

The Interpersonal Implications of Stealing the Glory

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Abstract

People tend to overestimate their contribution to joint tasks, in part because their own contributions are more memorable than the contributions of their collaborators. We examined some of the interpersonal consequences of this bias. Participants engaged in either a hypothetical (Experiment 2) or real (Experiment 1) cooperative task and learned how their collaborator ostensibly allocated responsibility. We varied how much credit the collaborator took for herself, and also how much credit she gave to the participant, factors confounded in past research. In each experiment, collaborators who “stole the glory” were seen as less fair, harder to get along with, and less honest than were collaborators who did not. Interestingly, this effect was driven by one’s own contribution being underappreciated more than one’s collaborator’s contribution being overstated. Mediation analyses revealed that the discord could be traced to the attribution of biased responsibility judgments to self-interest on the part of one’s collaborator.

Keywords: responsibility, egocentrism, social comparison, social judgment, naive cynicism

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### The Interpersonal Consequences of Stealing the Glory

*“Of all crimes the worst is to steal the glory. . . even more accursed than to rob the grave.” — Robert Frost*

In 1953, biologists James Watson and Francis Crick published a landmark paper outlining their discovery of the double-helical structure of DNA. Unmentioned in their article, however, were the contributions of their collaborator, Rosalind Franklin. Franklin’s X-ray photograph of a single DNA fiber, taken in 1952, is considered by many to have been essential to the breakthrough (Holt, 2002; Maddox, 2002). In the words of one author, Franklin’s photo “fairly shouted helix” (Holt, 2002, p. 106). Nevertheless, neither Watson nor Crick gave Franklin even the slightest credit for the discovery in their original paper, nor when the pair was awarded the Nobel Prize for the work in 1962.

This example should come as little surprise to readers familiar with the literature on judgments of responsibility. When people divide responsibility for collaborative endeavors—be they groundbreaking scientific discoveries or simple household chores—they tend to overestimate their own contributions and underestimate the contributions of others (Brawley, 1984; Burger & Rodman, 1983; Christensen, Sullaway, & King, 1983; Deutsch, Lozy, & Saxon, 1993; Kruger & Gilovich, 1999; Leary & Forsyth, 1987; M. Ross & Sicoly, 1979; Savitsky, Van Boven, Epley, & Wight, 2003; Thompson & Kelley, 1981).

Why? One reason, doubtless, is that some individuals are bent upon claiming more than their fair share of the responsibility in order to claim more than their fair share of the resulting rewards, including fame, fortune, and the occasional Nobel Prize (Leary, Bednarsky, Hammon, & Duncan, 1997; Miller, Goldman, & Schlenker, 1985; Schlenker & Miller, 1977). But there is a more innocent source of overestimation as well. First, because one’s own contributions tend to be more cognitively available than do the contributions of one’s collaborators, people tend to overestimate the former and

underestimate the latter (Brawley, 1984; Burger & Rodman, 1983; Kruger & Savitsky, 2005; M. Ross & Sicoly, 1979; Ross, 1981; Thompson & Kelly, 1981). The time and effort one devotes to a task oneself—whether one is hunched over an electron microscope or a sink full of dirty dishes—is simply more memorable than the time and effort invested by someone else. Another, somewhat related argument suggests that people may overestimate their own inputs into a collaborative endeavor because they begin the search by asking “How much have I contributed?” rather than “How much has my partner contributed?” resulting in biased estimates (Gilovich, Kruger, & Savitsky, 1999). Furthermore, not only is information about one’s own contributions more memorable than information about a collaborator’s contributions, people typically have a greater amount of information about their contributions than the contributions of their collaborator (Kruger, Windshitl, Burrus, Fessel, & Chambers, 2005)

Despite the sometimes benign origins of this bias, we suspect that its interpersonal consequences are considerably more malignant. Indeed, returning to the DNA example, although Franklin died several years before Watson and Crick were awarded the Nobel Prize, her friend and biographer Ann Sayre speculated that had she known that her contributions went unrecognized, Franklin “might well have risen like a goddess in her wrath, and the thunderbolts might have been memorable” (1975, p. 172). To be sure, people react negatively to being underappreciated when they attribute that underappreciation to a failed memory. However, we offer that people are particularly likely to react negatively when they attribute that underappreciation to a motivated grab for excess credit.

We base our predictions, at least in part, on early theorizing by Ichheiser (1949) and, more recently, L. Ross & Ward (1996). Although certainly not true in all situations (e.g. Asch, 1956), in many situations people tend to assume that their own view of the world corresponds to objective reality (Ichheiser, 1949), and that individuals who do not

share that view must not only be wrong, but uninformed, irrational, or biased by ideology or self-interest (Leary, Bednarsky, Hammon, & Duncan, 1997; Miller, Pronin, Puccio, & L. Ross, 2002; L. Ross & Ward, 1996). People tend to perceive themselves as fairer than others because they perceived a stronger relationship of frequency and fairness in their own behavior than in the behavior of others (Messick, Bloom, Boldizar, & Samuelson, 1985). Furthermore, work in the study of reactions to evaluation suggests that people strongly prefer positive feedback over negative feedback, and that people with high self-esteem believe that positive feedback is more accurate than negative feedback (e.g. Jussim, HsuiJu, & Aiello, 1995; Moreland & Sweeney, 1984; Sweeney & Wells, 1990). Applied to the present case, when people realize that their own assessment of their contribution to a collaborative task does not match the assessment of their collaborator, they are likely to assume, first, that their collaborator is wrong, and second, that the source of the error must be ignorance, stupidity, or—perhaps more likely—selfishness (see M. Ross & Sicoly, 1979, for a similar argument). Indeed, when people perceive that the possibility of an ulterior motive for one's behavior exists (e.g. attaining excess credit for a collective endeavor), they believe that the probability of an alternative explanation (e.g. lack of memory) for that behavior is low (Fein, Hilton, & Miller, 1990; Hilton, Fein, & Miller, 1993).

Some support for these intuitions comes from a recent study of everyday intuitions of responsibility judgments (Kruger & Gilovich, 1999). Participants allocating responsibility for collective endeavors tended to assume that their collaborators would give themselves more than their fair share of the outcome (at least when the outcome was positive). This was true regardless of whether their collaborators *actually* overestimated responsibility. Importantly, when asked to explain differences in opinion about these disagreements, participants indicated that their collaborators—but not they themselves—were biased by self-interest. Kruger and Gilovich (1999) went on to characterize the

exaggerated assumption that the judgments of others are biased by ideology as “naive cynicism.”

This misperception of motive is likely to lead to a misperception of the individual, sewing the seeds of anger, resentment, and hostility. To the extent that people see the exaggeration of personal contribution not as a genuine difference in memory but rather a motivated grab for excess credit, they are likely to draw negative inferences about collaborators who exaggerate their personal responsibility for a collaborative effort. As a consequence, these negative inferences may influence future working relationships, such that people may be less willing to work with these collaborators in the future.

There are at least two findings consistent with this assertion. First, Kruger and Gilovich (1999) found that couples who tended to attribute differences in responsibility allocations to motivated distortion were less likely than couples that did not to be satisfied with the relationship. Although the direction of causality in this study is uncertain (couples may have invoked motivated reasoning to explain disagreements *because* they did not particularly care for one another), they are at least consistent with the notion that the attribution of disagreements over responsibility to motivated reasoning can lead to interpersonal discord. More direct evidence comes from a study by Forsyth, Berger, and Mitchell (1981), who led participants to believe that a collaborator either over- or underestimated their relative contribution to a joint task with either a positive or a negative outcome. As expected, participants thought that “self-serving” collaborators (e.g., those who attributed the lion’s share of the responsibility for a successful outcome to him- or herself) were harder to get along with, less likeable, and less desirable as future work partners, than their other collaborators.

Despite these findings, there are at least two questions that remain unanswered. The first is the question of cause: *Why* do people evaluate individuals who “steal the glory” negatively? Given the ubiquity of collaboration in everyday life—and, if past

research on the topic is any indication, the ubiquity of *bias* in estimates of contributions to such collaborations—it is important to understand not only *whether* people react negatively to this bias, but also *why* they do. In keeping with the logic of naive cynicism, we suspect that one reason is that people attribute the disagreement to a motivated grab for excess credit rather than an honest difference in construal.

Second, note that past research has confounded methodologically what may be distinct and separable psychologically. In the Forsyth et al. (1981) research summarized earlier, participants learned that their collaborators gave themselves more credit for the outcome than they gave to the other group members, gave themselves less credit, or neither. As such, it is unclear whether participants' negative evaluations stemmed from their own contribution being underacknowledged or the fact that their collaborator overestimated his or her own contribution (or both). To be sure, overestimating one's own contribution ("We discovered the double helix") often goes hand-in-hand with underestimating others' ("And you didn't"). But which is the source of interpersonal discord?

We suspect that people are more concerned with how they are evaluated by their collaborators than with how their collaborators evaluate themselves. After all, there is no shortage of studies attesting to people's preoccupation with how they are regarded by others (e.g., Leary & Forsyth, 1987; Leary, Tambor, Terdal, & Downs, 1995; Gilovich, Medvec, & Savitsky, 2000; Savitsky, Epley, & Gilovich, 2001; Shrauger & Shoeneman, 1979). For instance, the theory of reflected appraisal proposes that individuals create their self-impressions by first imagining how others view them and then adjusting their self-views accordingly (e.g. Shrauger & Shoeneman, 1979). Furthermore, it is often the case that the allocation of rewards in groups depends on how each individual's contribution is perceived by other group members (Leary & Forsyth, 1987). Also, individuals who commit a minor social blunder tend to focus inordinately on the

transgression and how it—and they—will be judged in the eyes of others (Savitsky et al., 2001). Indeed, Leary et al. (1995) have suggested that individuals' assessments of how they are viewed by others form the basis of their self-esteem, and that moment-to-moment fluctuations in state self-esteem are in fact reflections of individuals' concerns over the possibility of harsh recriminations from others and the social exclusion that might follow. Finally, note that there are few punishments as painful—or as consequential—as banishment from the group (Baumeister & Leary, 1995; Williams, 1999). Given that individuals who fail to “pull their own weight” in group tasks run the risk being shunned (Cosmides, 1989; but see Kerr, 1983 for an exception), it stands to reason that individuals would be especially sensitive to being underappreciated.

The present research was designed to address these issues. We conducted two experiments in which participants evaluated an individual—either hypothetical (Experiment 2) or real (Experiment 1)—with whom they had collaborated on a project. We varied how much credit the collaborator was said to have attributed to him- or herself, as well as how much credit the collaborator was said to have attributed to the participant. We expected participants to evaluate their collaborator negatively whenever the collaborator took too much credit and gave the participant too little credit, consistent with prior work (Forsyth et al., 1981). However, we expected participants' evaluations of their collaborator to be more sensitive to variations in how much responsibility the collaborator attributed to the participant than to variations in how much responsibility the collaborator claimed for him- or herself. In Experiment 2, we examined one potential cause of this conflict: the attribution of disagreements over responsibility to self-interest on the part of one's collaborator.

### Experiment 1

Participants in Experiment 1 collaborated on a group task in the lab, and then provided separate estimates of their own and their partner's contribution to the task.

Participants then learned that their collaborator ostensibly (a) either did or did not overestimate his or her own contribution, and (b) either did or did not underestimate the participant's contribution. Finally, participants evaluated their collaborator on several criteria, including overall likeability and desirability as a future work partner. We predicted, first, that participants would evaluate their collaborator negatively when he or she took too much credit or gave the participant too little credit, and second, that the influence of the latter would be greater than the influence of the former.

### *Method*

*Participants.* Eighty-four students enrolled in an introductory course in psychology at the University of Illinois (46 women, 38 men) earned course credit in exchange for their participation. They were recruited in groups of four.

*Procedure.* On arrival to the lab, the experimenter explained that the experiment involved impression formation in group tasks. The four participants were randomly assigned to one of two teams and told that the experiment would begin by having each team compete to see which one could solve the most anagrams in 20 minutes. After showing them an example, the experimenter presented participants with a series of anagrams printed on a 3-foot by 5-foot sheet of paper placed on a table. Participants were to write the correct solution to as many anagrams as they could directly on the sheet of paper, with his or her team earning one point per anagram solved. Each of the 4 participants solved anagrams simultaneously, and were not given a chance to review their answers at the end of the task, making it unlikely that they could remember the exact number of anagrams they and their partner solved.

After 20 minutes had elapsed, participants were lead to private rooms and given a questionnaire asking them to provide separate estimates of the number of anagrams they and their teammate solved, each on separate 1 (*none*) to 12 (*all*) scales. Next, the

experimenter collected each participant's questionnaire, ostensibly to give to his or her teammate as part of the impression formation task.

To provide information upon which to evaluate his or her teammate, each participant was then presented with a questionnaire ostensibly completed by his or her teammate. In reality, the answers to the questionnaire were fabricated by the experimenter in order to manipulate the independent variables. Participants learned that their teammate either did or did not overestimate his or her own contribution to the task, and did or did not underestimate the participant's contribution to the task. This was done by adding or subtracting "3" to each participant's own responsibility estimates when crafting the bogus teammate questionnaire. For instance, if a participant estimated both his own and his teammate's contribution to the task to be a "7" on the 1-to-12 scale, he would learn that his partner ostensibly gave herself either a 7 (in the accurate condition) or a 10 (in the overestimation condition), and that she gave the participant either a 7 (in the accurate condition) or a 4 (in the underestimation condition). The maximum or minimum scale value was used when the addition or subtraction of 3 fell outside of the scale range. The design of the experiment was thus a 2 (teammate's rating of him- or herself: accurate vs. overestimation)  $\times$  2 (teammate's rating of participant: accurate vs. underestimation) factorial, with all four conditions represented in every session of the experiment (that is, each of the four participants in each experimental session were assigned to a separate experimental condition).

After reading the questionnaire ostensibly completed by their teammate, participants evaluated him or her on four dimensions. These included a number of items designed to assess participants' overall evaluation of their teammate ("How much do you like your teammate?," "How hostile is your teammate?," "How easy is your teammate to get along with?," and "How fair is your teammate?"), as well as two questions designed to get at participants' willingness to work with their teammate in the future ("How

willing would you be to work with your partner in the future?” and “Suppose you will be doing a similar task in the future . . . would you prefer to work with the same person or with another person?”). All ratings were made on 1-to-12 scales, with the exception of the last question, which was made on a 1-to-5 scale. Finally, all participants were probed for suspicion and debriefed.

### *Results and Discussion*

No participant voiced suspicion that the responsibility estimates provided by his or her teammate were bogus. Gender did not influence the results of this or the next experiment and will not be discussed further.

The responses to the four teammate evaluation measures were highly correlated, and so were averaged (after reverse scoring the negative items) to create a single index ( $\alpha = .81$ ). This variable was submitted to a 2 (teammate's rating of him- or herself: accurate vs. overestimation)  $\times$  2 (teammate's rating of participant: accurate vs. underestimation) repeated-measures analysis of variance (ANOVA), with the group as the unit of analysis. As Table 1 reveals, participants provided lower ratings of their teammate when they thought that he or she underestimated the participant's contributions than when they thought he or she did not,  $F(1, 20) = 11.99, p = .002, \eta^2 = .38$ . However, as Table 1 also reveals, there was neither an interaction nor a main effect for the teammate's rating of him- or herself,  $F_s < 1$ . In other words, whereas participants reacted negatively to being underappreciated, they were rather indifferent with respect to how their teammate evaluated his or her own contribution.

We also examined the two questions designed to measure participants' interest in working with their teammate in the future. Despite the surface similarity of the two measures, they were uncorrelated, and so we analyzed each one separately. Contrary to our predictions, neither measure was significantly influenced by either independent variable, all  $F_s < 1.2$ . We return to this issue in experiment 2.

## Experiment 2

Why do people dislike individuals who “steal their glory?” As outlined above, we believe that one determinant is people’s belief that the difference of opinion stems from a motivated grab for excess credit rather than, say, an honest difference in memory. That is, this difference of opinion should be more strongly related to the belief that their partner wants to see him or herself in a positive light than the belief that their partner is merely misremembering contributions.

Experiment 2 was designed to test this interpretation. Participants imagined that they had collaborated with another student on a class project and that, in some conditions, she had either underestimated the participant’s contribution to the project or overstated her own. In addition to rating the extent to which they would like such a collaborator, participants also completed several measures designed to capture their intuitive *explanations* for her ratings—specifically, the extent to which they interpreted her ratings as the product of self-interest.

As in Experiment 1, we predicted that participants would evaluate their collaborator negatively when she took too much credit for herself or gave the participant too little credit, but that the influence of the latter would be greater than the influence of the former. In addition, we predicted that a tendency to attribute her ratings to motivated reasoning would statistically mediate this relationship, consistent with our causal account.

A second aim of Experiment 2 was to see whether the implications of stealing the glory extend not only to interpersonal evaluations, but also to behavioral predictions (a notion for which we found no support in Experiment 1). Thus, in Experiment 2 we added several additional measures designed to capture participants’ interest in working with their collaborator in the future, as well as how hard they expected to work if they did so.

Third, in Experiment 1 we did not have a measure of participants’ actual performance. Thus, it is possible that a participant’s estimation of his or her own

contribution may have actually been an overestimation. Consequently, a partner's perceived underestimation of the participant's contribution may have actually been accurate. In Experiment 2, we control for this by explicitly stating each partner's true contribution.

Finally, we expanded our operationalization of each independent variable from two to three levels. Specifically, participants learned that their collaborator either underestimated, overestimated, or accurately estimated her own contribution, and also that she underestimated, overestimated, or accurately estimated the participants' contribution. Our goal was to disentangle underestimation of the participant's contribution from *misestimation*. In Experiment 1, participants rated their collaborator more negatively when they believed that he or she underestimated the participant's contributions than when they thought he or she did not. However, unclear is whether this derogation was due to participants' belief that they were underappreciated, or simply that they were misrepresented. A sizable literature on "self-verification" suggests that people may at times desire to be regarded accurately by others, even if that means that others should evaluate them in less than flattering terms (e.g., Swann, 1992; Swann & Ely, 1984, Swann & Hill, 1982; Swann, Pelham, Chidester, 1988; but see Swann, et al, 1989 for a counter-example). That is, as evidence that they are viewing the world accurately, people often want others to see them in the same way they see themselves. By including a condition in which the participant's collaborator was said to have overestimated the participant's contribution, this alternative interpretation could be put to the test.

### *Method*

*Participants.* Two hundred fourteen University of Illinois students (112 women, 102 men) participated on a volunteer basis.

*Procedure.* Participants read a questionnaire that asked them to imagine that they had collaborated on a class project with another student, "Sharon." Participants were

asked to imagine that although they had encountered some disagreements with Sharon, they had worked closely with her and had gotten along well overall. “In the end, both of you were very satisfied with your project, and you got positive feedback from your instructor and your classmates. You and Sharon shook hands and congratulated each other on a job well done.”

Participants were then asked to imagine that they received an e-mail from their class instructor in which they were asked to rate how much they and Sharon had each contributed to the project—ratings that would be used to help determine each student’s grade and that would be kept confidential. The questionnaire went on as follows:

Since you and Sharon both contributed equally—approximately a 7 on the 0-to-10 scale—you replied to your instructor’s e-mail indicating that each of you deserved a 7. A week later, you received another e-mail from your instructor confirming your earlier responses to the survey to insure that no mistakes were made. As it happened, however, you received the wrong e-mail by mistake. The message you got was intended for Sharon, not for you, and it contained confidential information about Sharon’s responses to the two earlier questions about productivity. When asked to rate her own productivity, Sharon gave herself a \_\_\_\_; when asked to rate your productivity, she gave you a \_\_\_\_.

Depending on condition, participants learned that Sharon had given herself either a 5, 7, or 9 on the 0-to-10 scale, and, orthogonally, that she had given the participant either a 5, 7, or 9. The design of the experiment was thus a 3 (Sharon’s rating of herself: underestimation, accurate, or overestimation)  $\times$  3 (Sharon’s rating of the participant: underestimation, accurate, or overestimation) factorial.

*Dependent measures.* After learning how Sharon ostensibly allocated responsibility to the participant and to herself, participants answered several questions designed to measure 1) their satisfaction with Sharon’s allocation of responsibility, 2)

their evaluation of Sharon herself, 3) their interest in working with Sharon in the future, 4) their anticipated productivity if they were to work with Sharon in the future, and 5) their explanation for Sharon's allocation of responsibility. Specifically, participants answered three questions designed to assess their satisfaction with Sharon's ratings ("Overall, how satisfied or unsatisfied would you be with Sharon's ratings?," "Overall, how pleased or displeased would you be with Sharon's ratings?," and "Overall, how fair or unfair would you say Sharon's ratings are?"), each of which were made on separate scales ranging from -5 to +5, with endpoints labeled *very unsatisfied-very satisfied*, *very displeased-very pleased*, and *very unfair-very fair*, respectively. These were averaged to create a single index of participants' satisfaction with Sharon's ratings,  $\alpha = .95$ .

Second, participants rated Sharon herself: "Given the limited information you have about Sharon, how would you rate Sharon on the following criteria?" This was followed by seven semantic differential scales, with endpoints ranging from -5 to +5: *mean-nice*, *unpleasant-pleasant*, *unsupportive-supportive*, *not helpful-helpful*, *uncooperative-cooperative*, *unproductive-productive*, and *biased-unbiased*. In addition, participants rated their liking for Sharon on a scale from -5 (*dislike very much*) to +5 (*like very much*). These ratings were averaged to create a single index of participants' evaluation of Sharon,  $\alpha = .95$ .

Third, participants indicated their interest in working with Sharon in the future. This was measured with the single item "imagine that your instructor assigned you another project and gave you the option of working with Sharon again or working with a new partner (to be chosen by your instructor) . . . which would you prefer?" This was accompanied by a scale ranging from -5 (*definitely new partner*) to +5 (*definitely Sharon*), with the midpoint labeled "no preference".

Fourth, we asked two questions designed to capture participants' anticipated productivity should they find themselves working with Sharon in the future. Participants

indicated (separately) how productive they would be if they worked with Sharon and if they worked with another student, each on a scale from 0 (*no productivity whatsoever*) to 10 (*superior productivity*). We subtracted the latter from the former to create an index of how productive participants thought that they would be with Sharon versus someone else, with positive numbers indicating greater relative anticipated productivity with Sharon and negative numbers indicating greater relative productivity with someone else.

Finally, participants provided their explanation for Sharon's allocation of responsibility using measures adapted from Kruger and Gilovich (1999). Specifically, participants were presented with two possible (though doubtless non-exhaustive) explanations: (a) "People want to see themselves in a favorable light . . . thus, Sharon rated herself as she did because she was motivated to do so by her own self-interests," and (b) "Since people pay so much attention to what they do, it's easier to remember their own actions . . . thus, Sharon rated herself as she did because she remembered more of her own contributions." Participants rated how much each explanation captured their reasoning on a scale from 0 (*doesn't capture my thinking at all*) to 10 (*captures my thinking perfectly*), and also rated the plausibility of each explanation on a scale from 0 (*not at all plausible*) to 10 (*very plausible*). Responses to these two questions were averaged to create two index variables, one measuring participants' endorsement of a motivated reasoning explanation,  $\alpha = .95$ , and the other measuring participants' endorsement a memory explanation,  $\alpha = .92$ .

### *Results and Discussion*

*Sharon's rating of the participant.* Because our a priori predictions centered on the main effects of each independent variable as opposed to their interaction, and also in the interest of simplicity, we used a one-way analytical approach as opposed to a two-way analytical approach. However, some readers may be interested to learn that when these data were analyzed in a series of  $3 \times 3$  ANOVAs, in addition to observing

consistent main effects for each independent variable, we also observed consistent, although much smaller, interactions (all  $F_s > 6$ ,  $ps < .01$ ). This was due to the fact that the influence of Sharon's rating of the participant was greater when she gave more credit to herself. However, because the interaction qualified only the magnitude of the simple effects rather than their direction, we emphasize the one-way analyses rather than the two-way analyses in our description of the results.

Our first set of analyses focused on participants' satisfaction with Sharon's allocation of responsibility, their evaluation of Sharon, their willingness to work with Sharon in the future, and their anticipated future productivity working with Sharon, as a function of the accuracy of Sharon's estimate of the participant's contribution. As Table 2 illustrates, the more credit Sharon gave to the participant, the more positive were participants' ratings. This was verified by separate one-way ANOVAs, one for each of the four dependent measures, and supplemental planned pairwise comparisons, which revealed that all main effects and pairwise comparisons were significant, all  $ps < .001$ .

These data extend the results of Experiment 1 in several important ways. First, they provide a replication of the finding that people react negatively to being underappreciated. Importantly, this was true not only in terms of their interpersonal evaluation of their collaborator, but also in terms of their interest in working with this person in the future, as well as their anticipated productivity should they do so. Note that participants did not react negatively to their contribution being overestimated (quite the contrary), which rules out a self-verification interpretation of the results (Swann, 1992).

*Sharon's rating of herself.* Our next set of analyses focused on the interpersonal consequences of Sharon's estimate of her own contribution. Contrary to our findings in Experiment 1, we found consistent evidence that Sharon's evaluation of her own contributions influenced participants' ratings, including their satisfaction with her ratings, their evaluation of Sharon herself, their willingness to work with her in the future, and

their anticipated productivity should they work with her again. Specifically, as Table 3 shows, the more credit Sharon allocated to herself, the less participants liked her, wanted to work with her in the future, and so on. However, it should be pointed out that by and large, these effects were dwarfed by the effects of Sharon's rating of the participant (Table 2), consistent with our predictions. This was true in terms of participants' satisfaction with the ratings, their evaluation of Sharon, and their willingness to work with Sharon in the future (all  $Z$ s  $> 3$ ,  $p$ s  $< .001$ ), although not in terms of their anticipated productivity should they do so ( $Z = 1.41$ ,  $p = .159$ ).<sup>1</sup>

*Mediational analyses.* The primary goal of Experiment 2, however, was to examine the source of this interpersonal discord. Our thesis is that the discord can be traced, at least in part, to the attributions people make for bias in the responsibility judgments of others. Specifically, we predict that people tend to attribute the bias to self-interest on the part of their collaborator (c.f., Kruger & Gilovich, 1999), which in turn leads to the derogation of that collaborator.

In an initial investigation of this hypothesis, we averaged the 3 conditions in which Sharon rated her own contribution higher than the participant, the 3 in which she rated her own contribution as less than the participant, and the 3 conditions in which she rated her contribution as equal to the participant. This revealed that participants attributed Sharon's ratings more to motivated reasoning ( $M = 7.85$ ) than to differences in memory ( $M = 6.56$ ) when Sharon rated her own contribution as higher than the participant,  $t(72) = 3.37$ ,  $p < .01$ . When Sharon rated the participants' contribution as higher than her own, participants attributed her ratings more to differences in memory ( $M = 4.52$ ) than to motivated reasoning ( $M = 3.06$ ),  $t(69) = -4.37$ ,  $p < .001$ . Finally, when Sharon rated the participants' contribution and her contribution as equal, participants attributed her rating to motivated reasoning ( $M = 5.42$ ) and to differences in memory ( $M = 5.27$ ) equally,  $t(62) = .43$ ,  $p = .67$ .

As a test of mediation, we conducted a path analysis between Sharon's division of responsibility, participants' explanation for that division, and each dependent measure, to see whether the attribution to motivated reasoning statistically mediated the link between Sharon's ratings and participants' evaluations (Baron & Kenny, 1986). Specifically, we conducted a separate path analysis for each dependent measure. A graphical depiction of one of these analyses (participants' evaluation of Sharon) is presented in Figure 1.

As can be seen, Sharon's rating of herself and her rating of the participant each significantly predicted both the proposed mediator (the attribution to motivated reasoning) and the dependent variable (in this case, participants' liking of Sharon). Specifically, the more credit Sharon gave to the participant, the less inclined participants were to attribute her judgment to motivated reasoning, and the more they liked her. And the more credit Sharon gave to herself, the more participants attributed her judgment to motivated reasoning, and the less they liked her. Sobel (1982) tests revealed that the former statistically mediated the latter. That is, the influence of Sharon's ratings of the participant on participants' liking of her was reduced when their attribution for those ratings were taken into account,  $Z = 3.32, p < .001$ , as was the influence of Sharon's rating of herself,  $Z = -4.53, p < .001$ . These data suggest that the influence of Sharon's ratings on participants' liking of her was partially mediated by the attribution of those ratings, specifically, the attribution to motivated reasoning.

Recall that in addition to asking participants about the extent to which a motivated reasoning explanation characterized their attributions, we also asked them the extent to which a memory explanation characterized their attributions. When we repeated the path analysis with the memory attribution rather than the motivated reasoning attribution as a mediator, it failed to show any evidence of mediation,  $Z = 1.44, p = .150$ .

Repeating this analysis for each of the three remaining dependent measures revealed a remarkably consistent pattern. In each case, each of the independent variables,

proposed mediators, and the dependent measure were significantly associated with one another, and the relationship between the independent variable and the dependent variable was reduced when the attribution to motivated reasoning was taken into account (all  $ps < .01$ ), but not when the attribution to memory was taken into account (all  $ps > .17$ ).

### General Discussion

When people divide responsibility between themselves and their collaborator(s), they tend to overestimate their own relative contribution. The present research investigated the interpersonal consequences of this bias. Consistent with prior work, we found in Experiments 1 and 2 that people react negatively to those who “steal the glory” (Forsyth et al., 1981). Specifically, in Experiments 1 and 2, we found that participants perceived the judgments to be unfair, formed a negative impression of their collaborator. Furthermore, in Experiment 2 participants were disinclined to work with the person in the future, and anticipated low productivity should they do so.

In addition, whereas past research has confounded one’s own contribution being underappreciated with one’s collaborator’s contribution being overstated (e.g., Forsyth et al., 1981), in the present research we examined each bias separately. We consistently found that participants reacted more negatively to being underappreciated than they did to their collaborator overstating his or her own contribution. This is consistent with our argument that the former is likely to be considerably more socially consequential than the latter (Baumeister & Leary, 1995; Williams, 1999), and also the more general observation that individuals tend to be especially concerned with how they are viewed and evaluated by others (e.g., Gilovich & Savitsky, 1999).

The present research also sheds light on one source of this discord. In Experiment 2 we found that the link between a collaborator stealing the glory and the resulting interpersonal discord it created could be traced to the attribution of that theft to motivated

reasoning. Specifically, participants' tendency to invoke such an explanation was shown to mediate the link between a collaborator's allocation of responsibility and participant's liking of her, their willingness to work with her in the future, and so on.

The feeling that one has been underappreciated may have important consequences for group performance and group cohesion. The current research demonstrated that those who felt underappreciated liked their partners less than those did not feel underappreciated. Furthermore, those who felt underappreciated were less willing to work with their partners in the future. Indeed, those who feel they are constantly underappreciated may ultimately make the decision to leave the group if their partners continue to underappreciate them (see also Leary & Forsyth, 1987).

*Limitations and future research.* One limitation of study 2, of course, was that it was hypothetical. After all, a number of studies attest to people's difficulty when it comes to anticipating how they would react to a hypothetical situation (Gilbert, Driver-Linn, & Wilson, in press; Sherman, 1980). Although the findings in this experiment dovetailed with those of the non-hypothetical Experiment 1, future work should examine these issues further in a non-hypothetical setting.

Future research may also attempt to differentiate the current research from research in reciprocity of interpersonal attraction, or the mutuality of one person's liking for another (e.g. Newcombe, 1956). Although certainly related, we believe that the current research is conceptually distinct from research in reciprocity of interpersonal attraction. That is, whereas the research in interpersonal attraction has focused on how people respond to a person who *likes* them, the current research focuses on how people respond to a person who *underappreciates* them. As such, one may feel like they are liked by another person, but still feel that that person underappreciates them. Future research may focus on further disentangling appreciation from liking.

Another potential avenue for future research is to explore the “flip-side” of the issue we investigate here: How do people react to the collaborators whose glory *they* have stolen? Although admittedly nothing more than speculation, it may be the case that individuals judge those whom they have short-changed every bit as negatively as they themselves are judged. Numerous studies demonstrate that individuals often derogate those whom they perceive as victims, especially when they themselves are responsible for the victimization (e.g., Lerner, 1980; Shaver, 1970). We suspect that the same derogation may operate here. Indeed, consider Rosalind Franklin once again, and how she was described by James Watson, her Nobel laureate collaborator, in his book *The Double Helix*. Franklin “became simply ‘Rosy,’ a bluestocking virago who hoards her data, stubbornly misses their import, and occasionally threatens Watson and others with physical violence—but who might not be ‘totally uninteresting’ if she ‘took off her glasses and did something novel with her hair’” (Holt, 2002, p. 102).

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Authors' Notes

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## Footnote

1 Because our a priori predictions centered on the main effects of each independent variable as opposed to their interaction, and also in the interest of simplicity, we used a one-way analytical approach as opposed to a two-way analytical approach. However, some readers may be interested to learn that when these data were analyzed in a series of  $3 \times 3$  ANOVAs, in addition to observing consistent main effects for each independent variable, we also observed consistent, although much smaller, interactions (all  $F$ s  $> 6$ ,  $p$ s  $< .01$ ). This was due to the fact that the influence of Sharon's rating of the participant was greater when she gave more credit to herself. However, because the interaction qualified only the magnitude of the simple effects rather than their direction, we emphasize the one-way analyses rather than the two-way analyses in our description of the results.

Table 1

*Liking of teammate by condition, Experiment 1.*

Teammate's rating of the participant			
Teammate's rating of him/herself	Accurate	Underestimation	<i>Mean</i>
Accurate	9.27	8.01	8.64
Overestimation	9.04	8.27	8.66
<i>Mean</i>	9.16	8.14	

Table 2

*Mean Evaluations of a hypothetical collaborator, “Sharon,” as a function of her evaluation of the participant, Experiment 2.*

Dependent measure	Accuracy of Sharon’s rating of the participant		
	underestimation	accurate	overestimation
Satisfaction with ratings	-2.63 <sub>a</sub>	0.44 <sub>b</sub>	2.49 <sub>c</sub>
Evaluation of Sharon	-0.16 <sub>a</sub>	2.07 <sub>b</sub>	3.02 <sub>c</sub>
Willingness to work w/Sharon in the future	-2.70 <sub>a</sub>	0.67 <sub>b</sub>	2.89 <sub>c</sub>
Anticipated relative productivity in future work w/Sharon	-2.52 <sub>a</sub>	-1.23 <sub>b</sub>	0.62 <sub>c</sub>
<i>Mean</i>	-2.00 <sub>a</sub>	0.49 <sub>b</sub>	2.26 <sub>c</sub>

Note: Positive numbers indicate a favorable evaluation. Within-row values with the same subscript are not significantly different from one another.



Table 3

*Mean Evaluations of a hypothetical collaborator, “Sharon,” as a function of her evaluation of herself, Experiment 2.*

Dependent measure	Accuracy of Sharon’s rating of herself		
	underestimation	accurate	overestimation
Satisfaction with ratings	0.67 <sub>a</sub>	1.04 <sub>a</sub>	-1.46 <sub>b</sub>
Evaluation of Sharon	2.14 <sub>a</sub>	2.02 <sub>a</sub>	0.73 <sub>b</sub>
Willingness to work w/Sharon in the future	1.01 <sub>a</sub>	0.83 <sub>a</sub>	-1.08 <sub>b</sub>
Anticipated relative productivity in future work w/Sharon	-0.60 <sub>a</sub>	-0.44 <sub>a</sub>	-2.15 <sub>b</sub>
<i>Mean</i>	<i>0.81<sub>a</sub></i>	<i>0.86<sub>a</sub></i>	<i>-0.99<sub>b</sub></i>

Note: Positive numbers indicate a favorable evaluation. Within-row values with the same subscript are not significantly different from one another.

Figure Caption

*Figure 1.* Path analysis for the relationship between Sharon's allocation of responsibility to herself and to the participant, participants' explanation for that allocation, and their liking for Sharon, Experiment 2. The numbers in parentheses are the  $\beta$ s holding constant the proposed mediator. \*  $p < .05$ .

