered four questions regarding their group motivation (e.g., "How generous are you?"), three questions measuring their perceptions of the group's solidarity (e.g., "How much solidarity do you think the group had?"), two questions regarding their degree of identification (e.g., "How much do you identify with the group?"), and five questions regarding group cohesion, borrowed from past research on relational cohesion (Lawler and Yoon 1996, 1998).<sup>11</sup> I reduced the group motivation composite from six to four items to streamline the survey (see the Appendix for the complete list of questions).

The study features a two-condition (participant received high/moderate status feedback),

<sup>10</sup> As in Studies 1, 2, and 3, participants rated high contributing group members as significantly more group motivated and higher status than lower contributing members.

<sup>11</sup> After these surveys, participants completed the PANAS survey of positive and negative affect (Watson, Clark, and Tellegen 1988). I find no significant effect of the study manipulation on reported positive or negative affect. This serves as evidence against the possible alternative explanation that expressions of respect increased contributions by engendering positive affect (e.g., Isen and Levin 1972).

between-subjects design. Eighty-six undergraduates (60 women, 26 men) at a large, private university participated in return for pay, plus an option of extra credit in a sociology class. I dropped seven participants from data analysis for expressing suspicion regarding either the status feedback or simulated participants and indicating that these suspicions affected their contribution behavior in phase 2.

## RESULTS

I predicted that participants who were randomly assigned high status feedback would contribute more to the group afterward than would those who received moderate status feedback. I first tested this claim by creating a variable "change in contribution," which represents the difference between participants' average contribution before the ratings feedback and their average contributions after the feedback. Table 5 gives the means for change in contribution levels for the two conditions of the study. Participants in phase 2 increased their contributions when given high status feedback, but tended to decrease their contributions if given moderate status feedback.

I next conducted a mediation analysis to determine if participants' self-reported group motivation mediates the relationship between status rewards and change in contribution level. That is, do status rewards increase contributions by increasing participants' motivation to be generous toward the group? A reliability analysis justified making a composite for participants' self-reported group motivation (Cronbach's alpha = .88). Figure 5 shows the results of this analysis. First, as above, a regression analysis shows that the more highly participants were rated, the more they increased their contributions. Also, a regression analysis demonstrates that the more highly participants were rated, the more they described themselves as group motivated (e.g., generous and cooperative). This is an important finding, showing that participants' evaluations of their own motivations are shaped by what they think others think of them. Finally, a full regression analysis supports my claim that participants who received more praise increased their contributions

**Table 5.** Means by Condition for Survey and Behavioral Dependent Measures from Study 4

	Participant Received High Status Feedback	Participant Received Moderate Status Feedback	Mean Difference	Significance
Participant's change in contribution (phase 2 minus phase 1)	.033 (.135)	-.031 (.137)	.064	.04
Participant's rating of own group motivation	69.0 (17.5)	60.6 (17.8)	8.4	.038
Participant's rating of group solidarity	38.2 (19.6)	28.7 (16.1)	9.5	.02
Participant's rating of group cohesion	39.0 (20.1)	32.3 (15.9)	6.7	.106
Participant's rating of identification with group	31.8 (23.3)	22.3 (19.3)	9.5	.053

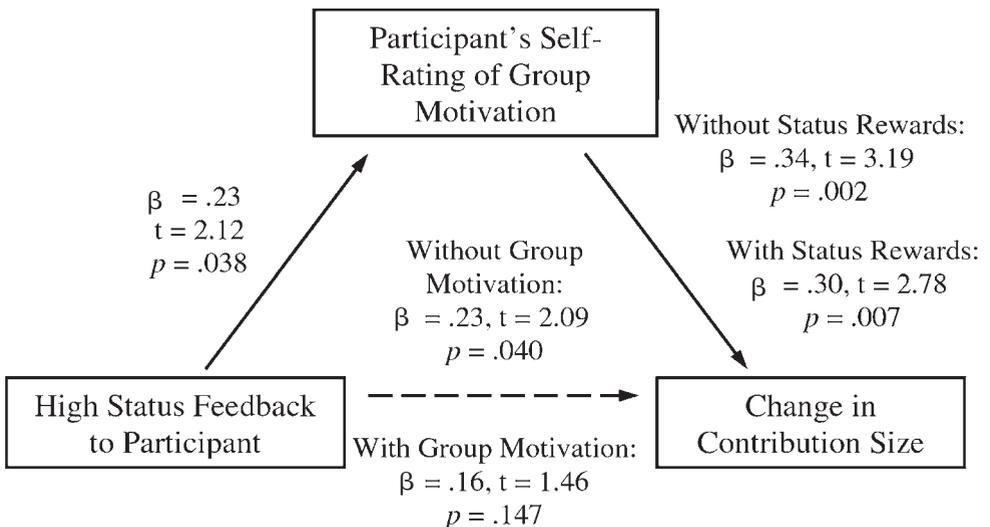
Note: Standard deviations shown in parentheses.

because the praise raised their own estimation of their motivation to help the group.<sup>12</sup>

<sup>12</sup> I did not survey participants' group motivation until after all rounds of the Public Goods game were concluded to avoid creating a demand effect in favor of the behavioral prediction. That is, receiving status could have led individuals to feel greater group motivation and then behave consistent with their self description via a "commitment and consistency" dynamic (Cialdini 2001). Placing measurement of the mediator at the end of the study, however, raises the possibility that status feedback somehow affected contribution directly, and only thereafter did participants perceive themselves as more group motivat-

IONS OF THE GROUP: SOLIDARITY, COHESION, AND IDENTIFICATION. I created composites from the solidarity, cohesion, and identification questions. Each set of questions shows at least acceptable levels of reliability (Cronbach's alpha = .75, .88, and .91, respectively). As shown in Table 5, participants who were given higher level status feedback perceived the group as having greater solidarity than did those who received moderate status feedback. Participants

ed. Although the mediation analysis given in Figure 5 is consistent with my theory, the present design cannot completely eliminate this alternate interpretation.



**Figure 5.** Results of Mediation Analysis for Study 4

Note: A dotted arrow indicates that a relationship is statistically insignificant ( $p < .05$ ) in the full model.

given high status feedback also perceived the group as having greater cohesion than did those who received moderate status feedback, although this result only approaches marginal significance. Finally, participants who were given high status feedback also reported identifying with the group more than did those who received moderate status feedback, although this result is marginally significant.

## DISCUSSION

Results of Study 4 confirm that status rewards for contribution to collective action encourage greater giving in the future. Importantly, the effects of status rewards on participants' contribution levels do not significantly interact with participants' prior levels of contribution ( $p > .90$ ). This suggests that people will give more after receiving esteem from group members, and less if they do not, regardless of how much they gave in the past. We should consider this in light of Studies 1, 2, and 3, however, which show that low contributors are unlikely to receive high status feedback in the first place. The present research suggests that low contributors receive low levels of respect from group members, leading them to give less in the future, while high contributors receive high respect from group members, leading them to subsequently give more.

If this pattern holds over time, groups may bifurcate into subgroups of contributors and free-riders as high contributors gain higher status, contribute more as a result, again achieve improved status, and so on. This dynamic would be at least superficially similar to Michels's (1915) "Iron Law of Oligarchy," which describes a tendency for a subgroup of early contributors to assume positions of leadership in the group and take on the majority of contributions and decision making. This theoretical connection deserves further study.

One could argue that status does not provide a solution to the collective action problem if this dynamic obtains; that is, if status feedback leads some to contribute more, but others to contribute less, then status does not have a uniformly positive impact on group productivity. However, we should not expect solutions to the collective action problem to satisfy such a criterion. We observe neither maximal productivity in groups nor uniformity in contributions

across group members. The present research shows that collective action contributions earn individuals status and that this status affects further contribution patterns. Status thus motivates at least some observed contributions to collective action. Furthermore, the present research shows how status structures the dynamics of who gives, how much they give, and under what conditions.

Although I follow the social psychology literature in assuming that groups' status hierarchies are zero-sum, this assumption deserves further investigation. It could be that groups vary in their general rates of granting respect for contributions, with some groups offering copious respect for generous behavior and others offering less. If this is the case, the present research suggests that groups that grant more respect will engender greater productivity. Indeed, organizational research indicates that workers are more productive when they feel respected in their workplaces, and workplaces that offer greater respect to workers are more generally productive (Tyler and Blader 2000). Future research should further investigate the exact macro-level implications of the dynamics explored here (see, e.g., Kitts 2006).

The results of Study 4 highlight the significance of Studies 1, 2, and 3 by showing that the receipt of status rewards for contributions to the group may be a key factor in sustaining group productivity among rewarded group members. Status rewards also influenced less tangible aspects of the group, such as feelings of solidarity and identification among group members, both of which have important effects on the experience of group membership.

Further, status rewards affected contribution behavior by increasing participants' motivations to help the group. This suggests a novel solution to what could be called the paradox of reward-driven generosity. This paradox follows from evidence that prosocial behavior is both seemingly sincere (e.g., anonymous giving, self-reports of altruistic motives, and cases of extreme altruistic sacrifices for non-kin) and responds to reputational incentives (e.g., people give more in public than in private and often tell others about their giving). Study 4 suggests that status rewards may affect prosocial behavior not in a forward-looking, rational calculus, but instead by operating at individuals' backs, reinforcing past prosocial behavior and encourag-

ing further giving.<sup>13</sup> In this way, status can encourage generous behavior, not through the prospect of future rewards, but through reinforcement of past generous behavior. If this learning dynamic is nonconscious, it would help explain how prosocial behavior in humans could be experienced as sincere and selfless, while also being responsive to past status rewards. Study 4 offers support for such an account, although other explanations for the findings of this initial test remain possible.

It is worth noting that the extent to which contributions to a group lead to greater respect likely depends on the cultural beliefs shared by group members. Specifically, the more group motivation is considered a meritorious trait within a given culture, the more contributions will tend to earn an individual improved status standing among groups within, or influenced by, that culture. For example, it has been speculated that cultures could value individual achievement and self-actualization to such an extent that self-sacrifice for others would be disrespected (Nietzsche [1887] 1989). That said, anthropological research indicates that even highly competitive cultures, such as that of the Yanomamö (Chagnon 1988), view individuals perceived as making valuable contributions to group efforts as higher status.

## CONCLUSIONS

Collective action research investigates how people overcome the temptation to free-ride on the efforts of others, deciding instead to contribute to public goods. Until recently, status was largely overlooked as a variable in this research. The theory I present here asserts that individuals who contribute to collective action receive social and material benefits for their efforts, in particular, improved status in the eyes of other group members. The presence of these rewards helps demystify how groups solve collective action problems. Contributions to collective action earn respect from group members by

signaling that contributors value the group's well-being over their own. Experimental results show that individuals who behave in more group-motivated ways in collective action settings are seen as higher status (Studies 1, 2, 3, and 4), have more influence over other group members (Study 1), are cooperated with more in subsequent interactions (Studies 1, 2, and 3), and receive greater gifts (Studies 1 and 2). Study 2 also shows that contributors to collective action may enjoy social and material benefits from individuals outside the group as well.

I also found evidence that collective action contributions yield status gains for the reason specified by the theory: they communicate a contributor's group motivation. An exchange-theoretic alternative explanation failed to account for the results of Study 2. Mediation analyses of the results of Studies 1, 2, and 3 support the group motivation-signaling account of why collective action contributions lead to improved status. Most significantly, Study 3 demonstrates the mediating role of group motivation via a direct experimental manipulation of the extent of sacrifice shown by a given contributor.

The theory also proposes that individuals receiving status rewards for collective action contribution will (1) develop more positive views of the group, (2) be more motivated to help the group, and (3) will contribute more as a result. Study 4 tests these claims and shows that status rewards for collective action contribution can stimulate individuals' subsequent contributions, identification, and solidarity. These findings underscore the value to a group of rewarding contributions and also support a solution to the paradox of reward-driven generosity. Taken together, status rewards accrue to those who appear group-motivated in their behaviors, and group motivation in turn is enhanced by status rewards, generating more contributions in the future.

This research points to a possible drawback of formal incentive systems designed to encourage contributions to public goods. Formal incentive systems likely interfere with the informal incentives of status rewards because contributions under threat of formal sanction (e.g., paying taxes or obeying the law) do not necessarily reflect concern for the group. Therefore, they do not earn an individual status. Although effective at maximizing group contributions, formal

<sup>13</sup> Other theoretical accounts of how prosocial behavior could be experienced as sincere while also responsive to past reputational rewards emphasize evolution as the mechanism, that is, reputational gains contribute to the reproductive fitness of humans who behave prosocially (e.g., Frank 1987, 1988).

incentives may undermine a group's natural tendency to produce solidarity and identification among contributing members via status rewards. Indeed, recent research shows that formal sanctions can undermine trust and altruism between group members (Fehr and Rockenbach 2003; Mulder et al. 2006).

The theory also suggests that the character of a group's status hierarchy may encourage or impede contributions from its members (see Kitts 2006). Groups with greater status mobility (e.g., newly formed groups without set status hierarchies) might be more likely to offer substantial status rewards that promote future giving. For example, a union drive might be most effective at maximizing contributions of organizing time from activists when the group is new and the status hierarchy is still flexible, rather than later when relative position in the group is more determined. Organizations and other groups with rigid status hierarchies may struggle to promote maximal contributions from their members unless they provide some alternative mechanism for intragroup status mobility. Groups with highly unequal status hierarchies may also face impediments to group productivity, as large gaps between status positions may discourage group members from contributing.

The collective action problem is concerned with how social movements and other groups are organized and sustained, as well as the more fundamental, Hobbesian question, *why society?* Why do individuals come together in groups to pursue collective goals, rather than pursuing purely selfish ones? Why are there groups, societies, and cultures, rather than just a population of disconnected egoists?

The status solution fits the collective action problem well in a few ways. The status incentive system does not require central, formal organization. The incentives rest in the regard members have for one another. This means that the system is not easily destroyed or undermined and does not require any explicit management or leadership to be maintained. Also, status incentives, unlike material ones, increase as the collective action becomes more difficult. As tasks require greater sacrifice from group members, contributing indicates even greater concern for the group.

Lest readers take these results to imply a simple quid-pro-quo between group and member

that answers the collective action problem, I would underscore the importance of both perceived and actual group motivation in the interplay of individual contributions and relative standing in a group's status hierarchy. These are critically social phenomena wherein group members carefully evaluate each other for signs of devotion to the group, far more than a simple exchange.

The collective action problem has engaged scholars for centuries before and after Hobbes. The answer to this question promises insights on the evolution of government and social institutions, as well as the movements that might be devised to reform or even overthrow them. Hobbes's *Leviathan*, the collective force we wield in the creation and maintenance of social order, is not an explicit contract. Perhaps, though, there is an implicit social contract embedded in our minds. That social contract, our willingness to behave in basically prosocial ways and make sacrifices for the group's welfare, may stem fundamentally from our concern for what others think of us.

Sartre ([1943] 1955) famously observed that "*l'enfer, c'est les autres*" ("hell is other people"), partly because our reliance on what others think of us leaves us dependent on them for our own happiness. Because of this concern for others' esteem, we are privately tyrannized by others' opinions, even outside their presence, as even our views of ourselves are reflected to us through the eyes of many (Cooley 1902). I suggest here, however, that our concern for others' opinions of us is, in the end, responsible for much of our happiness because of the possibilities it grants: the opportunity for society, camaraderie, and the production of public goods. Although we are pursued by our consideration of how others view us, at the end of the pursuit we find ourselves in groups, with the potential for solidarity with others.

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## APPENDIX: COMPLETE TEXT OF QUESTIONS ASKED AFTER STUDY 4

### SELF-RATINGS OF GROUP MOTIVATION

How selfish are you? [Extremely Selfish, Not Selfish at All] (Reverse-scaled)

How generous are you? [Extremely Generous, Not Generous at All]

How cooperative are you? [Extremely Cooperative, Not Cooperative at All]

How much of a team player are you? [Not a Team Player at All, Really a Team Player]

### PERCEIVED GROUP SOLIDARITY

How much solidarity do you think the group had? [No Solidarity at All, A Great Deal of Solidarity]

How much did the group feel like a team? [Not at All, A Great Deal]

How much do you think the group stuck together? [Not at All, A Great Deal]

### SELF-REPORTED GROUP IDENTIFICATION

How much do you identify with the group? [Not at All, A Great Deal]

How much do you feel connected with the group? [Not at All, A Great Deal]

### GROUP COHESION

For the following questions, please indicate how you would describe the group using the two adjectives at either end of the scale below.

[Close, Distant]

[Coming Together, Coming Apart]

[Solid, Fragile]

[Cohesive, Divisive]

[Converging, Diverging]

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