

The Costs and Benefits of Undoing Egocentric Responsibility Assessments in Groups

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Individuals working in groups often egocentrically believe they have contributed more of the total work than is logically possible. Actively considering others' contributions effectively reduces these egocentric assessments, but this research suggests that undoing egocentric biases in groups may have some unexpected costs. Four experiments demonstrate that members who contributed much to the group outcome are actually less satisfied and less interested in future collaborations after considering others' contributions compared with those who contributed little. This was especially true in cooperative groups. Egocentric biases in responsibility allocation can create conflict, but this research suggests that undoing these biases can have some unfortunate consequences. Some members who look beyond their own perspective may not like what they see.

Keywords: judgment and decision making, egocentrism, perspective taking, heuristics, biases

Banting and Macleod won the 1923 Nobel Prize in Medicine for the discovery of insulin. Banting, so outraged at the credit given to Macleod, boycotted the ceremony in Stockholm and awarded half of his own prize money to a lab coworker. Macleod, who oversaw Banting's experiments as director of the laboratory, conveniently failed to mention Banting in speeches about the research (Harris, 1946). Contrast this animosity to the 2002 Nobel Prize in Economics awarded to Daniel Kahneman, whose late collaborator and close friend Amos Tversky was ineligible to receive the distinction posthumously. Consistent with the collaborative nature of their relationship, Kahneman's opening line in his award address emphasized the critical importance of Tversky's efforts in their research together—a sentiment he has stressed many times before and since.

Unfortunately, research suggests that people too often claim credit like Banting and Macleod, rather than like Kahneman and Tversky. Indeed, people are notorious for claiming more responsibility in collective endeavors than they objectively deserve. In the classic demonstration (M. Ross & Sicoly, 1979), for example, married couples were asked to assess their responsibility for a variety of household activities, such as preparing breakfast, shopping, and making important decisions. When summed together, self-allocated responsibility exceeded 100%, indicating that at least one member of the couple was—perhaps sorely—mistaken. Similar results have been observed across domains as diverse as fund-raising (Zander, 1971), academics (M. Ross & Sicoly, 1979), and athletics (Brawley, 1984; Forsyth & Schlenker, 1977), just to name a few (for a review, see Leary & Forsyth, 1987).

Such egocentric biases in responsibility allocations tend to occur, at least in part, because people focus too much on their own contributions and too little—if at all—on others' contributions. As the opening example suggests, failing to credit others' contributions by egocentrically focusing on one's own can create considerable conflict among group members, even if they are not disagreeing about responsibility for a Nobel Prize (Babcock & Loewenstein, 1997; Forsyth, Berger, & Mitchell, 1981; Forsyth & Mitchell, 1979). These egocentric biases have been cited as one of the key instigators of dissatisfaction and conflict in groups (Bazerman & Neale, 1982; Neale & Bazerman, 1983; L. L. Thompson & Loewenstein, 1992). Reducing such egocentric biases by leading people to consider their collaborators' contributions would therefore seem to be a simple strategy for minimizing the unhappiness, dissatisfaction, and conflict they produce.

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This research was supported by a Graduate Research Fellowship from the National Science Foundation to Eugene M. Caruso and by National Science Foundation Grant SES0241544 and a James S. Kemper Foundation Faculty Research Fund grant to Nicholas Epley. We thank Tara Abbattello, Dolly Chugh, Sean Darling-Hammond, Angela Kim, Sarah Murphy, Kristian Myrseth, Heather Omoregie, Dobromir Rahnev, Aram Seo, and Erin Rapien Whitchurch for assistance conducting these experiments.

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However, removing an egocentric focus on one's own contributions requires placing that focus on others' contributions, and we suggest that whether egocentrism in social interaction exacerbates or diminishes conflict depends on what people see when they shine the spotlight on others' contributions. To the extent that people believe they have done more work than their peers, considering others' contributions by adopting their perspective may highlight how little others have contributed, thereby increasing perceptions of inequity and unfairness.

We conducted four experiments to investigate the impact of perspective taking on egocentric allocations of responsibility and two indicators of group conflict—overall enjoyment and interest in future collaboration. We made several predictions. First, because people tend to focus too little on others' contributions when assessing responsibility for group outcomes, we predicted that leading people to think about the actions of others would decrease self-allocations of responsibility. Second, we predicted a more complicated relationship between perspective taking and the two indicators of group conflict. Highlighting others' contributions also highlights inequities in the contributions of group members that might have been overlooked. Doing so may lead group members who believe they contributed much (or members who actually did contribute much) to the group outcome to feel dissatisfied with others' meager contributions and with the inequality in group members' efforts. In contrast, group members who believed they contributed little (or members who actually did contribute little) may feel relatively more satisfied with others' more substantial contributions and the extent to which they benefited from working with these group members. We therefore predicted that reducing egocentrism in groups through perspective taking would cause high credit claimers to report decreased enjoyment and interest in future collaborations, relative to their low credit-claiming counterparts. We based our predictions on the mechanisms that produce egocentric responsibility allocations and the importance of equity in groups, to which we now turn.

Egocentric Responsibility Allocations

At least two mechanisms contribute to excessive responsibility claiming in groups: motivated reasoning and differential accessibility. In general, people are motivated to view themselves in a favorable light. Claiming more responsibility for positive group outcomes is obviously an effective strategy for improving and maintaining one's self-image, and people commonly use it (Miller & Schlenker, 1985; M. Ross & Sicoly, 1979, Experiment 2; Schlenker & Miller, 1977).

More relevant for the current studies, however, egocentric responsibility allocations are also produced by the differential accessibility of one's own contributions relative to others' contributions. People are always present (and usually attentive) for their own contributions, but are not necessarily present for others' contributions. People are therefore more likely to both notice and recall their own contributions than others' contributions (Schwarz et al., 1991; Tversky & Kahneman, 1973). Because noticing and remembering are both critical requirements for crediting contributions, people are likely to believe they have contributed more to a group project than others believe they contributed (M. Ross & Sicoly, 1979).¹

Three empirical findings are consistent with this accessibility interpretation. First, people overestimate their contributions not only to positive group outcomes but also to negative group outcomes (Kruger & Gilovich, 1999; see also Caine & Schlenker, 1979; M. Ross & Sicoly, 1979). These findings suggest that a motivated desire to see oneself in a positive light is not sufficient to explain the tendency for exaggerated claims of contribution.

Second, people naturally report considering information about themselves more than information about others when assigning responsibility (Brawley, 1984; S. C. Thompson & Kelly, 1981). This suggests that one's own behavior is more accessible when allocating responsibility for collective endeavors and therefore more likely to be used in such judgments.

Finally, varying the extent to which participants consider their own versus others' contributions alters responsibility allocations. Increasing participants' focus on their own contributions exacerbates the tendency to overestimate one's contributions (Burger & Rodman, 1983; M. Ross & Sicoly, 1979), whereas increasing their focus on others' contributions diminishes this tendency (Savitsky, Van Boven, Epley, & Wight, 2005). Even the most dispassionate group members, it appears, would conclude that they have contributed more than is warranted simply because their own contributions are so much easier to notice and recall than are others' contributions.

The impact of differential accessibility in responsibility allocations may be compounded by a related tendency for people to think of other group members as a collective rather than as individuals, even further masking their unique contributions (Savitsky et al., 2005). This tendency for people to pack the constituent elements of a category into a single unit is best seen in research on *support theory* (Rottenstreich & Tversky, 1997; Tversky & Koehler, 1994), which demonstrates that the perceived likelihood of an event is determined by the amount of support that can be generated in favor of a focal hypothesis relative to alternative hypotheses. *Unpacking* the constituent elements of a category—by describing them separately rather than collectively, for instance—increases the amount of support that can be generated in favor of a focal hypothesis and therefore increases its perceived likelihood. In one experiment, for example, people indicated that they were more likely to die from “heart disease, cancer, or other natural causes” than simply from “natural causes” (Tversky & Koehler, 1994).

This existing research suggests that one effective way to reduce egocentric responsibility allocations is to increase the attention paid to other group members by asking people to unpack their collaborators, considering them as individuals rather than as the rest of the group. Consistent with this possibility, a series of experiments involving debate teams, MBA groups, and academic group projects found that participants asked to unpack (or think about) their collaborators as individuals claimed significantly less credit for the overall work than participants not encouraged to

¹ In daily life, of course, motivated reasoning and differential accessibility can work in concert to produce egocentric responsibility allocations, as the desire to view oneself positively can influence the extent to which people search for accessible evidence consistent or inconsistent with this desire (Dawson, Gilovich, & Regan, 2002; Ditto & Lopez, 1992). Our point is not to disentangle these two mechanisms but to simply point out that either can produce egocentric assessments of responsibility.

unpack their collaborators (Savitsky et al., 2005). Reducing egocentric allocations of responsibility by simply asking people to think about others' contributions therefore seems like a logical way to help restore perceptions of fairness and reduce conflict over inequity in group interactions.

Egocentrism, Equity, and Group Well-Being

People who overestimate their own importance may feel underappreciated or believe that others are trying to take advantage of them (Gilovich, Kruger, & Savitsky, 1999). In addition, those who appear to take more credit than they deserve for a group accomplishment are less well liked and thought to be less desirable collaborators (Forsyth et al., 1981). In fact, egocentrism is one of the key instigators of dissatisfaction and conflict in negotiations. Negotiators consistently overestimate the likelihood that a neutral arbitrator will agree with their egocentric assessments of fairness (Bazerman & Neale, 1982; Neale & Bazerman, 1983), and these biased perceptions predict negotiation impasse (L. L. Thompson & Loewenstein, 1992; Wade-Benzoni, Tenbrunsel, & Bazerman, 1996). These results have been replicated in a variety of negotiation contexts, regardless of the presence or absence of financial incentives for performance (Babcock, Loewenstein, Issacharoff, & Camerer, 1995; Camerer & Loewenstein, 1993; Loewenstein, Issacharoff, Camerer, & Babcock, 1993).

If egocentric allocations of responsibility contribute to conflict and dissatisfaction within groups, and if focusing people on others' contributions rather than on their own decreases egocentric allocations, then focusing people on others' contributions should also reduce conflict and increase satisfaction. Although this argument is logically compelling, we suspect it is often wrong. Whether reducing egocentrism will decrease conflict and dissatisfaction within a group depends, we argue, on what people see when they look beyond their own perspective and into that of their collaborators.

Almost all groups include natural variability in actual contributions, with some people doing more and others doing less. Reducing egocentric biases by strengthening the focus on others' contributions is likely to highlight these differences in actual contributions that otherwise would have been relatively overlooked. Asking someone who contributes a great deal to consider others' contributions might indeed decrease the relative importance of one's own contribution but will also highlight the minimal contributions of individual others. This high credit claimer may now be more likely to feel like the division of labor was inequitable, to suspect that others were benefiting unfairly from his or her hard work, and to be less interested in continuing to work with this group in the future, compared with another group member who contributed less.

Asking someone who contributes little, in contrast, will again decrease the relative importance of his or her own contributions but will also highlight the impressive efforts of others. A person who has benefited from others' skills, abilities, and efforts may be more satisfied with his or her participation in the group and more interested in continuing with future collaborations, compared with someone who contributed more. Equity and fairness are paramount concerns in nearly all social relationships (Walster, Walster, & Berscheid, 1978), and reducing an egocentric focus on one's own contributions may make violations of equity more salient than they

would otherwise be, with differential effects on measures of conflict in a group depending on whether one has contributed much or has contributed little.

Notice that these predicted effects of reducing egocentrism could be independent of the group's outcome. Indeed, the results from the hypothetical group project study described above made no mention whatsoever of the group outcome. Although people are more likely to claim responsibility for a group success than a group failure (e.g., Forsyth & Schlenker, 1977), our theory is less concerned with the differential impact of motivations or outcomes on attributions of responsibility than with the impact of decreasing egocentric biases in those attributions.

Regardless of the group outcome, reducing a focus on one's own contributions naturally calls attention to others' contributions and highlights inequities among group members. Because such inequities are likely to produce relative dissatisfaction with group outcomes among those who contributed much but relative satisfaction with those who contributed little (e.g., Walster et al., 1978), we predicted relatively lower levels of satisfaction and desire for further collaboration among high credit claimers compared with low credit claimers. Ironically, such perspective taking may result in relative dissatisfaction among those who contributed much—precisely the people who would be most beneficial to the group's future collaborations.

Four experiments examined these hypotheses by investigating the impact of perspective taking in group endeavors on two proxies of group conflict, namely perceived enjoyment and interest in future collaborations. In each, participants working as part of a group were either asked to think carefully about the contributions of each individual group member or not before assessing responsibility or before assessing their satisfaction with the group. Consistent with previous research (Savitsky et al., 2005), we predicted that those led to consider their individual collaborators' contributions would claim less responsibility than those not led to do so. More important, participants in each of our experiments also indicated their enjoyment with the group and their interest in continued collaboration. We predicted that explicitly leading participants to consider others' contributions would result in relatively lower perceptions of enjoyment and desire for future collaboration among high credit claimers compared with low credit claimers. We did not predict any such relationship between credit claiming and enjoyment with the group or interest in future collaboration among those not explicitly led to consider others' contributions. Although few people would choose to be more biased in their judgment rather than less, we suggest that reducing egocentric biases in collective endeavors may sometimes have important and unexpected costs.

Study 1: Authors

Academic collaboration is the paradigmatic anecdote for egocentric responsibility allocations. The number and ambiguity of diverse tasks spread out over months or even years make accurate attributions virtually impossible. M. Ross and Sicoly (1979) discussed the problem of determining authorship as particularly relevant to their original investigation of egocentric biases, and suggestions for the appropriate way to overcome problems with authorship credit are a popular topic of discussion and debate (e.g., Fine & Kurdek, 1993; Goodyear, Crego, & Johnston, 1992; Zanna

& Darley, 2004). Given its prominence, we attempted to upgrade its anecdotal status by conducting research on authors of major academic journal articles. In addition, we examined our specific hypotheses about the impact of reducing egocentric biases by asking authors to indicate their satisfaction with the order of authorship and desire to collaborate in the future.

Method

Participants. We selected manuscripts from five organizational behavior journals for this study: *Academy of Management Journal* (AMJ), *Academy of Management Review* (AMR), *Administrative Science Quarterly* (ASQ), *Journal of Applied Psychology* (JAP), and *Organizational Behavior and Human Decision Processes* (OBHDP). Articles with three to six authors,² published between 1999 and 2001, were included in the investigation. E-mail addresses for all authors were available for 231 of the resulting 293 articles. If an author in this set had more than one article, all but one of those articles were randomly excluded to ensure that no author received the questionnaire more than once. Finally, all articles by two colleagues familiar with our hypotheses were excluded, leaving a sample of 145 articles with 484 unique authors.

Procedure. Each participant received an individual e-mail with a link to an online questionnaire containing questions about the experience of writing the article with their author group. Participants were asked to complete the questionnaire in the next few days, and not to discuss their responses with anyone. All participants were assured, both in the e-mail invitation and on the first page of the online survey, that their responses would remain confidential and anonymous. We explained that their responses would be aggregated such that their identities would not be attached to the data for any analyses.

Each article was randomly assigned to the self-focused ($n = 108$) or other-focused ($n = 89$) condition so that all authors of a particular article each received the same condition. Participants in the self-focused condition were simply asked, "Of the total work that your author group did on the article, what percent of the work do you feel you personally contributed?" Participants in the other-focused condition, in contrast, were first asked to write down the initials of their coauthors, and then told,

For all authors of the paper, please take a few moments to think about the contributions that they made to the article. Go down the list one at a time and consider the work that each person prepared and the contributions they made based on their particular area of expertise.

Following these instructions, respondents in the other-focused version indicated the percentage of work that each author (including themselves) contributed to this article. The order of the list of authors was held constant ("Author 1 contributed. . .," "Author 2 contributed. . .," etc.) to avoid confounding this manipulation with the order of self-allocations.

Dependent measures. After reporting the amount of work contributed, participants were asked how interested they would be "in initiating a brand new line of research (independent of any current ongoing research projects) with this same author group," how much they enjoyed "working with the group . . . compared to others with which you have worked," how happy they were "right now with the order in which your name was listed among the authors of this paper," and how happy they were "with the order in which your name was listed among the authors of this paper when the order was first decided." Responses to these items were made on scales ranging from 1 (*not at all*) to 7 (*very*).

Results

As might be expected, response rates were highest for first and second authors. Forty-six percent of first authors and 47% of

second authors completed the questionnaire, compared with 32% of third authors and 10% of fourth authors. Only 1 fifth author, and no sixth authors, responded. However, response rates by author order did not differ between conditions, $\chi^2(5, N = 197) = 4.42, ns$. In addition, the average size of author groups did not differ between the self-focused ($M = 3.42, SD = 0.73$) and other-focused conditions ($M = 3.48, SD = 0.76$), $t(195) = 0.40, ns$, nor did the mean author position or distribution of author numbers differ between these conditions ($M = 2.05, SD = 0.96$; $M = 2.10, SD = 0.97$, respectively), $t(195) = 0.63, ns$. Response rates may influence the generalizability of the following results to all compositions of author groups but do not influence the validity of comparisons between the two experimental conditions. In addition, gender had no significant effect on our dependent variables of interest in this or any other study in which it was measured and is therefore not reported further.

Responsibility allocations. To assess responsibility allocations across different group sizes, we created an index of adjusted responsibility for the author by multiplying the self-report of work for each participant by the number of authors in his or her group (see also Savitsky et al., 2005). For instance, if a respondent claimed to have contributed 30% of the work in a four-author group, the adjusted responsibility for that author would be 120%. Note that we are making no claim that adjusted responsibilities greater than 100% necessarily represent an overestimation because author position is expected to be objectively related to this adjusted responsibility estimate. Rather, we are simply creating an index that allows for between-condition comparisons across different sizes of author groups.³ Our main interest in this research is not to replicate the well-established existence of egocentric biases in responsibility assessments but to investigate the consequence of reducing an egocentric focus on one's contributions for group conflict.

As predicted, authors who considered their coauthors' contributions reported contributing less ($M = 123.12\%, SD = 50.55$) than those who were not explicitly led to consider others' contributions ($M = 140.44\%, SD = 65.70$), $t(195) = 2.04, p < .05, d = 0.294$.⁴

² We chose not to include groups of 2 authors because our analysis is unlikely to apply to such groups. If egocentric responsibility claims rest in part on considering the other group members collectively rather than individually (Savitsky et al., 2005), then such egocentrism should be largely eliminated when the rest of the group is only one other individual. That is, two-person groups are naturally unpacked.

³ Because we obtained responses from more than 1 person per author group, the analysis at the individual level does not account for statistical dependencies in the data. Because of confidentiality requirements, we could not identify individual respondents with their group in this study, making correction of this problem impossible. We return to this issue in Study 3, where we have independent observations at the group level.

⁴ Readers might be tempted to compare the overall index of claiming with a logical benchmark of 100%, but such a comparison is inappropriate given the higher response rates from first authors who likely were responsible for more credit than second or subsequent authors. Although we cannot be sure of the exact amount of egocentric responsibility claiming that occurred in this experiment, multiple replications in other research leave us little doubt that authors in the self-focused condition were exhibiting stronger egocentric biases than authors in the other-focused condition.

Table 1 shows the mean amount of claiming by author order for the self-focused and other-focused conditions.

To account for author order and group size, we also conducted a regression on raw self-allocated responsibility. This analysis predicted self-allocated responsibility from experimental condition and a set of dummy variables to control for seven possible combinations of group size (3 or 4 authors) and the participant's author position (first, second, third, or fourth author), with the fourth author in a four-author article as a baseline.⁵ The results of this regression show a significant negative effect of considering others' contributions on the percentage of work claimed ($B = -4.55$), $t(172) = -2.37$, $p < .02$. This implies that explicitly considering others' contributions, controlling for number of authors and authorship position, reduces self-allocated responsibility by an average of 4.5% on the raw responsibility allocation estimates.

Interest in future collaboration. One might intuitively expect that enhancing others' relative contributions would increase authors' interest in future collaboration, but it did not. There was no significant difference in the desire to initiate a new line of research between authors in the self-focused ($M = 4.74$, $SD = 1.91$) and other-focused conditions ($M = 5.09$, $SD = 2.03$), $t(195) = 1.26$, *ns*. As predicted, however, the effect of considering others' contributions did depend on the amount of responsibility authors claimed for themselves. In the other-focused condition, the more responsibility authors claimed, the less interested they were in future collaborations ($r = -.40$, $p < .01$). There was no significant relationship, however, in the self-focused condition ($r = -.09$, *ns*). These two correlations differ significantly from one another ($z = 2.29$, $p < .025$).

To assess whether these correlational differences translated into mean differences among high and low credit claimers, we performed a median split on the adjusted responsibility index. In the other-focused condition, high credit claimers were less interested in future collaboration ($M = 4.67$, $SD = 2.19$) than were low credit claimers ($M = 5.53$, $SD = 1.76$), $t(87) = 2.03$, $p < .05$, $d = 0.436$. In the self-focused condition, high credit claimers ($M = 4.64$, $SD = 1.90$) did not differ significantly from low credit claimers ($M = 4.90$, $SD = 1.94$), $t(106) = 0.710$, *ns*, $d = 0.141$.

Notice, however, that a median split on the responsibility index did not control for the participant's author position, and the correlational analysis did not control for either the participant's author position or the number of authors on an article. To control for both of these factors, we conducted a second regression examining the

relationship between experimental condition (self-focused vs. other-focused), self-allocated responsibility, and the interaction between condition and self-allocations on the desire to initiate a new project. We again added a set of dummy variables to control for the seven possible combinations of the number of authors on the article and the participant's author position. The results of this regression indicated that although experimental condition was positively related to the desire to initiate a new project ($B = 1.29$), $t(170) = 1.85$, $p < .07$, this effect was qualified by the interaction between the experimental condition and the level of claiming ($B = -0.03$), $t(170) = -1.75$, $p < .09$. The impact of considering others' contributions on the desire to initiate a new project was weaker (and even potentially negative) for those who claimed more.

To see this more clearly, we ran separate regressions of experimental condition on desire to initiate a new project for the top quartile and the bottom quartile of claimers within each of the seven group size–author order combinations (using the same set of dummy variables as before). These regressions revealed that the impact of considering others' contributions on the desire to initiate a new project was directionally negative and nonsignificant for the top quartile of credit claimers ($B = -0.72$), $t(30) = -0.97$, *ns*, but directionally positive and significant for the bottom quartile of credit claimers ($B = 1.17$), $t(30) = 2.38$, $p < .025$.

Perceived enjoyment. We followed a similar analysis plan on the dependent variable of how much people enjoyed working with their author group. A similar pattern of correlations with self-allocations emerged for ratings of how much people enjoyed working with this group, with the other-focused condition more negative than the self-focused group ($r_s = -.49$ and $-.15$, respectively; $z = 2.38$, $p < .01$). In addition, the top half of credit claimers (by a median split on the responsibility index) in the other-focused condition enjoyed their experience less ($M = 5.48$, $SD = 1.50$) than the bottom half of credit claimers did ($M = 6.23$, $SD = 1.04$), $t(87) = 2.73$, $p < .01$, $d = 0.587$, but no significant difference on perceived enjoyment emerged in the self-focused condition between high credit claimers ($M = 5.42$, $SD = 1.46$) and low credit claimers ($M = 5.81$, $SD = 1.25$), $t(106) = 1.42$, *ns*, $d = 0.281$. This pattern of results shows that both the desire to work with the group in the future and the enjoyment of working with the group decrease as work claimed for the self increases, but only among those who consider others' contributions. Apparently, thinking about the other authors' contributions decreases one's overall evaluation of the group among those who feel they contributed more to the project, compared with those who feel they contributed less.

Again, we conducted a regression examining the relationship of condition (self- versus other-focused), self-allocated responsibility, and the interaction between these two on how much people enjoyed working with their author group. We again added a set of dummy variables to control for the seven possible combinations of the number of authors on the article and the participant's author

Table 1
Mean Responsibility Claimed and Standard Deviations by Author Order and Condition (Study 1)

Author order	n	Self-focused		Other-focused	
		M	SD	M	SD
1	66	59.74	19.87	56.11	16.00
2	68	38.17	12.70	32.55	7.51
3	47	29.96	12.66	25.32	6.56
4	15	21.67	9.83	17.44	5.25
5	1	10.00	—	—	—
6	0	—	—	—	—

Note. Dashes indicate no data were available.

⁵ Because of the extremely low response rates from fifth and sixth authors, we dropped the 17 respondents from papers with 5 or 6 authors to simplify the regression analyses and reduce the number of dummy codes needed. Including the partial data from these groups does not alter the analysis in any meaningful way.

position. The results of this regression revealed that condition was positively related to how much people enjoyed working with their author group ($B = 1.04$), $t(170) = 2.19$, $p < .05$, and that this effect was qualified by the interaction with the level of credit claiming ($B = -0.02$), $t(170) = -2.22$, $p < .05$, showing that the effect of self versus other focus was weaker (and even potentially negative) for those who claimed more.

To see this more clearly, we again conducted separate regressions of condition (self-focused versus other-focused) on how much people enjoyed working with their author group for the top quartile and the bottom quartile of claimers within each of the seven group size–author order combinations (using the same set of dummy variables as before). These regressions revealed that the effect of condition on perceived enjoyment with the author group was marginally significant in the negative direction among the high credit claimers ($B = -0.99$), $t(30) = -1.89$, $p < .07$, but positive and nonsignificant among the low credit claimers ($B = 0.38$), $t(30) = 0.948$, *ns*.

Independent of group size and author order, considering others' contributions did significantly increase authors' happiness with the order in which their names appeared in the final author list. This was true both at the time the order was decided (other-focused, $M = 6.52$, $SD = 1.01$; self-focused, $M = 6.13$, $SD = 1.48$), $t(195) = 2.10$, $p < .04$, $d = 0.302$, and at the time of our experiment (other-focused, $M = 6.47$, $SD = 1.10$; self-focused, $M = 5.97$, $SD = 1.66$), $t(195) = 2.44$, $p < .02$, $d = 0.351$. Although this last effect is not central to the core theme of the present article, it is consistent with the logic that having a greater appreciation of the work of others reduces the likelihood of feeling that a higher status of authorship was deserved.

Discussion

As predicted, considering others' contributions significantly reduced the amount of responsibility authors claimed for themselves. Reducing a relatively egocentric focus on one's own contributions, however, did not simultaneously lead to universally positive evaluations of the authors' collaborative experiences. Leading participants to consider others' contributions increased interest in future collaboration and reported enjoyment among those who believed they contributed relatively little to the project, relative to authors who believed they contributed more. Reminding people of how much more work they did than others in the group is exactly the violation of equity that would lead to dissatisfaction with a group project, whereas reminding participants how much they were helped by others' contributions would likely increase satisfaction. That similar relationships did not arise in the self-focused condition suggests that these participants were primarily focused on their own contributions, consistent with the long line of research demonstrating egocentric biases in such responsibility allocations.

Study 2: Manipulating Perceived Contributions

The results of Study 1 are consistent with our claim that reducing an egocentric focus on one's own contributions reduces happiness with the group among those who report having done more than others, relative to those who report having done less. However, this study relied on participants' reports of their contributions rather than manipulating perceived contributions directly and is

therefore open to a host of alternative interpretations that such correlational designs engender. Study 2 therefore tested our key hypotheses in a paradigm designed to manipulate people's perceived contributions to a group.

In particular, Study 2 used a well-replicated finding that the difficulty of retrieving information from memory can be used as a guide to its relative frequency, sometimes in spite of the amount of information retrieved. In one experiment, for instance, participants given the difficult task of listing 12 examples of their own assertive behavior rated themselves as less assertive than those given the easy task of listing only 6 examples (Schwarz et al., 1991). We adopted a similar approach in Study 2 by asking participants to think of either 3 or 10 personal contributions to a group project. We expected that those asked to recall only 3 contributions would believe that they contributed more to the group than those asked to recall a full 10 contributions. We therefore predicted that participants given the easy task of listing just 3 examples would show decreased enjoyment and desire for future collaboration after considering others' contributions, compared with those given the difficult task of generating 10 examples.

A related issue with the first study is that the reports of contributions in the self-focused and other-focused conditions were not necessarily equivalent. Our analysis assumes that relatively high credit claimers in the self-focused condition would be similarly high credit claimers in the other-focused condition. However, because self-allocated responsibility was not assessed until after the key experimental manipulations, this assumption remains empirically untested. To avoid this concern, we asked all participants in Study 2 the exact same question about how much they contributed before we introduced the self-focused versus other-focused manipulation. Study 2 was therefore not designed to test the consequence of considering others' contributions on self-allocated responsibility but rather only to test the key relationship between these self-allocations and measures of group conflict.

Method

Participants. Participants ($N = 101$) were approached in an undergraduate dining hall at Harvard University and completed the experiment in exchange for a candy bar.

Procedure. Participants were handed a multipage questionnaire (adapted from Savitsky et al., 2005). On the first page, participants were asked to consider a project in which a group "worked together toward a common goal, and where the entire group as a whole was recognized for the outcome of the group project." One participant, for instance, thought about a project in which "two classmates and I had to compose, memorize, and perform a dialogue for our Chinese class, and we were given a grade as a group."

On the next page, all participants were then asked to think about some specific contributions they personally made to the final group project. Approximately half of the participants ($n = 50$) were asked to list 10 specific contributions, whereas the other half ($n = 51$) were asked to list 3 such contributions. Participants were asked to pick a group project before learning how many contributions they needed to generate to rule out the possibility that participants in the two conditions might systematically report different types of group projects.

On the following page, participants were asked to indicate what percentage of the group output they personally contributed. This virtually ensures that participants in both the self-focused and other-focused conditions were responding equivalently in their responsibility claims.

On the final page, participants in the other-focused condition were asked to think about the contributions of their other group members before proceeding. Specifically, they were asked to write the first name or initials of each of their fellow group members on blank lines we provided and then to take a moment to think back to specific things that each individual member contributed to their group. All participants then completed the same dependent measures of *enjoyment with the group* and *desire to work with the group in the future* that we used in Study 1. Finally, participants were asked to indicate how hard it was to generate (3 or 10) examples of personal contributions to the group on a scale ranging from -5 (*very difficult*) to 5 (*very easy*).

Results

Responsibility allocations. As intended, participants found it significantly easier to generate 3 contributions ($M = 3.12$, $SD = 2.09$) than 10 contributions ($M = -0.34$, $SD = 3.09$), $t(99) = 6.60$, $p < .0001$, $d = 1.33$, with no differences between the self-focused and other-focused conditions ($F < 1$, *ns*). This ease translated into the predicted mean differences in reported contributions. Once again, an index of adjusted responsibility was created by multiplying participants' responsibility allocations by their reported group size. Participants who were randomly assigned to the low-perceived-contribution condition ($M = 135.32\%$, $SD = 45.69$) felt that they had contributed less to the group task than those in the high-perceived-contribution condition ($M = 164.44\%$, $SD = 88.10$), $t(99) = 2.08$, $p < .04$, $d = 0.418$. Because the focusing manipulation happened after measuring self-allocated responsibility, we did not expect—nor did we find—any statistical difference in self-allocations between the self-focused ($M = 153.39\%$, $SD = 72.05$) and other-focused ($M = 146.58\%$, $SD = 71.57$) conditions ($t < 1$, *ns*) or any interaction on self-allocations between condition and the number of contributions requested ($F < 1$, *ns*).

Interest in future collaboration. Recall we predicted that there would be no impact of listing contributions on interest in working with the group in the future or on recalled enjoyment among those in the self-focused condition, but that considering others' contributions would produce lower evaluations on both measures among those asked to list few contributions compared with those asked to list many contributions. Indeed, a 2 (condition: self-focused versus other-focused) $\times 2$ (contributions listed: 3 versus 10) analysis of variance on the desire to work with the group in the future yielded only this predicted significant interaction, $F(1, 97) = 4.33$, $p < .04$, $\eta_p^2 = .043$. A similar significant interaction emerged on reported enjoyment for the group project, $F(1, 97) = 4.25$, $p < .05$, $\eta_p^2 = .042$.

We also examined the simple effects of our contribution condition on the two measures of satisfaction. Among other-focused participants, those in the high-contribution condition expressed less interest in working with the group again than those in the low-contribution condition, $t(48) = 2.60$, $p < .015$, $d = 0.751$, and also reported less enjoyment of the experience, $t(47) = 2.61$, $p < .015$, $d = 0.761$. There were no significant differences between high and low groups among the self-focused participants ($t_s < 1$, $p_s > .70$). All relevant means are presented in Table 2.

Discussion

Study 2 makes several contributions to this research by helping to rule out alternative explanations for Study 1. First, Study 2

Table 2
Mean Ratings and Standard Deviations of Desire to Work With the Group Again in the Future and Enjoyment of the Project Among High- and Low-Perceived Contributors in the Self-Focused Versus Other-Focused Conditions (Study 2)

Contribution condition	Self-focused		Other-focused	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Desire to work with group in future				
Low	5.23	1.68	5.38	1.95
High	5.36	1.68	4.08	1.57
Enjoyment of project				
Low	5.27	1.56	5.65	1.72
High	5.44	1.58	4.58	1.14

eliminates the possibility of any systematic difference between those who may have naturally reported (and actually contributed) more or less to the group project by manipulating perceived contributions across participants rather than by simply measuring perceived contributions. Compared with those led to feel they contributed relatively little, those led to feel that they contributed relatively more showed a decrease in desire to work with the group again, and decreased enjoyment of the project, when they were led to think about other group members' contributions just before reporting their satisfaction with the group.

Second, the introduction of the perspective-taking manipulation after the reports of contribution rules out the possibility that the results of Study 1 were driven solely by some quirk in the manipulation before the responsibility judgments. That is, it is possible that those who claimed to have contributed much in the self-focused conditions would not have made similar claims in the other-focused conditions of our first study. This manipulation itself may have differentially affected the reports of people at different levels of claiming, rendering our comparisons of high and low claimers across the two conditions untenable. The current study eliminates this problem by capturing claims of fairness in an identical manner in both conditions and shows that considering others' contributions at the time of responsibility judgments is not necessary to obtain the effects on group satisfaction.

Finally, Study 2 expands on our earlier findings by moving beyond correlational data and demonstrating the same pattern of results experimentally. The significant interactions on desire to work with the group again and on enjoyment with the project establish a more direct link between reducing egocentric biases and indices of group conflict. The significant simple effects among only the other-focused participants reinforce the reliability of these results. Although considering others' contributions may uniformly decrease egocentric biases in responsibility allocations, it does not have a uniform effect on indices of group conflict. Whether this form of perspective taking helps or hinders group satisfaction depends critically on the perceived contributions of the perspective takers themselves.

Study 3: Manipulating Actual Contributions

The studies reported so far both suggest that reducing an egocentric focus has different effects among those who believe (or are

led to believe) they have contributed relatively more or relatively less than their other group members. Although Study 2 helps rule out explanations associated with natural differences between high and low claimers by manipulating perceived contributions, no study so far has manipulated actual contributions. Without controlling actual contributions to the group, the previous experiments cannot definitively demonstrate that those who have actually contributed more to a group will be less happy than those who contributed less when taking the perspective of others.

We have suggested that this occurs because considering others' contributions highlights how much they have done compared with oneself, producing a relatively negative assessment when one has contributed more than others but a relatively positive assessment when one has contributed less. For example, imagine that you worked on a project in a group of four people, and that you did a considerable amount—40% of the total work. Without giving much more thought to it, you may conclude that doing 40% is a reasonable share of the total work. But thinking harder about others' individual contributions highlights how much less each of the other individuals did than you—say, 15%, 20%, and 25%. An assessment of one's own work in isolation should therefore lead to more favorable assessment of the group and an increased interest in working with the group in the future, compared with thinking more specifically about others' contributions. In contrast, if you contributed less than others, say 15%, considering others' contributions would highlight how much you benefited from others' efforts and lead to a more favorable assessment, compared with those who contributed little but did not explicitly consider others' contributions.

In fact, this is precisely what participants reported when we conducted an experiment using this very example. In this experiment, undergraduates were approached in public places on the Harvard University campus, and they were asked to complete a brief questionnaire in exchange for a candy bar. The survey asked participants to imagine that they had been part of a group of four students that completed a class project. Half the participants were told that they had contributed 15% of the total work, whereas the other half were told that they had completed 40% of the total work. Furthermore, some participants in each of these groups were given no explicit comparison with the other group members. Others were told how much each of their individual group members contributed in an effort to make their contributions relative to others—and the corresponding departures from equity—more salient. The low contributors (15%) were told that the other members of their group had contributed 20%, 30%, and 35%, whereas the high contributors (40%) were told that the other members had contributed 15%, 20%, and 25%. All participants were then asked to indicate how much they thought they contributed compared with others on a scale ranging from 1 (*none of the work*) to 6 (*all of the work*), and how much they would want to work with this group again in the future on a scale ranging from 1 (*not at all*) to 6 (*very much*).

Results revealed the predicted interaction on desire for future collaboration, such that low contributors who had no explicit comparison available wanted to work with the group relatively less ($M = 3.45$, $SD = 1.45$) than low contributors who had the explicit comparison available ($M = 4.07$, $SD = 1.41$), but that high contributors with no comparison ($M = 2.91$, $SD = 1.21$) wanted to work with the group relatively more than high contributors with an explicit comparison available ($M = 2.55$, $SD = 0.91$), $F(1, 113) =$

4.38, $p < .04$, $\eta_p^2 = .037$. Furthermore, the correlation between how much people thought they contributed and how much they wanted to work with the group again was more negative among participants who had the explicit comparisons available ($r = -.48$, $p < .001$) than among participants with no such comparison available ($r = -.13$, ns ; $z = -2.11$, $p < .04$), suggesting that the explicit comparisons exacerbated the tendency for relatively high credit claimers to feel less enthusiastic about future collaboration with the group, compared with relatively low credit claimers.

Of course, this experiment involves purely hypothetical contributions and is therefore only suggestive. Study 3 was designed to make a more substantial contribution, as well as overcome a number of shortcomings of the earlier studies, by randomly assigning participants to contribute a relatively high or relatively low amount of work to an actual group project. In addition, many of the contributions considered in the previous experiments have been somewhat ambiguous. Successful research collaborations, for instance, require a mix of knowledge, insight, and effort. It is therefore difficult to calibrate claims of responsibility with some objective standard. Study 3 therefore used an objective and quantifiable measure of contribution to the group. Finally, Study 3 allowed for analyses of complete groups rather than the partial groups in Studies 1 and 2. These complete groups allow us to address concerns about the statistical nonindependence of some of the data in our previous experiments.

In particular, participants in Study 3 were asked to write a group essay, with some members of the group asked to write more sentences than other members. We predicted that those who actually contributed much to the group essay would report less enjoyment and interest in working with the group in the future when explicitly asked to consider others' contributions, relative to participants who contributed less. This paradigm allows us to investigate the impact of reducing an egocentric focus on one's actual contributions on measures of group conflict.

Method

Participants. One hundred thirty-six participants from an existing participant pool of Boston-area residents reported to a computer laboratory. Participants were paid \$20 for this 90-min study.

Procedure. Participants were randomly assigned to condition by having them select a card from a bowl. Participants were seated in front of individual computers and told that they were participating in a study about virtual workgroups. Because many groups today comprise people in different locations, work on group projects is often completed independently by members of the group. Therefore, participants were told they would be writing an essay jointly with three other group members, but that they would not be interacting or discussing their work as they wrote.

Participants first filled out some background questions on the computer. These questions asked about their undergraduate major, the number of essays they had written in college, how much they enjoyed writing essays, and included a series of analogies and anagrams for them to complete. These questions were ostensibly designed to determine the type and amount of work that each individual would be assigned to contribute. In reality, participants were randomly assigned to write either a *high* (15) or *low* (5) number of sentences in the final essay.

After completing the background questionnaire, participants received eight pages of background material from the World Health Organization Web site (<http://www.who.int>) about the current state of the HIV/AIDS epidemic to use in their essay and a detailed outline that explained what topics their essay should cover. Participants were given 12 min to read

through the material and were then assembled in groups of 4 in separate rooms that each contained a single computer.

Participants were assigned to one of four roles (Alpha, Beta, Kappa, or Delta). Alpha and Kappa were each responsible for writing 15 sentences, whereas Beta and Delta wrote 5 sentences each (although the exact number of sentences was never made explicit to the participants). The experimenter informed the participants that they would be writing sentences sequentially and that they were not to talk to one another during the essay writing. The experimenter then called out a role and the number of sentences to be written by that participant. For instance, the experimenter began by saying, "To begin Section 1, Alpha should write the first two sentences." Participants had approximately 1 min for every sentence they had to write before the experimenter moved on to the next instruction. Roles were called out in a predetermined random order so that participants could not anticipate who would be responsible for writing next.

Once the essay was finished, participants reported back to their individual computers to complete the final dependent measures. Individuals in the self-focused groups ($n = 17$ groups) simply reported the percentage of the overall essay that they contributed, whereas those in the other-focused groups ($n = 17$ groups) thought about each of their other group members before reporting how much each person—including themselves—contributed. These responsibility estimates were followed by the same questions about desire to work with the group on a new project and enjoyment of the group task. In addition, participants were asked to rate the quality of the sentences that they had written compared with those of their other group members on a scale from -3 (*much worse*) to 3 (*much better*). A manipulation check asked participants to estimate the percentage of the total sentences in the essay that they had personally written. Finally, we asked participants to rate how happy they were with the division of labor in their group on a scale from 1 (*not at all*) to 7 (*very*). This allowed us to test our claim that considering others' contributions influences reported enjoyment with the group and interest in future collaboration because it highlights relative inequities in responsibility among the group members.

Results

We conducted all analyses at the level of the group, treating high versus low contributors as a within-groups variable and focusing condition as a between-groups variable.

Responsibility allocations. Participants successfully perceived the actual contribution manipulation. Those assigned to write a low number of sentences reported contributing less ($M = 13.85\%$, $SD = 6.68$) than those assigned to write a high number of sentences ($M = 32.09\%$, $SD = 10.99$), $t(33) = 10.06$, $p < .0001$, $d = 3.50$. More important, considering others' contributions influenced reported contributions to the essay. Participants in the other-focused condition claimed to have contributed less to the group essay ($M = 20.98\%$, $SD = 3.54$) than participants in the self-focused condition ($M = 25.62\%$, $SD = 5.68$), $t(33) = 2.86$, $p < .008$, $d = 1.00$. There was no interaction between the focusing manipulation and the high–low contribution manipulation ($F < 1$, ns).

Although considering others' contributions reduced self-allocated responsibility, it is interesting to note that summed self-allocations of all 4 group members did not exceed 100%. This may not be especially surprising to readers, however, because this paradigm that allowed complete control over actual contributions, also avoided many of the key attributes that produce egocentric biases in daily life. In particular, all participants' contributions were easily noticed by all group members (although they might not have been equally credited), contributions were relatively unambiguous, and overall satisfaction with the group product was rel-

atively low. Ratings for the quality of the final essay ($M = 3.43$, $SD = 1.63$) were not above the midpoint on the scale; in fact, they were significantly below the midpoint, $t(34) = 3.80$, $p < .001$. Research suggests that making contributions harder to notice, more ambiguous, and more desirable would increase participants' tendency to claim more credit for themselves than is logically possible (e.g., Dunning, Leuenberger, & Sherman, 1995; Miller & Schlenker, 1985; Savitsky et al., 2005).

Interest in future collaboration. Of course, the purpose of this study was not to provide yet another demonstration of the oft-documented egocentric biases in responsibility allocation in group endeavors, but rather to investigate the consequences of reducing an egocentric focus on one's own contributions. As in the previous studies, participants' actual contributions influenced their evaluations of their group. There was a marginally significant interaction between condition and amount of contribution on desire to work with the group again in the future, $F(1, 32) = 2.72$, $p = .109$, $\eta_p^2 = .078$. As seen in Table 3, high contributors in the self-focused groups ($M = 4.21$, $SD = 1.72$) were directionally more likely to want to work with the group again compared with low contributors ($M = 3.56$, $SD = 0.92$), whereas the opposite pattern was found in the other-focused groups, in which high contributors ($M = 3.74$, $SD = 1.38$) desired future collaboration less than low contributors ($M = 4.44$, $SD = 1.65$). Neither of these simple effects was significant ($F_s < 1.2$, $p_s > .20$).

Perceived enjoyment. A much stronger effect emerged, however, for ratings of enjoyment with the group. The interaction between condition and amount of contribution on enjoyment was significant, $F(1, 32) = 6.98$, $p < .015$, $\eta_p^2 = .179$. Table 3 shows that high contributors in the self-focused groups ($M = 4.15$, $SD = 1.54$) reported enjoying their group experience directionally more than low claimers ($M = 3.65$, $SD = 1.16$); as expected, this simple difference was nonsignificant, $F < 1$, $p > .35$. But once again, the opposite pattern was found in the other-focused groups, in which high contributors ($M = 3.65$, $SD = 1.50$) enjoyed the project less than low contributors ($M = 5.12$, $SD = 1.10$), $F(1, 32) = 7.78$, $p < .01$, $\eta_p^2 = .196$. A composite measure of these two indices of group conflict ($r = .85$) revealed the predicted significant interaction, $F(1, 32) = 4.85$, $p < .035$, $\eta_p^2 = .132$. In addition, simple effects tests on this composite measure revealed the predicted

Table 3
Mean Ratings and Standard Deviations of Desire to Work With the Group Again in the Future and Enjoyment of the Project Among High and Low Contributors in the Self-Focused Versus Other-Focused Conditions (Study 3)

Contribution condition	Self-focused		Other-focused	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Desire to work with group in future				
Low	3.56	0.92	4.44	1.65
High	4.21	1.72	3.74	1.38
Enjoyment of project				
Low	3.65	1.16	5.12	1.10
High	4.15	1.54	3.65	1.50

results. The simple effect of focus among high versus low contributors was significant among the other-focused groups, $F(1, 32) = 4.24, p < .05, \eta_p^2 = .117$, but not among the self-focused groups, $F(1, 32) = 1.12, p > .25, \eta_p^2 = .034$.

Happiness with division of labor. To explore a possible mechanism for the results in this study, we asked participants how happy they were with the division of labor in their group. Other-focused participants who had contributed much were significantly less happy with the division of labor ($M = 3.76, SD = 1.92$) compared with other-focused participants who had contributed little ($M = 5.65, SD = 1.54$), $F(1, 32) = 17.26, p < .001, \eta_p^2 = .350$, but there was no significant difference in happiness between high ($M = 4.00, SD = 1.91$) and low ($M = 4.35, SD = 1.97$) contributors in the self-focused condition, $F(1, 32) < 1, p > .40, \eta_p^2 = .019$. The interaction between contribution and focus was significant, $F(1, 32) = 5.70, p < .025, \eta_p^2 = .151$.

To test whether this measure of happiness with the division of labor mediated the effect of self- versus other-focus on our dependent measures, we tested for moderated mediation using the procedure outlined by Baron and Kenny (1986). Essentially, we predicted that happiness with the division of the work would mediate the effect of high versus low contributors in the other-focused, but not self-focused, condition. To test this prediction, we treated contribution condition, the focusing condition, and their interaction as independent variables, happiness with the division of labor as the mediator, and the composite measure of group conflict as the dependent variable. As noted earlier, the interaction of these variables affected happiness with the division of work ($t = -2.39, p < .025$), and happiness with the division of work in turn affected the composite measure of group conflict ($t = 5.27, p < .001$). When the mediator was added to the model, happiness with the division of work remained a significant predictor of group conflict ($t = 4.66, p < .001$), but the interaction term became marginally significant ($t = -1.77, p < .08$). This drop was itself significant ($z = -2.15, p < .04$). Separate mediational analyses confirmed that happiness with the division of labor significantly mediated the effect of contribution amount on group satisfaction for the other-focused groups ($z = -2.58, p < .01$), but not the self-focused ($z = -.73, p > .45$) groups. Such results provide suggestive evidence that happiness, or the lack thereof, with the division of labor at least partially accounts for the difference in group satisfaction ratings among those who consider their group members' contributions.

Discussion

Study 3 replicates and extends earlier findings by directly manipulating actual, quantifiable contributions among complete groups. Just moments after completing a task, those who were led to reflect on how much more than others they contributed reported enjoying the experience less than those who reflected on how much less than others they contributed, whereas no such difference was found among those who were not specifically focused on their relative contributions. The random assignment of high and low contributors rules out alternative explanations about characteristics specific to those who actually tend to contribute more or less to a group enterprise. The use of complete groups in Study 3 also rules

out the possibility that our earlier results were produced solely by an artifact of selection bias in response rates or other issues associated with the statistical interdependence of responses from incomplete groups.

Although we took great pains to assign participants to contribute many or few sentences, and although the manipulation was successfully reflected in participant self-reports, it is conceivable that number of sentences was not as objective a measure of contribution as we may have hoped. For example, those who wrote only a few sentences may have actually written sentences of a much better quality; hence, the amount of total work claimed could reflect some combination of quality and quantity. To test this possibility, we included one last dependent measure in the procedure that asked the participants themselves to rate the quality of their own sentences relative to those of their fellow group members on a scale ranging from 0 (much worse) to 10 (much better). Participants who contributed little did not think their sentences were any better or worse than those who contributed much, and there was no interaction between focus condition and level of contribution on reported quality of one's own sentences ($F < 1, ns$).

Study 4: Moderation by Competition

Considering others' contributions in a group endeavor can have potentially deleterious effects on at least some group members' well-being. Studies 1–3 demonstrated these results in contexts involving relatively cooperative groups, in which rewards are given to the group as a whole and individuals are not singled out for special recognition of their performance. When rewards are given to all group members in equal measure, violations of equity in contributions may be seen as unacceptable and upsetting. Loafers in these cooperative groups should therefore be particularly unwanted because of the clear inequity between effort and rewards.

Not all groups, however, share this kind of cooperative reward structure. Many groups are competitive in nature, in which the greatest rewards are given to the group member who contributed the most. In these competitive groups, claiming more responsibility is synonymous with success or victory, and feeling responsible for the majority of the group's accomplishments may potentially translate to greater enjoyment and desire to continue working with this group in the future. After all, loafers within a competitive group will actually increase the rewards given to a person who contributes a great deal.

The impact of undoing egocentrism may therefore depend on the competitive versus cooperative nature of the group. We examined this potentially important moderator of our earlier results in Study 4 by asking participants to recall a competitive or cooperative group of which they were a part, and to either consider the other group members' contributions or not. We predicted that considering others' contributions would reduce enjoyment and interest in further collaboration among those who contributed much compared with those who contributed little in cooperative groups, but not necessarily influence either measure among those who contributed much compared with those who contributed little in competitive groups.

Method

Participants. Seventy participants composed mainly of college students in the Boston area were recruited from an existing participant pool. Participants completed the experiment in exchange for \$5.

Procedure. Participants arrived at a computer laboratory and completed an unrelated study. Following this task, participants were handed a questionnaire packet for the current study similar to that used in Study 2. The first sheet of this packet asked participants to think of a recent time when they participated in a group project, with between two and five other people, that was now finished. Approximately half of the participants were asked to describe a cooperative group and the other half a competitive group. Participants in the cooperative group condition recalled a project in which they “worked together as a group toward a common goal, and in which the entire group as a whole was recognized for the outcome of the project,” such as “a project from a job you have held where the team as a whole was recognized or rewarded for its efforts.” For instance, 1 participant reported a project in which her “string quartet practiced together as a group to prepare for an upcoming concert”; another described a group that “worked together to design, print, and distribute organ donation awareness pamphlets and cards on campus.”

Participants in the competitive group condition, in contrast, were asked to recall a group project in which they “worked together as a group toward a common goal, but where the individual members of the group were recognized separately for their contribution to the outcome of the project,” such as “a project from a job you have held where you were working as part of a group but individually competing with your group members for a raise, bonus, or the affection of the boss.” For instance, 1 participant described a competitive project in which “our track relay team was competing to win the state race, but we were competing against each other for individual scholarships”; another thought about “a history project in school where a group of five people gave a presentation on a historical period, and each person had his/her own aspect to report on and get graded on”; and another mentioned being “part of the fencing team, composed of four people competing for three slots – the overall objective was to win as many meets as possible, but my individual objective was to hold on to my slot as #2 on the team.”

After writing a short description of the project and indicating how many people were in their group, participants randomly assigned to the self-focused condition ($n = 36$) indicated how much work they had contributed to the group project. In contrast, participants randomly assigned to the other-focused condition ($n = 34$) were asked to write down the first name or initials of all other group members, to think about each member’s specific contributions to the group, and to place a check mark next to each name once they had done so. On the following page, participants indicated how much each member, including themselves, had contributed. All participants in the other-focused condition received the same instructions, but half these participants listed their own contributions first, whereas half listed their own contributions last. The order in which their own contributions were listed, however, had no significant influence on the amount of work claimed ($t < 1$, *ns*) and is therefore not discussed further.

Finally, all participants indicated how interested they would be in working with this group again in the future and how much they enjoyed working in the group, both on scales ranging from 1 (*not at all*) to 7 (*very much*). Participants also indicated how cooperative or competitive they felt the group was on an 11-point scale, ranging from –5 (*very competitive*) to 5 (*very cooperative*), and how well they knew their fellow group members before participating in the project on an 11-point scale, ranging from –5 (*not at all*) to 5 (*very well*).

Results

As intended, participants in the cooperative condition ($M = 2.73$, $SD = 2.34$) rated their groups as more cooperative than those in the competitive condition ($M = 0.94$, $SD = 2.92$), $t(68) = 2.85$,

$p < .006$, $d = 0.692$. There were no significant differences between conditions in enjoyment with the group, $t(68) = 1.45$, *ns*, $d = 0.352$, or how well participants knew other group members, $t(68) = 1.02$, *ns*, $d = 0.248$. Unexpectedly, we found that the other-focused condition ($M = 4.75$, $SD = 1.03$) thought of groups with more members than the self-focused condition ($M = 4.26$, $SD = 0.96$), $t(68) = 2.04$, $p < .05$, $d = -0.683$; group size was thus used as a covariate in the subsequent analyses.

Responsibility allocations. To create an index of adjusted responsibility, as in Studies 1 and 2, we multiplied participants’ responsibility allocations by their reported group size. Once again, leading participants to consider their collaborators reduced ego-centric responsibility allocations. Participants in the other-focused condition ($M = 125.44\%$, $SD = 47.42$) claimed to be responsible for less of the overall work than participants in the self-focused condition ($M = 153.71\%$, $SD = 76.73$), $F(1, 67) = 5.44$, $p < .025$, $\eta_p^2 = .075$.

There was no difference between the competitive and cooperative groups in the total amount of work claimed ($t < 1$, *ns*). Because participants were randomly assigned to conditions, we expected no overall difference in claiming between the cooperative and competitive groups.

Interest in future collaboration. For the cooperative group condition, we expected that participants’ desire to work with their group in the future would replicate those of the cooperative groups used in the previous studies. Consistent with this prediction, the correlation between self-allocated responsibility and desire for future work was more negative ($r = -.73$) in the other-focused condition than in the self-focused condition ($r = -.36$), albeit this difference was only marginally significant ($z = 1.56$, $p < .06$).

Participants in the competitive group condition, in contrast, showed the opposite pattern. These same correlations were positive in the other-focused condition ($r = .32$) and slightly negative in the self-focused condition ($r = -.10$). As predicted, the overall 2 (self-focused versus other-focused) \times 2 (competitive versus cooperative group) interaction on these correlations was significant ($z = 3.47$, $p < .001$).

To investigate mean differences for our key claims in the cooperative condition, we performed a median split on the adjusted responsibility index and then tested the difference between high and low claimers on desire for future collaboration. The top half of claimers in the other-focused–cooperative condition were less interested in future collaboration ($M = 3.50$, $SD = 2.13$) than were the bottom half of credit claimers ($M = 5.62$, $SD = 1.38$), $F(1, 32) = 7.89$, $p < .01$, $\eta_p^2 = .198$. In the self-focused–cooperative condition, however, high credit claimers ($M = 4.55$, $SD = 1.43$) did not differ significantly from low credit claimers ($M = 5.86$, $SD = 1.60$), $F(1, 32) = 2.54$, $p > .12$, $\eta_p^2 = .074$. Although showing the opposite pattern, neither of these simple effects was significant among participants in the competitive conditions ($F_s < 1$, $ps > .45$), suggesting that focusing on others’ contributions is only detrimental to high credit claimers’ desire to collaborate again when they are working in cooperative group contexts.

Perceived enjoyment. Ratings of enjoyment showed a somewhat similar but weaker pattern. As before, the correlation between self-allocated responsibility and enjoyment was more negative in the other-focused ($r = -.33$) than in the self-focused condition ($r = -.22$), but this difference was not significant ($z = 0.48$, *ns*). These correlations did not reverse, however, in the

competitive groups condition between those in the self-focused ($r = -.06$) and other-focused ($r = -.07$) conditions.

The median split on the adjusted index also showed consistent results. Relatively high claimers in the other-focused-cooperative condition were marginally less interested in future collaboration ($M = 4.13$, $SD = 2.25$) than were relatively low claimers ($M = 5.37$, $SD = 1.50$), $F(1, 32) = 2.88$, $p < .10$, $\eta_p^2 = .082$. In the self-focused-cooperative condition, high claimers ($M = 5.56$, $SD = 1.17$) did not differ significantly from low claimers ($M = 6.29$, $SD = 1.22$; $F < 1$, $p > .35$, $\eta_p^2 = .026$). Again, neither of these simple effects was significant among participants in competitive conditions ($F_s < 1$, $p_s > .50$).

As in Study 3, we created a composite measure of these two indices of group conflict ($r = .82$). As expected, the simple effect of low versus high claiming on this composite was significant in the other-focused-cooperative condition, $F(1, 32) = 5.74$, $p < .025$, $\eta_p^2 = .152$, but not in the self-focused-cooperative condition, $F(1, 32) = 1.79$, $p > .15$, $\eta_p^2 = .053$.

Discussion

Study 4 again confirms that, regardless of the type of group endeavor, considering others' contributions reduces self-allocations of responsibility to group projects. However, this experiment also suggests that the potential negative effects of perspective taking within groups may be moderated by the cooperative versus competitive nature of the group. In cooperative groups, higher claimers were less likely than lower claimers to want to collaborate in the future once they had thought about the contributions of their other group members. In competitive groups, however, higher claimers were not less willing to work with the group again after considering the contributions of their fellow group members.

These results are consistent with Studies 1–3, all of which investigated groups designed to be cooperating together toward a common goal and common group output. When individuals feel they have done more than what they should have had to do in these groups, they may feel that the group is taking advantage of them. Such feelings could result in their unwillingness to collaborate with the same group of people in the future.

When people think about their contributions to competitive groups, on the other hand, those who feel they have contributed more may have been more successful (the relay racer who actually wins the individual track scholarship, for instance). Among these people, the more they think about the others against whom they were competing, the more likely they may want to compete with those people again. Given their past success in the group and the credit they likely received, they should not necessarily be less inclined to desire future interactions with the same group. Study 4 demonstrates that the type of group project can moderate the effect of reducing an egocentric focus on one's contributions on the desire for future interactions with the group.

General Discussion

Group members often appear to have their heads stuck in the proverbial sand when allocating responsibility for collective endeavors. Across a wide variety of domains, people tend to claim more responsibility for group outcomes than others would likely

give them credit for because they tend to egocentrically focus on their own contributions. This egocentric bias was reduced in three experiments by simply asking participants, before allocating responsibility, to think about their collaborators' contributions, and in one study by manipulating the ease with which one's own contributions came to mind. However, considering others' contributions in cooperative groups consistently decreased enjoyment and interest in future collaboration among those who felt they contributed relatively more and among those who actually contributed relatively more than others, suggesting that leaving one's head in the sand may sometimes be an effective strategy for maintaining group cohesion and happiness. The reverse pattern was found in the competitive groups of Study 4, however, suggesting that the practical implications of egocentric biases in group endeavors is more complicated than one might expect.

Although these experiments shed important light on the consequences of undoing egocentric biases in social interaction, and perhaps on the consequences of going beyond one's own egocentric perspective more generally, these experiments are clearly the start of a research program rather than the end of one. These experiments did not, for instance, clearly identify the key reasons why considering others' contributions produced our observed results. Study 3 provided at least some support for our predicted mediator of happiness with the division of labor, but variance remained to be explained in that analysis. It is possible that there are other important mediators that we have yet to consider, such as overall liking for other group members, the relative power or status of the perspective taker within the group, or perhaps the nature of the group's outcome. Our results may be especially likely to occur when those who consider their other group members naturally dislike those members, are in a position of weak power, or have worked toward an unsatisfying or unsuccessful outcome.

In addition, the relationship between effort and group rewards may also moderate the impact of undoing egocentrism in group interaction. Some groups are rewarded as individuals based on the effort they contributed, such as the author groups in Study 1 who are listed in order of their presumed effort and overall contributions. Other groups, however, receive equal rewards regardless of the amount of effort they personally contribute, such as in the essay groups in Study 3 and the cooperative groups in Study 4. Although we found that undoing egocentrism can lead those who contributed much to feel less satisfied with their group than those who contributed little in both kinds of groups, we suspect that the impact of undoing egocentrism may be larger in groups that are rewarded as a whole than in groups that are rewarded as individuals. People who contributed much may feel that they have been duly rewarded for their efforts in groups in which individual members are rewarded but may feel that others who contributed less have received undue credit in groups that get rewarded as a whole.

These potential moderators of our results highlight the difficulty in finding one single approach that is likely to reap the benefits of reducing egocentric biases that appear to create conflict within groups, without making those who contribute the most the least happy or interested in working with the group in the future. One simple possibility for an alternative debiasing technique, however, might be to have participants consider only their other group members' contributions, rather than considering both their own and others' contributions as participants did in all of the experi-

ments reported here. Of course, one's own contributions are likely to be highly salient regardless of whether one is asked to consider them explicitly or not, but explicitly considering one's own contributions in light of others' may particularly highlight the lack of equity that leads to relative dissatisfaction compared with those who contribute little to the group.

What these experiments did do, however, is begin a program of research looking carefully at both the positive and negative consequences of undoing a particularly pernicious bias in human judgment, namely egocentrism (Epley, Caruso, & Bazerman, 2006). In general, psychologists interested in human judgment and decision making have focused their empirical attention on identifying errors and biases in human judgment for both their practical and theoretical importance. This research tradition has provided an impressive corpus of knowledge, much of which demonstrates that people's interpretations of events are largely determined by their own unique perspectives on those events. For example, people tend to view themselves and their futures more positively than is both logically and realistically possible (e.g., Brown, 1986; Epley & Dunning, 2000; Kunda, 1990; Taylor, 1989; Weinstein, 1980). People also tend to overestimate the extent to which others will share their attitudes, emotions, and knowledge (Keysar, 1994; Nickerson, 1999; L. Ross & Ward, 1996; Van Boven, Dunning, & Loewenstein, 2000); the extent to which others are focused on them and their behavior (Fenigstein, 1984; Gilovich, Medvec, & Savitsky, 2000); and the speed with which they will complete important projects (Buehler, Griffin, & MacDonald, 1997; Buehler, Griffin, & Ross, 1994).

A moderately common view among interested psychologists is that these egocentric or egoistic biases are largely adaptive (e.g., Gigerenzer, Todd, & the ABC Research Group, 1999; Taylor, 1989). These illusions, the story goes, contribute to psychological well-being and protect an individual's positive sense of self (Taylor & Brown, 1988). As a result, these positive illusions increase personal commitment, enhance persistence at difficult tasks, and facilitate coping with aversive and uncontrollable events. Positive illusions also allow people in their everyday lives to maintain cognitive consistency, belief in a just and meaningful world, and a sense of personal control and efficacy necessary to take beneficial risks (Greenwald, 1980). Some have even gone as far as to advocate the selection of salespeople on the basis of the magnitude of their positive illusion, or "learned optimism" (Seligman, 1990). The logic is that unrealistically high levels of optimism bolster salesforce persistence.

Although each of these findings may be true in some specific situations (e.g., severe health conditions), and although positive illusions may prove beneficial in helping people cope with tragic events, they can also create harm. People regularly invest their life savings in new businesses that have little chance of success. Employees falsely assume that they are irreplaceable and find that their ultimatums to the boss are met with a quick firing. Other researchers caution that positive illusions are likely to have a negative impact on learning and on the quality of decision making, personnel decisions, and responses to organizational crises ("the hole in the ozone layer isn't that big"), and can contribute to conflict and discontent (Brodts, 1990; Kramer, Newton, & Pommerenke, 1993; Tyler & Hastie, 1991). And more relevant to the specific focus of the current studies, positive illusions lead organizational members to claim an inappropriately large proportion of

the credit for positive outcomes, to overestimate their value to the organization, and to set objectives that have little chance of success.

Despite this lengthy list of helpful and harmful effects of positive illusions, the empirical science of understanding the conditions under which these illusions help versus hurt has lagged far behind. Our research provides systematic evidence, under controlled experimentation, that the cooperative versus competitive nature of a group may be one such critical condition, and we feel that future experiments may reveal other important factors about the nature of the group, its task, or its outcome that may influence the effects of perspective taking on members' satisfaction with the group.

Perhaps most important, however, the current article highlights the specific and complicated relationship between judgmental biases and psychological or behavioral outcomes. Public discourse about the functionality of mental operations is often quite simplistic, and assumes that judgmental biases are either beneficial or they are not. This research demonstrates that reducing egocentric biases in collaborative groups may be harmful for happiness and future collaborations among some participants (i.e., high credit claimers), but helpful for others (i.e., low credit claimers). Although few people would wish to be more biased than less, reducing egocentric biases in group contexts may not be the panacea for conflict and impasse that much existing research suggests. It is important to bear in mind that reducing egocentric biases not only diminishes people's focus on themselves but also can increase their focus on others. Practitioners are therefore advised to remember that the benefits of removing egocentric blinders may depend on what people are able to see once they do so. Although reducing egocentric biases certainly has its benefits, these experiments demonstrate that they may have some unexpected—and undesirable—costs as well. Those who encourage group members to move beyond their own egocentric perspective and consider the efforts of their coworkers may wish to pause and consider what group members will see when they actually do so.

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Received May 20, 2005

Revision received January 22, 2006

Accepted February 26, 2006 ■

New Editors Appointed, 2008–2013

The Publications and Communications Board of the American Psychological Association announces the appointment of six new editors for 6-year terms beginning in 2008. As of January 1, 2007, manuscripts should be directed as follows:

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- *Journal of Experimental Psychology: Applied* (www.apa.org/journals/xap), **Wendy A. Rogers, PhD**, School of Psychology, Georgia Institute of Technology, 654 Cherry Street, Atlanta, GA 30332-0170.
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