Egocentrism vs. Egoism in Perceptions of Distributive Justice

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Abstract

Previous research has suggested that judgments of distributive justice are self-serving or egoistic (e.g. Greenwald, 1983). However, in three experiments, we demonstrate that judgments of distributive justice are often a product of egocentrism. That is, people tend to focus more on their own contribution than on the contribution of their collaborators when making distributive justice judgments. As a result, people who have contributed a lot to a task think it is fairer for them to receive more favorable outcomes than others than to receive less favorable outcomes than others. However, this effect is reversed when participants have contributed little to the task. This should occur even when participants believe that their partners contribute just as much, or as little, as they have. In three experiments, participants answered trivia questions as part of a “quiz bowl team”, were paid money for their performance, and were asked to evaluate the distributive justice of the payments. Results provided support for the hypotheses.

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Egocentrism vs. Egoism in Perceptions of Distributive Justice

People are often concerned with the fairness of a distribution of payments. That is, after completing a collaborative endeavor, people want the payment that they receive in exchange for their contributions to be comparable to the payment that others have received in exchange for their contributions. This concern with a fair distribution of outcomes is typically referred to as *distributive justice* (see Colquitt, Conlon, Wesson, Porter, & Yee Ng, 2001; Cropanzano, Rupp, Mohler, and Schminke, 2001 for reviews). In the area of organizational justice, it has been demonstrated that the perception that one has been justly rewarded for their work is associated with many important outcomes, including outcome satisfaction, job satisfaction, organizational commitment, and withdrawal. Furthermore, distributive justice is correlated with outcomes such as organizational citizenship behaviors directed at the organization and negative reactions (Colquitt et al, 2001). Given the importance of perceived fairness on organizational outcomes, it is important to discover what manner of allocation of resources will be considered fair.

Much of the previous research on distributive justice has worked from the assumption that people are *egoistic*¹, or self-interested, in that they feel that it is fair for them to get more than others for an equivalent amount of work (e.g. Ambrose, Harland, & Kulik, 1991; Diekmann, Samuels, Ross, & Bazerman, 1997; Greenberg, 1983; Greenberg, 1987; Greenberg, 2001; Grover, 1991; Messick & Sentis, 1979; Thompson & Loewenstein, 1992; Wade-Benzoni, Tenbrunsel, & Bazerman, 1996). This *egoism* account predicts that people will think that it is fairer (or less unfair) for them to be given a larger share of the corresponding outcome (typically some type of compensation for
work rendered) than another person who contributed equally. In fact, one of the pioneers of organizational justice research, Jerald Greenberg, believed that “Favorable Outcomes Are Fair Outcomes” constituted one of the seven canons of organizational justice (although he termed these “loose can(n)ons”), suggesting that it is a widely accepted notion that people base their judgments of fairness at least partly on egoism, or self-interest (Greenberg, 2001).

This account makes the perhaps unsurprising prediction that, when two people have contributed an equal amount to a task, one will prefer to be paid a larger amount than their collaborator rather than a smaller amount. It also predicts that people also feel it is fair for them to be paid a larger amount than their collaborator when the two have contributed equally. This was demonstrated by Messick and Sentis (1979), who asked participants to either imagine that they had worked seven hours and another person had worked ten hours, or to imagine that they had worked ten hours and another person had worked seven hours. Participants then specified the amount of money they preferred that each person receive for their work. Participants displayed a strong egoistic bias in their preferences, such that they preferred that they be paid more than another person for the same amount of work. Specifically, when participants imagined that another person was paid $25 for working seven hours ($3.57 per hour), they preferred that they be paid $45.81 when they had worked for ten hours ($4.57 per hour). Interestingly, not only did participants prefer to be paid more money than another person for an equal amount of work, they also thought that it was fair for them to be paid more than another person for an equal amount of work. That is, when asked about the fairness of, rather than their preference for, payment these participants thought it would be fair if the other person
were paid an average of $30.29 for working ten hours, they thought that it would be fair if they were paid an average of $35.24 for working ten hours. Thus, people were egoistic in both what they preferred their allocation of money to be and in the allocation of money that they considered fair. Subsequent research replicated Messick and Sentis’s (1979) findings for a variety of work-related domains while using different methods to study the influence of egoism on judgments of distributive justice (e.g. Diekmann, et al, 1997; Greenberg, 1983; Grover, 1991).

Some of this early research was spearheaded by Greenberg (1983), who found that people demonstrate egoism in their judgments of the fairness of unequal distributions of payment. In this study, participants worked on a proofreading task and were then paid for their work. They were informed that the average person was typically paid $2.00 for completing the task and were then told that they would be paid $.50 (underpayment), $2.00 (equitable payment), or $4.00 (overpayment) for their work. Furthermore, some participants acted only as observers of the proofreading task and were informed of the amount of pay allocated to the proofreader. Each participant then rated the fairness of the payment in comparison with the average payment of $2.00. Results revealed that participants were egoistic in their ratings of fairness. Those who were overpaid rated the payment as fairer than those who merely observed an overpayment. In contrast, those who were underpaid rated the payment as less fair than those who merely observed an underpayment. Furthermore, participants who were overpaid had higher fairness ratings for their payment than did participants who were underpaid. However, observers who witnessed an overpayment made the same fairness ratings as did observers who witnessed underpayment.
Other research has demonstrated egoism in distributive justice for other work-related domains. For instance, policies at work that are viewed as more favorable (i.e. those which benefit the self) are also viewed as more fair. For example, people who stood to benefit from maternity leave policies believed these policies were fairer than did those who did not stand to benefit from the same policies (Grover, 1991). Furthermore, Diekman et al (1997) demonstrated that those who were put in the position of receiving bonuses for a hypothetical company thought that it was fairer when unequal allocations favored themselves than when unequal allocations favored another person.

The egoism account suggests that favorable outcomes tend to be considered fair outcomes, and that this should be true even when contributions are held constant. In this case, judgments of distributive justice are highly dependent on favorability of outcomes and should not vary as much based on perceived level of contribution. In contrast to the egoism account, we predict that judgments of distributive justice will vary based on both outcome favorability and perceived level of contribution. We propose that people often form judgments of distributive justice egocentrically. That is, when judging the fairness of a payment one focuses primarily on his or her own contributions, often at the expense of sufficiently taking the contributions of others into account.

The prediction that people will egocentrically focus more on their own contributions than on the contributions of others when making judgments of distributive justice is based on previous work in the area of social comparison, which has found a similar tendency for people to pay more attention to their own contributions, abilities, and traits than to the contributions, abilities, and traits of others. This research has provided
some interesting, and perhaps counterintuitive, findings that run counter to some of the assumptions of the egoism account.

_Egocentrism_

People tend to be egocentric processors of social information (e.g. Chambers, Windschitl, & Suls, 2003; Klar & Giladi, 1997; Kruger, 1999; Kruger & Burrus, 2004; Kruger & Savitsky, 2007; Moore & Kim, 2003; Ross & Sicoly, 1979; Thompson & Kelley, 1981; Weinstein & Lachendro, 1982). That is, in many judgments involving social comparison, people tend to focus on themselves more than on the person they are comparing themselves to.

For instance, when people compare their abilities to the average person, they focus more on their own ability than on the ability of the average person (Klar & Giladi, 1997; Kruger, 1999; Moore & Small, 2007). This leads people to think that they are above average on easy tasks, and that they are _below average_ on difficult tasks (Klar & Giladi, 1997; Kruger, 1999; Moore & Small, 2007). That is, when comparing themselves to the average person on their ability to perform an easy task (such as using a computer mouse), people focus on the fact that it is easy for them to use a computer mouse, and fail to sufficiently consider the fact that it is also easy for the average person to use a computer mouse. As a result, people tend to think they are above average in their ability to perform easy tasks. By contrast, when comparing themselves to the average person on their ability in a difficult task (such as playing chess), people consider the fact that playing chess is difficult for them, but fail to sufficiently consider the fact that it is also difficult for the average person to play chess. As a result, people tend to think they are of below average ability for difficult tasks.
People also tend to focus on information about themselves more than information about others when making predictions about future events (Chambers, Windschitl, & Suls, 2003; Kruger & Burrus, 2004). Because of this, they tend to think that events that are rare are less likely to happen to them than to happen to the average person, and that common events are more likely to happen to them than to happen to the average person. For example, when making comparative estimates of the likelihood of living past age 100, people tend to focus on their own low probability of living past age 100, and tend to neglect the fact that the average person also has a low probability of living past age 100. Thus, when comparing their own chance of living past age 100 with the average person’s chance of living past age 100, they estimate that they are less likely than the average person to live past age 100 years old. Conversely, when comparing their own chance of living past age 70 with the average person’s chance of living past age 70, they tend to focus on their own high probability of living past age 70, and tend to neglect the fact that the average person also has a high probability of living past age 70. Thus, people tend to estimate that they are more likely than the average person to live past age 70 (Chambers, Windschitl, & Suls, 2003; Kruger & Burrus, 2004).

Of relevance to the question of interest, married couples’ combined estimates of their contribution to tasks such as “washing dishes” tend to add to more than 100% (Kruger & Gilovich, 1999; Kruger & Savitsky, 2007; Ross & Sicoly, 1979). Note that to the extent that taking credit for washing dishes is a desirable thing and may be rewarded in the future; this finding could be explained by egoism. However, married couples also tended to take a combined more than 100% of the credit for activities such as “causing
arguments between the two of you”, something that is certainly undesirable and probably would not be a rewarded behavior (Kruger & Gilovich, 1999; Ross & Sicoly, 1979).

These findings are consistent with the egocentrism account in that in both of these cases (washing dishes and causing arguments), people are basing their judgments on things that occur very frequently. However, the egocentrism account also predicts that people should *underestimate* their responsibility for tasks that are infrequently performed. Kruger and Savitsky (2007) recently found support for this prediction. They found that whereas married couples combined responsibility estimates for desirable and frequent household tasks averaged 108%, their combined responsibility estimates for desirable and infrequent household tasks averaged 62% (Study 1). In a separate study, when college students estimated how often they used household items in comparison with their roommates, they paid more attention to their own frequency of usage of the household items than to their roommates’ frequency of usage of the items (Kruger and Savitsky, 2007, Study 3). That is, multiple regression analyses indicated that participants’ estimates of how often they used household items in comparison to their roommates were better predicted by their own use of the items than by their roommates’ use of the items.

In much the same way, we propose that when people evaluate distributive justice, they pay more attention to their own contributions to a task than to other’s contributions. Because of this, people who have contributed a lot to a task will think it is fair for them to receive more favorable outcomes than others. This effect should be attenuated, or reversed, for people who have contributed little to the task. Importantly, this should be true even if the collaborator has contributed just as much, or just as little, as they have.
We conducted three experiments designed to test this hypothesis. In each experiment, participants imagined that they were members of a quiz bowl team and contributed to their team by correctly answering as many trivia questions per category as possible. As a manipulation of contribution, half of the categories were easy (leading to high contribution) and the other half were difficult (leading to low contribution). These categories were taken from Windschitl, Kruger, & Simms (2003), who pretested them for difficulty, and can be found in the Appendix. In Experiment 1, after they answered the questions, participants were informed that they were awarded money for half of the difficult categories and for half of the easy categories. They then rated the distributive justice of these money allocations for each category. In Experiment 2, rather than rating the distributive justice of money allocations, participants themselves allocated what they thought would be a fair allocation of money. Finally, in Experiment 3, we test a potential boundary condition for these effects by manipulating the amount of information participants had about their partners’ contributions.

Experiment 1

Participants were recruited in dyads for a study with the ostensible purpose of aiding the researcher in developing a computer program designed to prepare people for competitive situations. They were asked to imagine that they were part of a quiz bowl team representing their university and were told that their task was to contribute as much to the team’s success as possible by answering as many trivia questions correctly as they could. After answering the trivia questions, participants were paid per category based on their contribution to the team. Finally, participants were asked to rate the distributive justice of each payment.
If participants were egoistic in their judgments, then they should have rated favorable allocations of money as fairer than unfavorable allocations both for categories in which they contributed a lot to the team and for categories in which they contributed little to the team. However, the egocentrism account predicts an interaction between amount of contribution and money allocation such that when participants feel they have contributed a lot to the team, they should feel that it is fairer for them to be paid than not to be paid. This effect should be attenuated, or even reversed, when participants feel they have contributed little to the team.

**Method**

Participants

Fifty-two University of Illinois students (34 women, 17 men, and 1 unidentified) enrolled in an introductory course in psychology earned partial course credit for participating. Their mean age was 19 years old.

**Procedure**

Two participants were recruited at a time. Upon their arrival, they gave their informed consent to participate, were seated at separate computers in different rooms, and were then were prompted to press the space bar to continue. On the following three screens, participants read these instructions:

“Thank you for coming in today. The purpose of this study is to investigate how people perform in competitive situations. Specifically, we are developing a new program designed to prepare people for real competitions. For this particular competition, you and your partner will act as a quiz bowl team competing for the University of Illinois. Your task is to contribute as much as possible to the team
by answering as many questions correctly as you can. You and your partner will both answer the same trivia questions. You will be answering questions from 20 categories, and there will be 6 questions for each category. Furthermore, you will have the opportunity to be awarded up to $10.00 for your contribution to the team. Your “contribution” is defined as the number of answers you answer correctly for the team. The more trivia questions you answer correctly, the more you contribute to the team. To motivate you to try your best, there will be an award of $.50 for each category. The computer program, nicknamed B.O.S.S. (for Behavior Observing Synthetic Supervisor), will keep track of your and your partner’s contribution and will determine the awards. That is, if you contribute more to the team by answering more questions correctly for a category than your partner, B.O.S.S. will award you $.50 for that category and your partner will get nothing. Conversely, if your partner answers more questions correctly for a category, he or she will be awarded $.50 by B.O.S.S. and you will get nothing. You will be paid your earnings upon completion of the study. Before you begin the task of answering trivia questions, we would like to know a little bit about you. Please answer the questions that follow as honestly as possible. Remember, there are no right or wrong answers to the following questions, we are just interested in your honest responses.”

After reading these instructions, participant answered a six-item version of the Need for Cognition Scale as filler items² (Cacioppo & Petty, 1982). After they were finished with the Need for Cognition scale, they were presented with the following instructions:
“You will now perform your task as a member of the quiz bowl team. Remember, your task is to contribute as much as possible to the quiz bowl team by answering as many trivia questions correctly as possible. There will be 6 questions for each of the 20 categories presented. You and your partner will be answering the same questions. You will have 10 seconds to answer each question. If you do not answer in 10 seconds, the question will be counted as wrong. Thus, it is in your best interest to guess if you do not know the answer to a question.”

Next, participants answered six questions from each of the twenty categories. Each question was presented one-at-a-time and participants were given four possible answers to choose from. As a manipulation of contribution, ten of the categories consisted of very difficult questions and ten of the categories consisted of very easy questions. The difficult categories should have led to low contribution because participants should have answered very few of the six questions correctly for each of these categories, and the easy categories should have led to high contribution because participants should have answered nearly every one of the six questions correctly for each of these categories.

One difficult category was “1950’s movies”. An example question from this category is, “All but one of these pictures won a best picture Academy award during the 1950's. Which one did not?” (choices: A. Ben Hur, B. The Bridge Over the River Kwai, C. A Streetcar Named Desire, D. The Greatest Show on Earth – Answer: C). One easy category was “Fast Food Chains.” An example question from this category is, “Which of these fast food chains is also known as ‘Home of the Whopper’?” (choices: A. McDonald’s, B. Taco Bell, C. Subway, D. Burger King – Answer: D). Prior to the
running of the experiment, these questions were pretested for difficulty on a separate sample of 19 undergraduates. On a scale of 1 (very easy) to 10 (very difficult), the difficult questions were rated as far more difficult than the easy questions (M_D = 8.84, M_E = 1.18), t(18) = 25.63, p < .001. Furthermore, per category, far fewer of the difficult questions were answered correctly, on average (M_D = 1.32, M_E = 5.31), t(18) = -35.30, p < .001.

After the participants answered all the questions, they were informed that they would now be shown the allocation of money for each category. On the next screen, the computer displayed the name of the first category (e.g. Fast Food Chains). The computer next informed the participants whether they would be paid for that category (e.g. “You will not be paid $.50 for this category.”). The computer repeated this procedure on the same screen for each of the twenty categories. Although participants were told that these allocations were based on contribution, in reality they were determined ahead of time, such that participants were paid for one-half of the easy categories and for one-half of the difficult categories. Thus, for each subject, five categories were in the paid - high contribution condition, five were in the paid - low contribution condition, five were in the not paid – high contribution condition, and five categories were in the not paid – low contribution condition. This yielded a 2 (Contribution: High vs. Low) X 2 (Money Allocation: Paid vs. Not Paid) completely within-subject design.

After participants were told of the money allocations, they were handed a questionnaire on which to rate the distributive justice of the payments. Next, the experimenter said:
“We are interested in your impressions of how distributively just the money allocations were. Distributive justice can be defined as how fair an allocation of resources is perceived to be. Thus, we are interested in how fair you thought the payment of money for each category was. Please feel free to rate different categories differently if you think that the allocation of money for certain categories should have been different.”

This definition was also printed on top of the first page of the questionnaire.

To give the impression that the money allocations were based on the participant’s actual contribution, the questionnaire was worded so that the participants were reminded if they received money for each category. For example, whereas for the category “Fast Food Chains”, the questionnaire read, “Category: Fast Food Chains: You received $.50 for this category.” for the category “1950’s movies”, the questionnaire read, “Category: 1950’s movies: You did not receive $.50 for this category.”

Participants then rated how distributively just they thought the allocation of money was for each of the twenty categories on two items based on Colquitt’s (2001) scale measuring distributive justice. These items were “Is your payment for this category justified, given your contribution?” and “Is your payment for this category appropriate for the work you have completed?” Each item was answered on a 1 (to a small extent) to 10 (to a large extent) scale.

Next, participants estimated their own absolute amount of contribution to the team for each of the categories. They were first presented with the category (e.g. Fast Food Chains) and then indicated how much they thought they contributed to the team for the category on two separate items. The first item was, “For the category fast food chains,
how much do you think you contributed to the quiz bowl team?” This item was answered on a 1 (very little) to 10 (a great deal) scale. The second item was, “Out of your 6 answers for this category about what percent do you think were correct?” Underneath the item, a space was provided for participants to write their percent estimate. Participants were asked for their percent correct estimates rather than their number correct estimates in an attempt to avoid ceiling and floor effects.

After participants rated their own contribution, they were asked to rate their partner’s contribution using the same items. Because participants did not actually see their partners’ contributions, the instructions for rating partner contributions included the statement, “We know you may not be entirely sure how much your partner contributed to your team, but please give us your best estimate.”

Finally, as a manipulation check, the participants indicated how difficult each category was on separate 1 (very easy) to 10 (very difficult) scales.

Results and Discussion

Gender did not influence the results of this or the other two Experiments and will not be discussed further.

A manipulation check revealed that the manipulation was successful. Participants rated the difficult items as significantly more difficult on average than the easy items ($M_D = 7.75; M_E = 2.59$), $t(51) = -8.85, p < .001, d = 1.77$. Furthermore, they estimated that they answered more easy questions correctly than difficult questions, ($M_D = 21.23%; M_E = 78.63$), $t(51) = -27.84, p < .001, d = -5.13$. They also estimated that their partners answered more easy questions correctly than difficult questions, ($M_D = 51.57%; M_E = 80.86$), $t(51) = -10.49, p < .001, d = -2.12$. Although participants thought that they
performed worse than their partners on difficult questions ($M_{self} = 21.23\%$; $M_{partner} = 51.57\%$), $t(51) = -15.84, p < .001, d = -2.26$, they did not think that they performed better than their partners on easy questions ($M_{self} = 78.63\%; M_{partner} = 80.86\%$), $t(51) = -1.67, p = .10, d = -.18$

To simplify the analyses, for each person, we first averaged the two items measuring distributive justice together to create one rating of distributive justice per category. This yielded a set of 20 distributive justice ratings for each participant. The distributive justice items for each category were internally consistent, with alphas ranging from .68 to .92 (mean $\alpha = .82$). We then conducted a 2 (Contribution: High vs. Low) X 2 (Money Allocation: Paid vs. Not Paid) fully within-subjects ANOVA, with ratings of distributive justice as the dependent measure. If participants are egocentric in their judgments of distributive justice, then there should be an interaction of contribution level and money allocation. This analysis yielded strong support for the hypothesis. First, there was no main effect for level of contribution ($M_{High} = 6.77; M_{Low} = 6.79$), $F(1, 51) = .02, p = .89, \eta^2_{partial} = 0$. There was also no main effect for payment ($M_{not paid} = 6.70; M_{paid} = 6.86$), $F(1, 51) = .73, p = .40, \eta^2_{partial} = .01$. There was, however, a significant interaction, $F(1, 51) = 63.96, p < .001, \eta^2_{partial} = .56$. As Figure 1 shows, participants thought it was more fair to be paid than to not be paid for categories in which there was a high amount of contribution (easy categories) ($M_{paid} = 7.86; M_{not paid} = 5.67$), $t(51) = 6.59, p < .001, d = 1.14$, whereas they thought it was more fair not be paid than to be paid for categories in which there was a low amount of contribution (difficult categories) ($M_{paid} = 5.86; M_{not paid} = 7.72$), $t(51) = -5.60, p < .001, d = -.98$. 
These findings provide strong support for the hypothesis. Although participants did think it was fairer to be paid than not to be paid when contributions were high, they thought it was fairer not to be paid than to be paid when contributions were low. Note that the egoism account predicts a main effect for payment such that the participants should have thought it fairer to be paid than not to be paid. There was no such main effect in the current study.

If the participants were truly paying more attention to their own contribution than to the contribution of their teammates when making their distributive justice judgments, then judgments of one’s own absolute level of contribution should better predict distributive justice than judgments of one’s partner’s absolute level of contribution. To investigate this, we computed two partial correlations for each participant; one predicting judgments of distributive justice from participants’ ratings of their own contributions holding constant their ratings of their partners’ contributions, and the other predicting judgments of distributive justice from participants’ ratings of their partners’ contributions holding constant their ratings of their own contributions. If participants paid attention to their own contributions more than their partners’ contributions, then the magnitude of the partial correlation predicting judgments of distributive justice from participants’ ratings of their own contributions should be larger than the magnitude of the partial correlation predicting judgments of distributive justice from participants’ ratings of their partners’ contributions.

To simplify the analyses, we collapsed across the easy and difficult conditions for each participant and analyzed the data separately for the paid and not-paid conditions. We analyzed the data on the paid and not-paid conditions separately because each
condition makes distinct directional predictions. That is, when participants were paid the correlation between estimates of their own contribution and their distributive justice judgment should have been positive (the more I contribute, the fairer it is for me to be paid), and the correlation between estimates of their partner’s contribution and their distributive justice judgment should be negative (the more my partner contributes, the less fair it is for me to be paid). This pattern of results should be reversed when participants are not paid.

The results support the hypothesized relationship (see Figure 2). As Figure 2a reveals, only the partial correlation predicting distributive justice judgments from participants’ ratings of their own contributions holding constant their ratings of their partners’ contributions was significant, self-estimate \( t(48) = 8.10, p < .001 \), other-estimate \( t(48) = .58, p = .57 \). A direct comparison of these correlations demonstrated that participants paid more attention to their own contribution than to their partner’s contribution when judging distributive justice, \( t(48) = 4.82, p < .001, d = 1.14 \).

We also performed this analysis for the not-paid conditions, which once again provided support for the hypothesis. As Figure 2b reveals, only the correlation for the self-estimate holding constant the other-estimate was a significant predictor of distributive justice judgments, self-estimate \( t(47) = -7.69, p = .001 \), other-estimate \( t(47) = -.78, p = .44 \). A direct comparison of these correlations once again demonstrated that participants paid more attention to their own contribution than to their partner’s contribution when judging distributive justice, \( t(47) = -4.59, p < .001, d = 1.09 \).

Experiment 1 provided strong support for the hypotheses. Participants were egocentric rather than egoistic in their judgments of distributive justice in that they
thought is was fair to be paid more than their partners when contributions were high, whereas they thought it was unfair to be paid more than their partners when contributions were low. Furthermore, distributive justice judgments were better predicted by participants’ estimates of their own contribution than by their estimates of their partners’ contribution, providing evidence that they were focusing more on their own contribution when making these judgments. A critic may argue, however, that the reward in Experiment 1 was not large enough for egoism to have an effect; a potential $.50 per category reward might not have been a sufficient amount to induce self-serving behavior. Furthermore, in Experiment 1, payment amounts were already determined by the time justice judgments were made, thus leaving little room for self-serving judgments to produce any potential financial utility. It is possible that egoism will have more influence on justice judgments if they are made with the purpose of determining the payment amount rather than as a reaction to a payment. Finally, it can be argued that the contribution manipulation was confounded with payment favorability. Although we feel this interpretation is likely not valid given the observed interaction effect, it might be difficult to ascertain whether participants in Experiment 1 were estimating contribution level by using their estimates of the number of questions they answered correctly (as intended) or using the fact that they were paid or not paid as information to inform them of their own and their partner’s level of contribution. Experiment 2 was designed to address these shortcomings and to extend the results of Experiment 1.

Experiment 2

The basic design of Experiment 2 was similar to Experiment 1 in most respects, with a few key exceptions. First, the total number of categories of trivia questions was
reduced to sixteen to decrease the time required to complete the task. Second, payment was doubled from $.50 per category to $1.00 per category to ascertain whether a larger reward would induce egoistic responses. Third, rather than being told that the computer would determine the top contributor for each category, participants were told that after they completed the trivia questions, they would indicate what they believed a fair payment would be for each category and that these estimates would help determine the actual payments. This represents a strong test of the egocentrism vs. egoism in that, in this experiment, participants believed that the distributive justice judgments would actually help determine how much money they would receive for their contribution. Furthermore, eliciting justice judgments in this way eliminates the potential problem of participants using information about payment favorability as information about level of contribution.

Method

Participants

Thirty-four Columbia University students (19 women, 15 men) volunteered to participate. They were paid $10 for their participation. Their mean age was 23.6 years old.

Procedure

Participants were recruited in groups of two to eight. They were seated at computer cubicles, each containing a sign that indicated that they were on team one, two, three, or four. As they were seated, the experimenter let each participant know who their teammate was. Participants completed a similar quiz bowl task as in Experiment 1; however, to save time we reduced the number of categories to sixteen, of which there
were six questions for each of categories, for a total of 96 questions. Furthermore, participants were told that they would have the opportunity to earn up to $1.00 per category for a possible total payment of $16.00. As in Experiment 1, contribution was manipulated through question difficulty; eight of the categories consisted of very difficult questions (and should thus have led to low contribution) and eight of the categories consisted of very easy questions (and should thus have led to high contribution).

After the participants answered all the questions, a screen appeared that told participants that they would now indicate what they thought a fair payment for each category would be to help determine payments for each category. Next, for each of the 16 categories participants indicated how much of the $1.00 payment it would be fair for them to receive by typing in any amount between $0.00 and $1.00.

After they allocated payments, participants estimated their own absolute amount of contribution to the team for each category by typing in the percent of items they thought they answered correctly for each category. After they were done estimating their own performance, they estimated their partner’s performance in the same manner.

Finally, as a manipulation check, the participants indicated how difficult each category was on separate 1 (very easy) to 10 (very difficult) scales.

Results and Discussion

A manipulation check revealed that the manipulation was successful. Participants rated the difficult categories as significantly more difficult on average than the easy categories ($M_D = 7.43; M_E = 4.09), $t(33) = -8.51, p < .001, d = 2.10$.

We predicted that if participants are egocentric, then they should have claimed that it was fair to allocate more money to themselves when their contribution was high
(easy categories) than when their contribution was low (difficult categories). Results supported this prediction. Participants thought that it would be fair for them to be paid more money for their contributions to the easy categories than for their contributions to the difficult categories ($M_{E} = $0.74; $M_{D} = $0.48), $t(33) = 6.86, p < .001, d = 1.30.

Whereas allocations for the easy categories were significantly higher than an equal $0.50 allocation, $t(33) = 7.44, p < .001$, allocations for the difficult categories were not significantly lower than an equal $0.50 allocation, $t(33) = -6.8, p = .50$. Importantly, participants did not estimate that they performed better than their partners on the easy categories ($M_{\text{self}} = 69\%$ correct; $M_{\text{partner}} = 66\%$ correct), $t(33) = .79, p = .43, d = .16$, nor did they estimate that they performed worse than their partners on the difficult categories ($M_{\text{self}} = 39\%$ correct; $M_{\text{partner}} = 43\%$ correct), $t(33) = -1.29, p = .21, d = -.26$.

If the participants were truly paying more attention to their own contribution than to the contribution of their teammates when making their payment allocations, then judgments of one’s own absolute level of contribution should better predict these allocations than judgments of one’s partner’s absolute level of contribution. To investigate this, we ran an identical correlation analysis to the analysis in Experiment 1, collapsing across the easy and difficult conditions.

Results support the hypothesized relationship. As Figure 3 reveals, only the partial correlation predicting payment allocations from participants’ ratings of their own contributions holding constant their ratings of their partners’ contributions was significant, self-estimate $t(31) = 14.38, p < .001$, other-estimate $t(31) = .50, p = .62$. A direct comparison of these correlations demonstrated that participants paid more attention
to their own contribution than to their partner’s contribution when judging distributive justice, $t(31) = 8.84, p < .001, d = 2.49$.

These findings provide strong support for our hypotheses that judgments of distributive justice are at times egocentric. Participants thought that it was fair to allocate more money to themselves when contributions were high than when contributions were low. This was true although participants also indicated that their partners contributed the same amount as they did for both easy and difficult categories. As the partial correlation analysis provides evidence for, this occurred because participants were paying more attention to their own contribution than to their partner’s contribution when deciding on fair payment allocations. Furthermore, as in Experiment 1, we find no support for egoism. That is, the egoism account predicts that participants should allocate more money to themselves for both easy and difficult questions. However, in Experiment 2, participants did not allocate more money to themselves when the category was difficult. In fact, they allocated less money to themselves than they did to their partners for these categories, although the difference was non-significant.

A potential weakness of both Experiments 1 and 2 is that they are mixed-motive in nature. Although participants are said to be collaborating with each other on a team, the allocation of money is based on how much they contribute in comparison with their teammate. Thus, it can be argued that participants in these experiments were competing with their teammate rather than collaborating with them. Another potential weakness is that these experiments are suspect to experimenter demand. That is, exposure to both easy and difficult questions might make participants aware that the hypothesis concerns differences in justice ratings for these categories and thus lead to them to adjust their
responses accordingly. Experiment 3 was designed to address these concerns and to identify one potential boundary condition for these effects.

Experiment 3

Experiment 3 was identical to Experiment 1 with three key differences. First, to address concerns of the mixed-motive nature of the previous experiments, participants were told that they were competing with their partner against a computer simulated team and that each partner would be paid an equal amount of money for each category in which they outperformed the simulated team. Whereas in the previous experiments, participants rated the fairness of payments that were favorable or unfavorable; in the current experiment, participants rated the fairness of payments that were the same as their partners. Note as well that the collaborative nature of Experiment 3 provides a more conservative test of our egocentrism hypothesis in that the notion that one is working “with” someone against another team may serve to call one’s partner’s contributions to attention.

Second, to address concerns about experimenter demand, contribution level (easy vs. difficult questions) was a between-subjects rather than a within-subject manipulation. Finally, to test for a potential boundary condition for these effects, half of the participants were exposed to their partners’ ostensible answers to the questions. Recent research has demonstrated that the effects of egocentrism are at least partially due to informational disparities. That is, because people have better information about themselves than about others, they rationally pay more attention to information they know well (self) than information they do not know well (others) (Kruger, Windschitl, Burrus, Fessel, & Chambers, in press; Moore & Small, 2007). We thus attempt to attenuate the effects in
Experiment 3 by introducing more information about the participants’ partners’ contributions for half of the participants.

*Method*

**Participants**

Eighty Columbia University students (36 women, 44 men) volunteered to participate. They were paid $10 for their participation. Their mean age was 22.6 years old.

**Procedure**

Participants were recruited in groups of two to eight. They were seated at separate computer cubicles; and on each computer, a sign was posted that indicated that they were on team one, two, three, or four. As they were seated, the experimenter let each participant know who their teammate was. After they gave their informed consent to participate, they were prompted to press the space bar to continue. On the following three screens, participants read instructions that were similar to the instructions for Experiments 1 and 2 with the following two exceptions.

1) Half of the participants were told that they would see their partner’s answer immediately after they had answered each question.

2) They were told that they would be competing against a computer-simulated team from “e-University”; and if their team outperformed e-University in a category, they would be paid $2.00 for that category, with $1.00 going to each team member.

After completing the six-item version of the Need for Cognition Scale (Cacioppo & Petty, 1982), participants answered trivia questions for each of the same ten categories
used in Experiment 1. One-half of the participants answered questions from the difficult categories and the other half of the participants answered questions from the easy categories in an identical manner as in Experiments 1 and 2 (see Appendix). After answering each question, half of the participants were told their partner’s ostensible answer to the question. These answers were actually determined ahead of time by the experimenter such that partners answered approximately 1.48 of the difficult questions correctly for each category and 5.43 of the easy questions correctly for each category. These numbers reflect the number of questions participants answered correctly for these categories in Experiment 1. Participants, however, were not explicitly told whether their partners’ answers were correct or incorrect.

After they answered the questions, they were informed which categories they outperformed “e-University” on and were told that they would be paid for these categories. Each partner received a $1.00 payment for each of the categories they were paid for. In reality, the payments were determined ahead of time, such that they were paid for one-half of the categories. This yielded a 2 (Contribution: High vs. Low) X 2 (Information about partner’s answers: Information vs. No Information) X 2 (Money Allocation: Paid vs. Not Paid) mixed design with money allocation as a within-subject factor and contribution and information as between-subject factors. After they received the payment manipulation, participants rated how distributively just the payments were, estimated their own and their partner’s contribution to the team by estimating the percent of questions each partner answered correctly for each category, and rated the difficulty of the items on the same scales as Experiments 1 and 2. After rating item difficulty, participants were paid, thanked for their participation, and fully debriefed.
**Results and Discussion**

Participants once again rated the difficult items as significantly more difficult on average than the easy items (MD = 7.50; ME = 3.78), \( t(78) = -11.42, p < .001, d = -2.54 \). Participants’ estimates of their own and their partners’ contribution as a function of condition are depicted in Table 1. As Table 1 depicts, participants in the easy condition estimated that they answered more questions correctly than did participants in the difficult condition, \( F(1,76) = 131.75, p < .001, \eta^2_{\text{partial}} = .63 \). However, there was no significant 2-way interaction with the information condition, \( F(1,76) = .938, p = .34, \eta^2_{\text{partial}} = .01 \). Participants in the easy condition also estimated that their partners answered more questions correctly than did participants in the difficult condition, \( F(1,76) = 133.36, p < .001, \eta^2_{\text{partial}} = .64 \). Once again, there was no significant 2-way interaction with the information condition, \( F(1,76) = .89, p = .35, \eta^2_{\text{partial}} = .01 \). For easy items, participants estimated that their partners answered more questions correctly than they did for both the no information condition, \( t(18) = -2.36, p = .03, d = -.40 \), and for the information condition, \( t(18) = -2.75, p = .01, d = -.44 \). They also thought their partners answered more difficult questions correctly than they did, although these differences did not reach significance, no information \( t(18) = -1.75, p = .09, d = -.29 \), information \( t(18) = -1.93, p = .07, d = -.42 \). There was no significant 3-way interaction, \( F(1,76) < .001, p = .98, \eta^2_{\text{partial}} = 0 \).

To simplify the analyses, for each person, we first averaged the two items measuring distributive justice together to create one rating of distributive justice per category. This yielded a set of 10 distributive justice ratings for each participant. The distributive justice items for each category were internally consistent, with alphas ranging
from .83 to .95 (mean $\alpha = .90$). We first conducted separate 2 (Contribution: High vs. Low) X 2 (Money Allocation: Paid vs. Not Paid) repeated measures ANOVAs for both the no information and the information condition. The results from Experiment 1 were replicated (see Figure 4).

**No Information Condition**

For the no information condition, there was no main effect for level of contribution ($M_{\text{High}} = 5.59; M_{\text{Low}} = 5.50$), $F(1, 40) = .03, p = .86$, $\eta^2_{\text{partial}} = 0$. There was also no main effect for payment ($M_{\text{not paid}} = 5.22; M_{\text{paid}} = 5.86$), $F(1, 40) = 3.31, p = .08$, $\eta^2_{\text{partial}} = .08$. These results were qualified by a significant 2-way interaction, $F(1, 40) = 14.26, p < .001$, $\eta^2_{\text{partial}} = .26$. As Figure 4 shows, whereas participants thought it was more fair to be paid than to not be paid for categories in which there was a high amount of contribution (easy categories) ($M_{\text{paid}} = 6.81; M_{\text{not paid}} = 4.36$), $t(18) = 3.64, p = .002$, $d = 1.18$, they thought it was more fair not to be paid than to be paid for categories in which there was a low amount of contribution (difficult categories), although this difference was not statistically significant ($M_{\text{paid}} = 5.07; M_{\text{not paid}} = 5.93$), $t(22) = -1.50, p = .15$, $d = -.41$.

**Information Condition**

For the information condition, there was no main effect for level of contribution ($M_{\text{High}} = 5.63; M_{\text{Low}} = 6.28$), $F(1, 36) = 1.34, p = .25$, $\eta^2_{\text{partial}} = .04$. There was also no main effect for payment ($M_{\text{not paid}} = 5.53; M_{\text{paid}} = 6.37$), $F(1, 36) = 3.11, p = .09$, $\eta^2_{\text{partial}} = .08$. Once again, there was a significant 2-way interaction, $F(1, 36) = 8.95, p = .01$, $\eta^2_{\text{partial}} = .20$. As Figure 4 shows, whereas participants thought it was more fair to be paid than to not be paid for categories in which there was a high amount of contribution (easy categories) ($M_{\text{paid}} = 6.77; M_{\text{not paid}} = 4.49$), $t(18) = 2.77, p = .01$, $d = .88$, they thought it
was more fair not be paid than to be paid for categories in which there was a low amount of contribution (difficult categories), although this difference was not statistically significant ($M_{\text{paid}} = 5.98; M_{\text{not paid}} = 6.57$), $t(18) = -1.20$, $p = .25$, $d = -.31$.

Contrary to our hypothesis there was no significant three-way interaction, $F(1, 76) = .11$, $p = .74$, $\eta^2_{\text{partial}} = 0$, indicating that these effects did not vary as a function of the amount of information participants were given about their partners’ answers.

Additional Test of Egocentrism

Due to the between-subjects nature of the experimental design, we were unable to run the partial correlation analyses as we did in Experiments 1 and 2. That is, many of the participants’ estimates of their own or their partner’s contributions were constant (e.g. giving a ranking of 10 for each category in the high contribution condition). The corresponding lack of variance made computing within-subject partial correlations impossible for 21 subjects. Thus, we computed between-subject regression analyses as a further test of egocentrism as the mechanism driving these results. As with the partial correlation analysis, if participants are egocentric in their estimates of distributive justice, then justice judgments should be better predicted by one’s estimate of their own contribution than by their estimate of their partner’s contribution.

The results support the hypothesized relationship. Collapsing across the information and no information conditions, when participants are paid, distributive justice is significantly predicted by one’s estimate of their own contribution, but not significantly predicted by their estimate of their partner’s contribution ($\beta_{\text{self}} = .45$, $p = .02$; $\beta_{\text{partner}} = - .06$, $p = .74$). When participants are not paid, justice judgments are once again significantly predicted by one’s estimate of their own contribution, but not significantly
predicted by their estimate of their partners’ contribution ($\beta_{self} = -.61, p < .01; \beta_{partner} = .26, p = .20$). As Table 2 shows, the same pattern of results holds for both the no information and the information conditions, although only significantly so for two of the comparisons.

General Discussion

Three experiments demonstrated that perceptions of distributive justice are sometimes egocentric rather than egoistic. Experiment 1 demonstrated that people thought that it was fairer to be paid than not to be paid when they contributed a lot to a task, but they thought it was fairer not to be paid than to be paid when they contributed little to a task. We argue that these results occur due to the fact that the participants were egocentric in their judgments of contribution (e.g. Chambers, Windschitl, & Suls, 2003; Kruger, 1999; Kruger & Burrus, 2004; Kruger & Savitsky, 2004; Ross & Sicoly, 1979; Thompson & Kelley, 1981; Weinstein & Lachendro, 1982).

Experiment 2 replicated and extended the findings of Experiment 1. In this experiment, participants were asked to allocate what they believed would be a fair amount of money to themselves and to their partners. Once again, allocations were egocentric in that participants thought that it was fairer to award themselves more money for their contribution to easy categories than for difficult categories although they did not feel they performed any better or worse than their partners for these categories.

Finally, results were once again replicated in Experiment 3, this time in a more collaborative atmosphere in which participants were competing as a team against a simulated “e-University” and were paid equal amounts for their contribution. We also attempted to identify a boundary condition for these effects, quality of information. Although we predicted that the effects would be attenuated for participants in the high
information as compared to the no information condition; contrary to our expectations, we did not find a significant interaction effect. An investigation of the effect sizes, however, is suggestive that increasing the amount of information may have had some effect. The interaction $\eta^2_{\text{partial}}$ was reduced from .26 for the no information condition to .20 for the information condition, the main effect $\eta^2_{\text{partial}}$ for the easy question condition was reduced from 1.18 for the no information condition to .88 for the information condition, and the main effect $\eta^2_{\text{partial}}$ for the difficult question condition was reduced from -.41 for the no information condition to -.31 for the information condition. However, these results are merely suggestive and further research is clearly required. This issue is discussed in more detail later in the future research section below.

The findings for the low contribution conditions run contrary to previous research, which suggested that people are egoistic when they assess the fairness of allocations of rewards given for collaborative efforts in that they think it is fairer for them to receive a larger reward than a partner for a collaborative effort than it is for that partner to receive a larger reward than them (e.g. Diekman et al, 1997; Greenberg, 1983; Grover, 1991; Messick and Sentis, 1979, Thompson & Loewenstein, 1992; Wade-Benzoni et al, 1996).

This result suggests that judgments of distributive justice may be not be as social comparison based as once thought (e.g. Austin, McGinn, & Susmilch, 1980; Buchanan & Mathieu, 1986; Van den Bos, Wilke, Lind, & Vermunt, 1998). Rather, these judgments may often be noncomparative or based on expectations one has developed for what constitutes fair payment for a certain contribution. We believe that this finding represents one of the major theoretical contributions of this paper and should help to stimulate further research on the origins of distributive justice judgments. At the
minimum, researchers should consider assessing participants’ lay theories of their belief that a payment should be based on their own performance independent of others’ performance or alternately, that a payment should be based primarily on their performance relative to others’ performance independent of individual performance.

**Future Research and Implications**

Future researchers should focus on trying to explain why people are egocentric in their judgments of distributive justice. As stated previously, one possible reason is that people have more information about their own contributions than about the contributions of others and thus base their judgments of distributive justice more on what they know well (Kruger, Windschitl, Burrus, Fessel, & Chambers, in press; Moore & Small, 2007). For instance, Kruger, Windschitl, Burrus, Fessel, and Chambers (in press) demonstrated that whereas participants who had little information about their roommate’s activities were egocentric in their judgments of how frequently they performed those activities compared with their roommates, participants who had a lot of information about their roommate’s activities were not. Thus, egocentrism seems to be partly the result of rationally discounting the contributions of others when one has little knowledge about them. Although we attempted to increase participants’ knowledge of their partners’ contributions in Experiment 3, our manipulation was unsuccessful. Future research should focus on including conditions that manipulate participants’ knowledge of the number of questions their partner answered correctly and incorrectly rather than simply manipulating participants’ knowledge of their partners’ answers themselves. In Experiment 3, although participants were aware of their partners’ answers, they may not
have been confident in the veracity of these answers and thus did not take this information into account when making their justice judgments.

A second possible reason that people are egocentric in their judgments of distributive justice may be termed accessibility (e.g. Ross & Sicoly, 1979). That is, information relevant to the self is more spontaneously and efficiently retrieved than is information relevant to the other. As such, information relevant to partners who are more salient may also come to mind more spontaneously and efficiently, leading to less egocentrism. This suggests that future research should manipulate the salience of partners in order to manipulate egocentrism.

Finally, a third possible reason that people are egocentric in their judgments of distributive justice may be termed focalism (e.g. Kruger & Burrus, 2004). Focalism refers to the idea that in comparative judgments, the features of the target of the comparison receives more weight in the judgment than does the features of the referent of the comparison. In social comparisons, the self tends to be the target of the comparison (and thus receives more weight in the judgment), while the other tends to be the referent. In the current experiment participants were themselves the target of the comparison and thus received more weight in the judgment of distributive justice than did the partner, who became the referent of the comparison. Thus, a manipulation that causes one’s partner to become the target of the comparison may lead to less egocentrism.

There are several potential ways to manipulate which person is the target of the comparison in an experiment. For instance, future research may manipulate the target by changing the way that the money allocations are made aware to the participant. That is, instead of being informed of how much money they have earned, participants could be
informed of how much money *their partner* has earned. Another way to manipulate the target may be to manipulate the way the distributive justice question is asked. For example, instead of answering the question, “Is your payment for this category, appropriate for the work you have completed?” participants could answer the question, “Is your partner’s payment for this category, appropriate for the work he or she has completed?” In this way, manipulating which partner is focal in the comparison may lead to changes in the amount of egocentrism observed in judgments of distributive justice.

While both the current experiment and the proposed studies have important implications for furthering our understanding of how people compare themselves to others, they also have important implications for our lives both at work and at home. For example, in the home, perceptions of the fairness of distributions have been found to be related to many important outcomes such as marital satisfaction, commitment, sexual satisfaction, feelings of depression, and intimacy (e.g. Walster & Walster, 1978). As such, research that sheds light on how these fairness judgments are formed can have important ramifications for improving the quality of our relationships. It seems likely that relationship satisfaction can only increase under the simple understanding that fairness judgments are often a function of a more coldly cognitive process of egocentrism rather than self-serving egoism and, in fact, this egocentric process can sometimes lead to other-serving judgments.

For many of the same reasons, the current research has important implications for organizational life. At a minimum, we argue that managers can take advantage of the current research by making themselves more aware of how their employees are forming
distributive justice judgments. For instance, under some situations, taking steps to ensure that employees are made aware of coworkers’ contributions may lead to more equitable judgments of the distributive justice of wages, bonuses, and raises. Given the fact that perceptions of organizational justice are significantly related to numerous important work outcomes such as job satisfaction, commitment, counterproductive work behaviors, and organizational citizenship behaviors (Colquitt et al, 2001), this line of research sends a strong message to organizations: In order to retain a happy and committed workforce, it is no longer enough for an organization simply to be fair but rather it imperative that it show its employees that it is fair. Any way an organization can increase the transparency of its processes and procedures will likely contribute to overall work environment.

Furthermore, we believe that this line of research is relevant to many decisions employers face on a fairly regular basis. For example, negotiated agreements are particularly relevant to this line of research. Using these findings, employers may wish to structure negotiations in such a way to increase the likelihood that the outcomes are perceived as fair by both parties. As discussed above, providing as much information as possible as well as reducing focalism may be ways to ensure that the employee leaves the bargaining table with a positive experience. This research may also be relevant to employers who are facing situations involving social dilemmas/limited resources. Employers can use this research to inform their communications with employees on what is deemed as a fair share of the resources. Often companies change procedures and process without providing a full explanation for why the change has occurred. If there is a justified reason for change, companies would be well served to get that message out or else run the risk of being perceived as unfair because employees lack adequate
information. Finally, employees’ reactions and experience with their company’s performance appraisal system may be improved by this research. For example, at jobs where contributions are relatively low (easy jobs), supervisors may want to qualify an employee’s performance review by rating and discussing the quality of his/her work compared to the rest of the team members. Then, for the example, the employee may take in consideration both the high level of performance of his/her colleagues as well as his/her own high level of performance when forming justice ratings of the performance appraisal, which made lead the employee to perceive the situation as more fair.

In conclusion, the current research presents the field with an important and previously undiscovered view of organizational justice. The fact that issues of fairness are at times determined without a full consideration of the situations of others provides organizational justice researchers with an important new lens through which to view issues of organizational justice. We believe that it is imperative for future researchers to, at the very minimum, consider the potentially biasing effects of egocentrism on their participants’ constructions of justice judgments.
References


Kruger, J., & Burrus, J. (2004). Egocentrism and focalism in unrealistic optimism (and


Thompson, L., & Loewenstein, G. (1992). Egocentric interpretations of fairness and


Footnotes

1 In their original articles, the authors refer to the tendency to be self-serving as “egocentric bias”. However, to avoid confusion, I refer to the tendency to be self-serving as egoism. Rather than the tendency to be self-serving, the term egocentrism is referred to by Inhelder & Piaget (1958) as the notion that the self figures more prominently in judgment than others. Egoism, on the other hand, is defined as, “the habit of valuing everything only in reference to one’s personal interest; selfishness” (The Random House Dictionary of the English Language, 1967).

2 Given the limited amount of time allowed for the experiment (50 minutes) it was necessary to use an abbreviated version of the Need for Cognition Scale rather than the full version.

3 We report the analyses using the estimated percent correct measure as the predictor. Results were identical, however, when using actual performance as the predictor.

4 When analyzed separately, the pattern of results is identical for each of the four conditions.

5 For this and all tests involving correlation coefficients, we report the raw correlation coefficients. However, in order to satisfy t-test assumptions of normality, we analyzed them using Fishers r-to-z transformed values.

6 Although the design of the experiment implies that they have earned $5.00, each participant was paid $10.00
Table 1. *Estimates of contribution as a function of condition (Experiment 3).*

<table>
<thead>
<tr>
<th>Condition</th>
<th>No Information</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Easy</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self</td>
<td>62.58%</td>
<td>67.20%</td>
</tr>
<tr>
<td>Partner</td>
<td>67.77%</td>
<td>73.80%</td>
</tr>
<tr>
<td><strong>Difficult</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self</td>
<td>28.26%</td>
<td>26.54%</td>
</tr>
<tr>
<td>Partner</td>
<td>32.83%</td>
<td>32.63%</td>
</tr>
</tbody>
</table>

Note: Numbers indicate average percent correct estimates for each category.
Table 2. Standardize regression weights predicting distributive justice judgments from participants’ estimates of their own contribution to the quiz bowl team and their estimates of their partners’ contributions to the quiz bowl team as a function of paid-not paid condition and information-no information condition (Experiment 3).

<table>
<thead>
<tr>
<th>Condition</th>
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<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paid</td>
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<td></td>
</tr>
<tr>
<td>Self</td>
<td>.64**</td>
<td>.20</td>
</tr>
<tr>
<td>Partner</td>
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<td>.08</td>
</tr>
<tr>
<td>Not Paid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self</td>
<td>-.54</td>
<td>-.66*</td>
</tr>
<tr>
<td>Partner</td>
<td>.23</td>
<td>.27</td>
</tr>
</tbody>
</table>

Note: numbers represent standardized betas.
** $p < .01$
* $p < .05$
Figure 1. Ratings of distributive justice as a function of payment and contribution level (Experiment 1).

Note: For ratings of distributive justice, higher numbers indicate a more just allocation of money. Error bars represent standard errors.
Figure 2. Mean correlations and partial correlations between self-estimates, peer-estimates, and judgments of distributive justice. Figure 3a represents the correlations for the paid conditions, and Figure 3b represents the correlations for the unpaid conditions. Mean partial correlation coefficients (directional paths) appear on single-headed straight arrows, and the simple correlation between self-estimates and peer-estimates appears on the double-headed curved arrows (Experiment 1).

** $p < .01$, * $p < .05$

(a)

(b)
Figure 3. Mean correlations and partial correlations between self-estimates, peer-estimates, and judgments of fair payment allocation. Mean partial correlation coefficients (directional paths) appear on single-headed straight arrows, and the simple correlation between self-estimates and peer-estimates appears on the double-headed curved arrows (Experiment 2).

** p < .01, * p < .05
Figure 4. Ratings of distributive justice as a function of payment and contribution level (Experiment 3). Figure 4a represents the no information about partner contribution condition and Figure 4b represents the information about partner contribution condition.

Note: For ratings of distributive justice, higher numbers indicate a more just allocation of money. Error bars represent standard errors.
Appendix

*Categories of trivia questions.*

<table>
<thead>
<tr>
<th>Studies 1 and 3</th>
<th>Study 2</th>
</tr>
</thead>
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<tr>
<td><strong>Difficult</strong></td>
<td><strong>Difficult</strong></td>
</tr>
<tr>
<td>1. 1950’s Movies</td>
<td>1. 1950’s Movies</td>
</tr>
<tr>
<td>2. Ancient Civilizations</td>
<td>2. Ancient Civilizations</td>
</tr>
<tr>
<td>3. Dates in History</td>
<td>3. Famous Rivers</td>
</tr>
<tr>
<td>5. Famous Rivers</td>
<td>5. Vegetation of the Amazon</td>
</tr>
<tr>
<td>7. Vegetation of the Amazon</td>
<td>7. Russian Literature</td>
</tr>
<tr>
<td>8. Latin American History</td>
<td>8. South American Geography</td>
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<td>9. Russian Literature</td>
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<tr>
<td><strong>Easy</strong></td>
<td><strong>Easy</strong></td>
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<td>1. Adam Sandler Movies</td>
</tr>
<tr>
<td>2. Brands of Alcohol</td>
<td>2. Brands of Alcohol</td>
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<tr>
<td>3. Celebrities</td>
<td>3. Celebrities</td>
</tr>
<tr>
<td>5. Driving Rules</td>
<td>5. Fast Food Chains</td>
</tr>
<tr>
<td>6. Famous Cartoon Characters</td>
<td>6. Rock N’ Roll</td>
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<td>7. Fast Food Chains</td>
<td>7. State Capitols</td>
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<tr>
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<td>10. U.S. Geography</td>
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