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Did I Do That? Group Positioning and Asymmetry in Attributional Bias

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Did I Do That? Group Positioning and Asymmetry in Attributional Bias

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Abstract:

A laboratory experiment examined whether one structural feature of groups, members' physical positioning, may produce asymmetry in their perceived contribution to a task. In particular, we investigated asymmetry in group members' (often excessive) claims of credit for collective tasks ("the self-serving attributional bias"). Consistent with the availability account of this bias, group members located in the middle of a group, with easy visual access to their partners' contributions, demonstrated less bias than outside members (who demonstrated bias consistent with prior research), but no less satisfaction. Further analyses suggested that these results reflected bias reduction among middle members, and did stem from visual availability. We conclude that the visual constraints imposed by physical positioning influence the availability of information and thus generate asymmetric attributional bias, with implications for conflict and its reduction.

Did I do that? Group positioning and asymmetry in attributional bias

Abstract

A laboratory experiment examined whether one structural feature of groups – members’ physical positioning – may produce asymmetry in their perceived contribution to a task. In particular, we investigated asymmetry in group members’ (often excessive) claims of credit for collective tasks (“the self-serving attributional bias”). Consistent with the availability account of this bias, group members located in the middle of a group, with easy visual access to their partners’ contributions, demonstrated less bias than outside members (who demonstrated bias consistent with prior research) – but no less satisfaction. Further analyses suggested that these results reflected bias reduction among middle members, and did stem from visual availability. We conclude that the visual constraints imposed by physical positioning influence the availability of information and thus generate asymmetric attributional bias – with implications for conflict and its reduction.

Key words: Asymmetry, self-serving attributional bias, group positioning, group performance, conflict

Introduction

Envision three researchers, seated in a row, discussing new study ideas. If the researchers and their participants behave alike, then the discovery of a great idea may convince each person that their contribution to the idea generation process was considerable. To the extent that each claims credit, this conclusion, natural in groups (Bazerman & Neale, 1982; Neale & Bazerman, 1983; Thompson & Loewenstein, 1992), may generate dissatisfaction with the whole experience. This dissatisfaction, in turn, may discourage the researchers from working together in the future (Ross & Sicoly, 1979).

Although many factors contribute to successful group work, this thought experiment illustrates the harm that the self-serving attributional bias (defined as assigning more credit to the self, especially for positive outcomes, than is objectively-due) (Bradley, 1978; Miller & Ross, 1975; M. Ross & Sicoly, 1979) can cause in groups. It also highlights an important structural feature of all groups: their members' physical positioning ("seated in a row"). The current paper examines whether physical positioning influences individual group members' espousal of the self-serving attributional bias. Specifically, we investigate whether group members located in different places display asymmetric levels of bias.

Researchers have identified the self-serving attributional bias as an important source of dissatisfaction and conflict in negotiations (Babcock & Loewenstein, 1997; Babcock, Loewenstein, Issacharoff, & Camerer, 1995; Loewenstein, Issacharoff, Camerer, & Babcock, 1993; Thompson & Loewenstein, 1992; Wade-Benzoni, Tenbrunsel, & Bazerman, 1996), and work groups (Caruso, Epley, & Bazerman, 2006; Corgnet, 2010; Epley, Caruso, & Bazerman, 2006). In both contexts, egocentric interpretations lead individuals, regardless of their actual contributions, to claim a larger share of the credit than warranted. As a result, group members often disagree on the allocation of the joint outcome. Promoting effective groups and minimizing

group conflict thus require mitigating the self-serving attributional bias (hereafter called “attributional bias”).

Although researchers have documented this bias for several decades (Bradley, 1978; Mezulis, et al., 2004; Miller & Ross, 1975; Mullen & Riordan, 1988; Roese & Olson, 1993; M. Ross & Sicoly, 1979; Zuckerman, 1979), investigations of how to mitigate it (Caruso, et al., 2006; Epley, et al., 2006) have only come to the fore more recently. Recent investigations focus on the cognitive bases of the attributional bias; they tend to recommend that group members actively attend to one another’s contributions. Whereas actively focusing on one’s own contribution exacerbates egocentric judgments and behaviors (Burger & Rodman, 1983; M. Ross & Sicoly, 1979), actively focusing on others’ contributions reduces attributional bias (Savitsky, Van Boven, Epley, & Wight, 2005).

However, these studies (Caruso, et al., 2006; Epley, et al., 2006) stress that asking group members to focus on others’ contributions may carry a pernicious side-effect: genuine contributors, focusing on others’ negligible contributions, become increasingly dissatisfied with the group effort and less interested in future collaboration. Thus, although an active focus on others does reduce attributional bias, it does not reduce the attendant dissatisfaction. Indeed, this solution is limited by generating more of the dissatisfaction it was intended to reduce (e.g., Caruso et al., 2006).

Accordingly, we sought to document not only the existence of asymmetric attributional bias but any effects of asymmetry on satisfaction. If the asymmetry reflected bias reduction, for example, we sought to determine whether that reduction generated comparable dissatisfaction. Since the predicted driver of asymmetric bias (physical positioning) is a structural variable, we expected it to operate at a relatively unconscious level (Nisbett & Wilson, 1977; L. Ross & Nisbett, 1991) – at least compared to the “focus on others” approach above. In other words, we

predicted that individuals' positioning was less likely to evoke conscious effort comparisons than an overt directive to focus on others. Thus, we expected any observed asymmetries to come without the changes in satisfaction characteristic of conscious comparisons. If so, and if the asymmetries reflected bias reduction, so much the better: at least for middle group members, we thought they would.

In sum, we set out to examine whether: 1) simple, structural features of groups (like physical positioning) can create asymmetric levels of bias across group members, whether 2) this asymmetry comes without the unintended consequences of "focusing on others," and whether 3) the asymmetry reflects bias reduction for middle group members. To the extent that positioning made others' contributions more available without evoking conscious comparisons, we expected that it would reduce the bias without the side-effects.

Attributional Bias

A number of researchers in the 1970's (e.g., Bradley, 1978; Miller & Ross, 1975; M. Ross & Sicoly, 1979) brought the existence, ubiquity, and implications of the attributional bias to psychologists' attention. This is but one of the many self-oriented biases that psychologists have uncovered. Indeed, a variety of judgments vary widely when they concern the self versus others. People often indicate, for example, that they are better drivers (Svenson, 1981), better teachers (Gilovich, 1991), more skilled managers (Larwood & Whittaker, 1977), and less prone to adverse health events (Weinstein, 1980) than others. More recently, Epley and Dunning (2000) found that people overstate the probability that they will be generous and charitable, and Heath (1999) showed that people believe that they are more motivated by intrinsic factors (like learning new things from a job) than their peers are.

Researchers have established the robustness of the attributional bias, in particular, across both laboratory settings (M. Ross & Sicoly, 1979) and field settings (Mullen & Riordan, 1988)

like sports. A recent meta-analysis of 266 studies, with 503 independent effect sizes, (Mezulis, et al., 2004), yielded an average d equal to 0.96, indicating a large bias. Since the initial formulations of attributional bias, psychologists have grappled with two classes of explanations for it – motivational (self-enhancement) (e.g., Bradley, 1978) and cognitive (availability) (e.g., Miller & Ross, 1975). The motivational explanations suggest that self-serving attributions reflect a need to see the self positively (Bradley, 1978). The cognitive explanations suggest that these judgments reflect the differential availability of information about the self and others (Miller & Ross, 1975).

Psychologists have amassed evidence for both explanations, and both probably contribute to the phenomenon (Tetlock & Levi, 1982). Considering all of the evidence, the two explanations seem a classic case of paradigms unlikely to be resolved through a critical test (Tetlock & Levi, 1982). Following recent investigations (e.g., Caruso, et al., 2006; Epley, et al., 2006), we take no position with respect to this debate, but assume that availability accounts for at least a portion of the attributional bias. Under that assumption, we examine the ability of structural variables like physical positioning to influence the availability of information about the self and others – and thus generate asymmetries in attributional bias.

Availability and Asymmetry in Attributional Bias

An availability account of the attributional bias holds that we ascribe excessive credit to ourselves because what we have done is more apparent, memorable, and retrievable than what others have done (Miller & Ross, 1975; M. Ross & Sicoly, 1979). Whereas we have direct access to our own efforts (we experience them ourselves, as an actor), we have no direct access to others' efforts. Their contribution is unclear. Because we cannot access others' efforts, these efforts are easy to underestimate at each stage of the process: perception, encoding, and retrieval (Miller & Ross; M. Ross & Sicoly, 1979). The availability account thus posits a cognitive

mechanism – processing of asymmetric information about the self and others – which naturally evokes biased attributions. Thus, asymmetric perceptions lie at the heart of the attributional bias, raising the possibility that they might also motivate its solution.

It follows from the availability account that any factors capable of reducing the asymmetry – by making others' contributions more available vis-à-vis our own – should reduce the attributional bias. A variety of investigators (e.g., Burger & Rodman, 1983; Caruso, et al., 2006; Epley, et al., 2006; M. Ross & Sicoly, 1979; Savitsky, et al., 2005) have provided consistent evidence, finding that an active focus on others' contributions can make their contributions more available. All of these approaches, however, rely upon a focal actor consciously changing his or her behavior by focusing more attention on others. This conscious focus, in turn, evokes clear comparisons between the efforts of oneself and others (Caruso, et al., 2006; Epley, et al., 2006).

Groups attempting to implement the “focus on others” solution in practice may face several challenges. Individual members may react to instructions constraining something as fundamental as the object of their attention (Brehm, 1972), perhaps even by focusing *more* attention on themselves (Storms, 1973). In organizations, individuals may simply ignore instructions leading them to downplay their own contributions when such instructions conflict with other, self-relevant goals like career advancement (Gioia & Sims, 1985). Finally, and most importantly: when individuals do comply with requests to focus on others' contributions, the act of doing so can generate dissatisfaction (Caruso, et al., 2006; Epley, et al., 2006), especially among genuine contributors.

The reason is that individuals instructed to consider the contributions of others tend to anchor on their own contributions (Gilovich, Savitsky, & Medvec, 2000), making any gap in contributions especially salient (Caruso, et al., 2006; Epley, et al., 2006). Thus, an active focus

on another's contributions evokes a contrast effect (Sherif & Hovland, 1961), making the contribution gap (not the other's *absolute* contributions) salient. Gaps that seem inequitable then prompt dissatisfaction (Loewenstein, Bazerman & Thompson, 1989). Ultimately, the most inequitable gaps are those seen by genuine contributors. Thus, even if the intervention leads groups to espouse less bias overall, genuine contributors tend to leave the groups dissatisfied (Caruso, et al., 2006; Epley, et al., 2006).

These findings, if ambiguous for the "focus on others" solution, do suggest a relatively unexplored feature of attributional bias: Asymmetry at the individual level. The fact that genuine contributors feel less satisfied than others after considering contributions suggests that group members may espouse different levels of attributional bias, at least subjectively. Thus, treating the bias of each member as equivalent may mask important differences across group members. Additionally, the prior findings suggest the form of an alternate remedy: Since dissatisfaction arises from a conscious comparison of own and others' efforts, a remedy that discouraged conscious comparisons might not reduce anyone's satisfaction.

Positioning and Asymmetric Bias

These considerations led us to examine variables that operate unconsciously, but powerfully: structural variables, defined as subtle, situational factors (Nisbett & Wilson, 1977; L. Ross & Nisbett, 1991). We reasoned that these variables, operating unconsciously, would be less likely to prompt conscious effort comparisons, reactance (Brehm, 1972), or refusal. Among structural variables, our study investigated whether one – physical positioning – could influence attributional bias without the satisfaction side-effects.

Psychologists have demonstrated repeatedly that structural variables can have vast and powerful effects (e.g., Bargh & Chartrand, 1999; Cialdini, Reno, & Kallgren, 1990; Tversky & Kahneman, 1981). People are unlikely to react (Brehm, 1972) against these factors because, in

many cases, the factors are unlikely to be perceived – at least not as attempts to constrain their behavior (L. Ross & Nisbett, 1991). Thus, we did not expect these variables to generate reactance or refusal. Likewise, whereas conscious comparisons call forth contrast judgments (Lombardi, Higgins, & Bargh, 1987), structural variables can influence the availability of information without prompting any judgments at all (L. Ross & Nisbett, 1991). In this case, we predicted that structural variables could make others' contributions more or less apparent without calling for a comparison.

We focused on physical positioning, defined as where each group member sits in comparison to others – choosing this variable because it offered a particularly clear test of the availability mechanism described above. Although many structural variables can influence the availability of contributions, positioning directly manipulates this salience by controlling individuals' field of vision: positions make it easy to see some group members and hard to see others. Given the need to position every group *somehow*, positioning was likely to focus attention unconsciously, altering the visual availability of others without prompting conscious comparisons. To the extent that positioning made others more available, we expected individuals to demonstrate less bias: configurations that maximized visibility should minimize bias. Indeed, the more people can see something, the easier it is for them to cognitively-retrieve information about it (Gabrielcik & Fazio, 1984; Tversky & Kahneman, 1973), and the more easily they can retrieve information, the more likely they will make attributions that reflect it (Higgins & Lurie, 1983; Pryor & Kriss, 1977; Rholes & Pryor, 1982).

Here, we examined three-person groups, with members seated in a row, on the premise that this configuration would maximize asymmetry between group members' perceptions, and thus create asymmetry in their contribution judgments. The position that would make others contributions' most visible is the middle. From this position, individuals can see both others,

along with their contributions. By comparison, sitting on the outside affords full exposure to the contributions of just one other person. The mere availability of more or less information about contributions should create asymmetries in attributional bias. Thus, in a three-person group:

Hypothesis 1: The middle group member will demonstrate less attributional bias than either of the people on the outside.

Thus, in a sense, outside group members served as controls for middle group members. Because our primary goals were to demonstrate that: 1) asymmetric bias exists in groups and 2) the bias can be explained by the availability associated with positioning; we were most concerned with documenting that middle members demonstrate the least bias.

Most research on the bias has used three-person groups (Mezulis, et al., 2004), in which equal visual access – by everyone, to everyone – is probably the exception. Thus, we reasoned that prior participants had experiences more like our outside group members than our middle members. Accordingly, we predicted that outside members' bias would resemble prior participants' bias; thus, the middle position in our study would *reduce* bias, rather than the outside position *increasing* it. Because members in any position should contribute an average of one-third of the group's outcome, claims of one-third or less from middle, but not outside members would provide support. If outside members claimed contributions consistent with prior research, this claim would be even stronger. A recent investigation of the bias using a questionnaire methodology (Caruso, et al., 2006) documented individual credit claims of approximately 47%. Thus, in the strongest form:

Hypothesis 2: Middle group members will claim approximately one-third of the credit, while outside members will claim closer to 47% of the credit.

On a more exploratory basis, we also examined the underlying mechanism. If visual availability is the mechanism, then *others'* perceived contributions should also vary as a function of positioning. Specifically, group members should see those directly within their field of vision

as contributing more than others. For three-person groups in a row, this suggests that outside group members will rate middle members as contributing the most, while middle members will rate both of their counterparts as contributing about the same. Experimental logistics only allowed us to test this prediction on a subset of our sample, so we advance it as an exploratory prediction rather than a formal hypothesis. Likewise, we expected positioning to reduce attributional bias without influencing group members' satisfaction, predicting that all members' satisfaction would be equivalent. Given the null nature of this prediction, we examined the associated means and p-values rather than presenting it as an additional hypothesis.

Study: Group Positioning

We conducted a laboratory study, assigning group members' positions to influence the extent to which they could effectively witness others' contributions. We assembled participants into three-person groups and asked groups to complete a numbers task involving the identification of as many numbers as possible that met predetermined conditions. We then isolated participants and asked them to complete a questionnaire about their relative contribution to the group. We also asked them to complete another numbers task, to provide an approximation of their objective contribution. We compared attributions of responsibility for participants with different physical positioning in the group, generally expecting middle members to exhibit the lowest levels of attributional bias.

Participants

We recruited 66 undergraduate participants (40% women) from a major University in Spain, using campus-wide advertisements, to participate in an experiment about "Decision Making." The participants were mostly (95%) Business and Economics majors in their third year. We do not report gender effects in this study since: 1) we did not find any, 2) a similar, but independent study with a sample of 165 undergraduate participants revealed no gender effects

(Corgnet & Sutan, 2007), and 3) classic research in this arena (e.g., M. Ross & Sicoly, 1979) suggests the absence of gender effects. All study procedures were conducted in Spanish, but were independently translated to English for the current paper. Our experiment was completed in three sessions of approximately twenty participants each. Participants learned that the experiment would last for 60 minutes, and that they would receive a show-up fee of 5 euros (equivalent to \$6.50 at the time), plus a potential performance-based payment. Average earnings for the three experimental sessions were 18 euros (\$23.40).

Design

Procedures. At the start of the experiment, participants were randomly assigned a number and a letter (e.g., 1-L) that indicated, respectively, their group's number and their individual, physical positioning in the group. Each group was composed of three members randomly assigned to sit in a row, on one side of a rectangular desk, in a private room. Participant L sat to the left of participant M, and participant R to the right, following signs placed on the table. In the first stage of the experiment, groups had 18 minutes to find three- and four- digit numbers fulfilling certain conditions, described below. This "numbers" task was adapted from prior research using numerical optimization tasks (e.g., van Dijk, Sonnemans, & van Winden, 2001, Montmarquette, Rulliere, Villeval, & Zeiliger, 2004). Each correct number earned a 45 euro cents (\$0.58) bonus, while each incorrect number garnered a penalty of 30 euro cents (\$0.39). Each group had access to only one set of instructions and one answer sheet, to encourage members to work together. In addition, members had to communicate and coordinate to avoid finding the same correct answers to the task.

Group task. In the group task (described to participants as "task 1"), groups received the following instructions:

You have 18 minutes to find as many numbers as you can, satisfying the following conditions:

- *It has 3 or 4 digits.*
- *If you sum its digits the result is equal to 15.*
- *If you multiply its digits the result is strictly larger than 10.*
- *The last two digits are strictly larger than 1.*
- *The first digit is an odd number.*
- *The second digit is an even number.*

Groups recorded their numbers on a shared answer sheet.

Individual tasks. In the individual portion of the experiment (described as “task 2”), participants went to private cubicles and answered a series of paper-based questions, individually and without communication, to assess their contribution to the joint outcome during the first task. The Appendix details these questions.

Then, participants completed an individual numbers task, which was essentially the same as the group task. The only difference was that the digits had to sum to 14 instead of 15. In the individual task, each correct number earned 30 euro cents (\$0.39), while each incorrect number incurred a penalty of 15 euro cents (\$0.20). Because the individual task essentially required participants to repeat the group task alone, participants’ individual performance both measured their individual ability and provided an approximation of their involvement in the group task. In other words, participants’ individual performance allowed us to construct an estimate of their actual contributions to the joint outcome in the group task. Our argument is based on the finding that performance on this task involves a learning component so that a participant who contributed heavily to the group task would tend to perform well on the individual task too. An independent sample (Corgnet, 2010), N=60, confirmed that: experienced participants outperformed inexperienced participants by approximately 30%. Thus, we felt comfortable using individual performance as an initial approximation of contribution to the group task.

Of course, our estimate of contributions is imperfect. For example, participants may have exerted less effort when working in a group as a result of social loafing (Jackson & Harkins, 1985; Karau & Williams, 1993), distorting our measure of contribution based on individual performance. However, there is no reason to expect a different relationship between loafing and individual performance as a function of positioning, meaning that any bias would be randomly-distributed across conditions. Furthermore, participants themselves felt that their efforts on the two tasks were comparable: Twenty out of twenty-one participants (95%) during the first data collection indicated that they exerted the same level of effort in both the individual and in the group task. Ultimately, any distortions are likely to reduce our statistical power, creating a conservative test.

Independent Measures

Participants were randomly assigned to a physical position in the group. The positioning variable identified whether a participant was located in the middle (coded as 1) or on the outside (coded as 0). We also recorded whether outside participants sat on the right or left.

Dependent Measures

We created four, partially-overlapping measures of attributional bias and a measure of participants' satisfaction. We first measured group members' claims about their own contribution to the joint output (following Epley, Caruso, & Bazerman, 2006), calling it "perceived contribution." Our second measure, which we called "estimated contribution," gauged the relative performance of group members on the individual task (task 2). Our third measure, called "estimated bias," was the difference between perceived contribution and estimated contribution. Finally, we created a measure of attributional bias at the group level called "aggregate perceived contribution," corresponding to the sum of group members' perceived contributions. A separate item, detailed below, assessed participants' satisfaction.

Perceived contribution. We assessed individuals' perceived contribution by analyzing their answers to the following, open-ended question, asked in the individual stage of the experiment: "What was your individual contribution, in percentage terms, from 0% to 100%, to the performance of the group?" By design, this measure gauges the perceived, rather than actual contribution of each group member. To estimate members' actual contributions, we introduced the following measure.

Estimated contribution. Our estimate of a given participant's contribution in the group task was based on an independent measure of ability on the task. Estimated contribution of group members to the joint outcome was measured as the ratio between their individual performance and the sum of all group members' performances during the individual task. If all members reached the same level of performance in the individual task, the estimated contribution of each member would be equal to one-third.

Estimated bias. We then used our estimate of group members' contributions, defined above, to construct a measure of estimated bias. Estimated bias was operationalized as the difference between their perceived contribution and estimated contribution, defined previously.

Aggregate perceived contribution. This group-level measure was computed as the sum of group members' perceived contributions. An aggregate perceived contribution significantly greater than one reveals the existence of biases at the group level.

Satisfaction. We measured participants' satisfaction by asking the following question during the second stage of the experiment: "How would you rate your satisfaction with your work group experience in task 1 (1=Very poor, 2=Poor, 3=Acceptable, 4=Good, 5=Very Good)?"

Results and Discussion

Before exploring the hypotheses, we first sought to document the existence of the attributional bias in our sample. The average perceived contribution was equal to 42.8% (see Table 1). This average, perceived contribution is comparable to similar studies based on a questionnaire methodology (Caruso, et al., 2006; M. Ross & Sicoly, 1979). We can reject the hypothesis that the mean perceived contribution in our sample equals one-third, $t(65) = 5.42$, $p < 0.001$, $d = 1.35$. In addition, the computation of the aggregate perceived contribution measure indicates that all of the twenty-two groups except one exhibited bias at the group level. We can reject the hypothesis that aggregate perceived contribution (128.4%) is equal to one, $t(21) = 5.35$, $p < 0.001$, $d = 2.33$.

Hypothesis 1 predicted that middle group members would demonstrate less bias than outside members. Our data provided support (see Table 2): Middle members claimed less credit for the group's outcome ($M = 0.38$, $SD = 0.13$) than did outside members ($M = 0.45$, $SD = 0.15$), $t(64) = 2.03$, $p = 0.05$, $d = 0.51$. Figure 1, a histogram of perceived contributions for middle and outside members, presents these findings graphically. We pooled data from outside members since, as predicted, claims for contribution did not significantly differ between group members seated on the left ($M = 0.45$, $SD=0.14$) and right ($M = 0.45$, $SD = 0.16$), $t(42) = -0.03$, $p = 0.98$, $d = -0.01$.

Additional evidence for Hypothesis 1 came from an OLS regression in which we controlled for the effect of the estimated contribution of each group member:

$$PCOi = \alpha_0 + \alpha_1 CONi + \alpha_2 POSi + \varepsilon_i$$

where $PCOi$ is member i 's perceived contribution. The variable $CONi$ is the estimated contribution of member i as measured using group members' relative performances in task 2. The variable $POSi$ is a dummy variable that takes value one if member i was in the middle. The regression allowed us to examine perceived contributions as a function of both position and

estimated, actual contribution; its results are displayed in Table 3. As indicated there, physical positioning significantly predicted members' perceived contributions to the joint outcome, even after controlling for estimated individual contribution. The coefficient associated with physical positioning was negative, meaning that middle group members offered lower perceptions of their own contributions to the joint outcome than other group members did.

Hypothesis 2 predicted that the middle position would effectively reduce attributional bias. In support, the credit claimed by middle members did not differ significantly from one-third, $t(21) = 1.72$, $p = 0.10$, $d = 0.75$, while the credit claimed by outside members was significantly greater than one-third, $t(43) = 5.46$, $p < 0.001$, $d = 1.67$. In addition, middle members exhibited significantly lower estimated bias ($M = 0.03$, $SD = 0.13$) than outside members did ($M = 0.13$, $SD = 0.15$), $t(64) = 2.52$, $p = 0.01$, $d = 0.63$. Estimated bias did not differ between group members seated on the left ($M = 0.15$, $SD = 0.16$) and right ($M = 0.11$, $SD = 0.15$), $t(42) = 0.91$, $p = 0.37$, $d = 0.28$. In addition, the biases of outside group members resembled the biases of participants in Caruso, et al. (2006). As noted these authors documented perceived contributions of approximately 47%, remarkably close to the claims of our outside members (45%), and substantially higher than those of our middle members (38%). This all supports the notion that the middle position reduced bias (Hypothesis 2).

Consistent with our predictions about the mechanism, outside members' bias seemed to stem from an undervaluation of the contributions made by counterparts at the other end of the table. Outside members' perceptions of their outside counterpart's contributions ($M = 0.26$, $SD = 0.16$) were significantly less than one-third, $t(13) = -1.92$, $p = 0.04$, $d = -1.07$. Estimated bias ($M = -0.08$, $SD = 0.18$) was also significantly less than zero, $t(13) = -1.78$, $p = 0.05$, $d = -0.99$.¹ This

¹ We conducted here directional tests where the alternative hypothesis is that perceived contribution (estimated bias) of other outside members is lower than one-third (lower than zero). Our N for these tests is small because laboratory

is consistent with a visual access mechanism, since positioning seemed to prevent outside members from observing each other's contributions accurately. Figure 2, a histogram of contributions perceived by outside members, presents this information graphically.

Meanwhile, middle members' perception of outside members' contribution ($M = 0.33$, $SD = 0.10$) did not differ from outside members' perceptions of middle members' contributions, $t(26) = -0.19$, $p = 0.84$, $d = -0.07$. This suggests that members perceived their neighbor's contribution without bias, whether they sat in the middle or on the outside. Middle members seemed to have an accurate perception of other group members' contributions because they were everybody's neighbor. Also, outside members tended to perceive the contribution of the middle group member "objectively," since the difference between outside members' perceived contribution of the middle member (0.33) and estimated contribution of the middle member (0.35) did not significantly differ from zero ($M = -0.02$, $SD = 0.18$), $t(13) = -0.32$, $p = 0.75$, $d = -0.18$. Finally, despite significant differences in the magnitude of attributional biases, we did not find significant differences in satisfaction levels between middle members ($M = 3.50$, $SD = 0.91$) and outside members ($M = 3.51$, $SD = 0.70$), $t(63) = 0.06$, $p = 0.95$, $d = 0.02$. On the contrary, their reported satisfaction was nearly identical.

An alternate interpretation of our results would suggest that middle group members, because of their positioning, were assigned to clerical tasks such as filling out the answer sheet, without contributing to the intellectual effort of the group. However, a pilot question, completed by 21 randomly-selected participants indicated that outside group members perceived the middle member's contribution as 32.7% ($SD = 0.10$), which did not differ significantly from one-third, $t(13) = -0.10$, $p = 0.92$, $d = -0.06$. Also, since experience on the numbers task tends to improve

limitations only allowed us to collect this data for a subset of our sample. Thus, we interpret these latter data with caution.

performance, we would expect middle group members to underperform outside members in the individual task if they had dedicated their group interaction to clerical tasks. However, the individual performance of middle members ($M = 24.7$, $SD = 9.5$) and outside members ($M = 26.1$, $SD = 10.5$) did not differ, $t(64) = -0.54$, $p = 0.59$, $d = -0.14$. In addition, debriefing indicated that participants did not consider clerical tasks, like writing numbers on the answer sheet, sufficiently important to assign someone exclusively to that endeavor. Instead, most participants said that their teams divided the work by numbers, allotting each person a separate range of numbers to compare against the criteria.

General Discussion

We started our investigation with the conjecture that simple structural variables like positioning could create asymmetries in attributional bias, without influencing group members' satisfaction. We even suspected that these asymmetries would reflect reductions in bias for middle group members. We derived our predictions from the availability interpretation of the attributional bias, under which people ascribe more credit to themselves than is objectively due, primarily because what they do is more apparent than what others actually do.

A laboratory study suggested that physical positioning is at least one structural variable that can create a "functional asymmetry," which we define here as an asymmetry with potential benefits for the group. Operating through the availability mechanism, members located in the middle of a group demonstrated less bias than members seated on the outside, with no apparent decrement in satisfaction, nor apparent increase in bias from outside members. Indeed, outside members demonstrated bias levels consistent with prior research. Apparently, outside members had insufficient access to one another's contributions, and were thus likely to underestimate these contributions. In contrast, middle members' extensive visual access seemed to lend them neutrality in credit assignment. Overall, middle members seemed to espouse less bias than prior

participants. These findings constituted initial evidence for the effect of at least one structural variable, physical positioning, on the magnitude and symmetry of attributional bias.

Implications for Asymmetry Research

Our research suggests that a variety of asymmetries characterize and underlie the well-documented attributional bias. An informational asymmetry (more information about own versus others' contributions) is one mechanism generating biased contribution judgments in the first place. A contribution asymmetry (greater actual contributions from some than others) curbs genuine contributors' satisfaction when asked to focus on others, as a means of bias reduction. Group positioning exacerbates or reduces informational asymmetry (depending on where the individual is located). Therefore, attributional bias itself appears asymmetric.

Because this latter asymmetry generally seems to reduce the bias of group members with enhanced information availability (middle members), leaving others' biases in-tact, it may represent a "functional asymmetry." Although a broader point based on the functionality of asymmetries would be premature, our results do suggest that at least one asymmetry may be helpful: Group positioning, conceived with bias reduction in mind, could reduce bias-inspired group conflict. More generally, when an asymmetry serves to reduce a dysfunctional feature of group life like attributional bias (for some members, without increasing it for others), the asymmetry may actually improve overall group functioning.

Our empirical context allowed us to examine a number of important issues related to asymmetry. We identified visual access as an important antecedent of asymmetric bias, and availability as one of its mechanisms. Our research suggested that reduced conflict might be one important outcome of asymmetric bias. From the results emerge a number of tangible steps that organizations and work groups might use to leverage asymmetric bias. Asking group members to sit in a circle is one, obvious possibility: circular configurations make the contributions of all

group members maximally, though perhaps not equally-available. Another possibility, which we discuss in more detail below, is to use mechanisms other than positioning to direct the attention of at least some group members toward others' contributions.

Implications for Work Groups and Organizations

Our study suggests that many real, structural variables in work groups and organizations (e.g., group size or task) might generate comparable asymmetries in contribution assessments. In fact, we have some preliminary data to support both of these possibilities: smaller groups and groups working on objectively-measurable tasks both seem to espouse less bias uniformly, not asymmetrically, in a paradigm similar to the one above. In addition, many structural variables in organizations could influence bias, asymmetrically or otherwise. For example, the presence or absence of public metrics (like bulletin boards highlighting sales volume) that make the real-time performance of group members clear might influence employees' contribution judgments. Individuals seated in-view of these bulletin boards, for example, might well show reduced bias.

Our results might guide organizations in designing workspaces and jobs so as to make everyone's actions more visible. For example, when deciding how to structure the workplace, managers might use our results to evaluate an "open-floor" plan. Such a plan would, of course, make the contributions of group members more salient. Assuming these contributions were positive, bias reduction should theoretically follow. When deciding how to structure jobs themselves, managers might consider assigning interdependent responsibilities, such that group members have visibility into their counterparts' activities. Of course, in all cases, managers would have to balance bias considerations against other management imperatives, like maintaining employee privacy.

Limitations, Future Directions, and Conclusion

Our analysis showed that positioning, and possibly other structural features of groups, can asymmetrically reduce attributional bias without reducing satisfaction. This suggests that structural variables have an important role in improving group performance and reducing group conflict, as mediated through asymmetric individual experience. However, our analysis, by focusing on physical positioning, constitutes only a preliminary step in developing a comprehensive framework to assess the importance of structural variables. Furthermore, the current results derived from an undergraduate sample in a laboratory context. Although this context afforded control over the many variables confounding real group life, it means that generalizing our results to various real-life contexts requires systematic, future research. Such research might readily use field experiments amongst group members inside organizations.

Another promising avenue for future research may involve the influence of information technologies on attributional bias. Research has identified a variety of ways that computer-mediated communication (CMC) systems, in particular, can make others more or less available (e.g., Walther, 1996). In organizations, CMC may facilitate the assessment of group members' contributions by disseminating real-time information about these contributions. By precluding visual access to the group members themselves, however, CMC may simultaneously compound attributional bias. Which way the bias goes in a virtual world is an important question. Research could easily address it by comparing the perceived contributions of individuals working side-by-side with those of individuals working virtually, aided or not aided by real-time metrics. In any case, CMC clearly introduces the potential for new forms of asymmetry in bias.

As this discussion suggests, the current research is a first step that affords many avenues for future study. The basic idea that structural variables can reduce attributional bias without reducing satisfaction seems general enough to extend across contexts, but specific enough to generate clear prescriptions. Overall, managing the structural features of groups seems a low-cost

solution to the high-cost dissatisfaction of disaffected group members – a means of harnessing asymmetry in service of group harmony.

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Figure 1: Histogram of perceived contributions and physical positioning

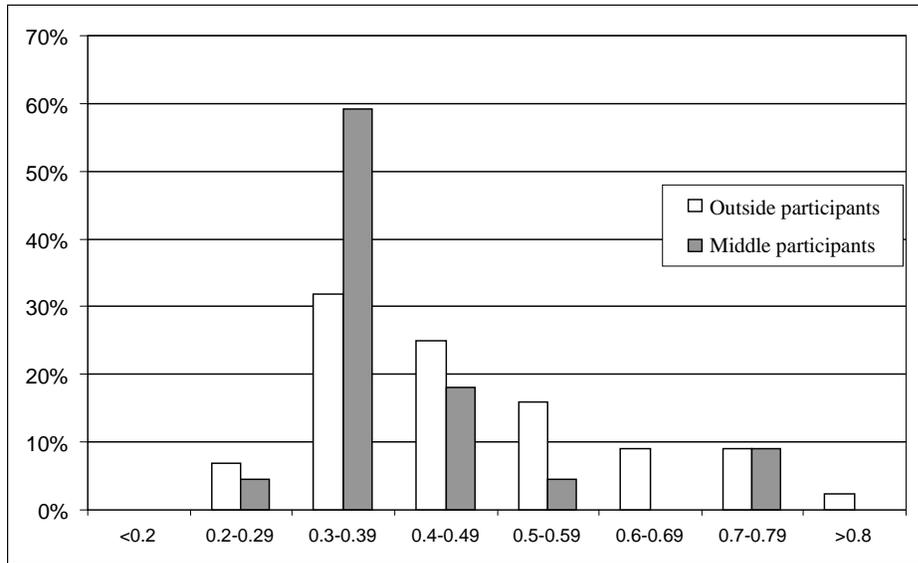


Figure 2: Histogram of outside members' perceived contributions of other outside members (outside/outside) and middle members (outside/middle)

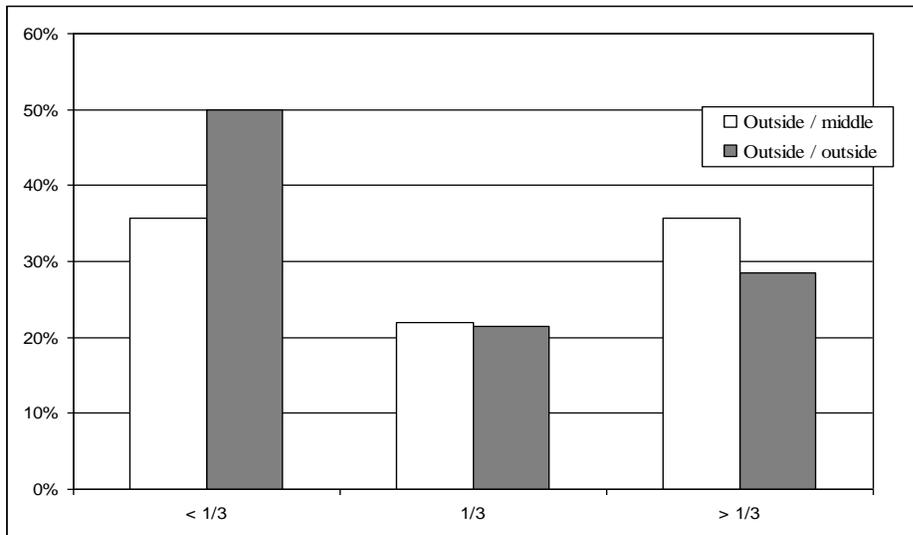


Table 1: Perceived contributions

Perceived contributions	Total (Proportion of participants)
<1/3	24.2%
=1/3	9.1%
>1/3	66.7%
Average perceived contribution	42.8%

Table 2: Perceived contributions and group members' physical positioning

Perceived contributions	M members (Proportion of participants)	L and R members (Proportion of participants)
<1/3	40.9%	18.2%
=1/3	9.1%	9.1%
>1/3	50%	72.7%
Average perceived contribution	37.7%	45.3%

Table 3: OLS regression

Dependent variable <i>Perceived contribution</i>	Coefficient (Standard errors)
Constant	0.302 (0.053)
Contribution (CON)	0.464*** (0.151)
Position (POS)	-0.085** (0.035)
R ² (66 observations)	0.184

Appendix: Individual Questionnaire

These questions were answered after task 1 and before task 2.

Section 1

What was your individual contribution, in percentage terms, to the performance of the group?

Section 2

(Outside group members only)

1-What was the individual contribution to the performance of the group, in percentage terms, of the middle participant?

2-What was the individual contribution to the performance of the group, in percentage terms, of the other outside participant?

(Middle group members only)

1- What was the individual contribution to the performance of the group, in percentage terms, of the participant on your left?

2- What was the individual contribution to the performance of the group, in percentage terms, of the participant on your right?

Section 3

1-How would you rate your satisfaction with your work group experience in task 1?

1=Very poor

2=Poor

3=Acceptable

4=Good

5=Very Good

2-Choose one of the following statements:

I exerted more effort in the individual task 2 than in the group task 1.

I exerted the same level of effort in the individual task 2 and in the group task 1.

I exerted a lower level of effort in the individual task 2 than in the group task 1.