

- a tendency to attribute less initiative and less imagination to the opponent than to himself. This hypothesis is consistent with a finding of attribution-research (Jones & Nisbett, 1971) that people tend to view their own behavior as reflecting the changing demands of their environment and others' behavior as trait-dominated.

The production of a compelling scenario is likely to constrain future thinking. There is much evidence showing that, once an uncertain situation has been perceived or interpreted in a particular fashion, it is quite difficult to view it in any other way (see, e.g., Bruner & Potter, 1969). Thus, the generation of a specific scenario may inhibit the emergence of other scenarios, particularly those that lead to different outcomes. . . .

Perhaps the most obvious demonstration of availability in real life is the impact of the fortuitous availability of incidents or scenarios. Many readers must have experienced the temporary rise in the subjective probability of an accident after seeing a car overturned by the side of the road. Similarly, many must have noticed an increase in the subjective probability that an accident or malfunction will start a thermonuclear war after seeing a movie in which such an occurrence was vividly portrayed. Continued preoccupation with an outcome may increase its availability, and hence its perceived likelihood. People are preoccupied with highly desirable outcomes, such as winning the sweepstakes, or with highly undesirable outcomes, such as an airplane crash. Consequently, availability provides a mechanism by which occurrences of extreme utility (or disutility) may appear more likely than they actually are. . . .

12. Egocentric biases in availability and attribution

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One instance of a phenomenon examined in the present experiments is familiar to almost anyone who has conducted joint research. Consider the following: You have worked on a research project with another person, and the question arises as to who should be "first author" (i.e., who contributed more to the final product?). Often, it seems that both of you feel entirely justified in claiming that honor. Moreover, since you are convinced that your view of reality must be shared by your colleague (there being only one reality), you assume that the other person is attempting to take advantage of you. Sometimes such concerns are settled or prevented by the use of arbitrary decision rules, for example, the rule of "alphabetical priority" - a favorite gambit of those whose surnames begin with letters in the first part of the alphabet.

We suggest, then, that individuals tend to accept more responsibility for a joint product than other contributors attribute to them. It is further proposed that this is a pervasive phenomenon when responsibility for a joint venture is allocated by the participants. In many common endeavors, however, the participants are unaware of their divergent views, since there is no need to assign "authorship"; consequently, the ubiquity of the phenomenon is not readily apparent. The purpose of the current research was to assess whether these egocentric perceptions do occur in a variety of settings and to examine associated psychological processes.

In exploring the bases of such differential perceptions, we are not so naive as to suggest that intentional self-aggrandizement never occurs. Nonetheless, it is likely that perceptions can be at variance in the absence of deliberate deceit; it is from this perspective that we approach the issue.

To allocate responsibility for a joint endeavor, well-intentioned participants presumably attempt to recall the contributions each made to the final product. Some aspects of the interaction may be recalled more readily, or be more available, than others, however. In addition, the features that are recalled easily may not be a random subset of the whole. Specifically, a person may recall a greater proportion of his or her own contributions than would other participants.

An egocentric bias in availability of information in memory, in turn, could produce biased attributions of responsibility for a joint product. As Tversky and Kahneman (1973, 11) have demonstrated, people use availability, that is, "the ease with which relevant instances come to mind" (1973, p. 209), as a basis for estimating frequency. Thus, if self-generated inputs were indeed more available, individuals would be more likely to claim more responsibility for a joint product than other participants would attribute to them.

There are at least four processes that may be operating to increase the availability of one's own contributions: (a) selective encoding and storage of information, (b) differential retrieval, (c) informational disparities, and (d) motivational influences.

Selective encoding and storage

For a number of reasons, the availability of the person's own inputs may be facilitated by differential encoding and storage of self-generated responses. First, individuals' own thoughts (about what they are going to say next, daydreams, etc.) or actions may distract their attention from the contributions of others. Second, individuals may rehearse or repeat their own ideas or actions; for example, they might think out their position before verbalizing and defending it. Consequently, their own inputs may receive more "study time," and degree of retention is strongly related to study time (Carver, 1972). Third, individuals' contributions are likely to fit more readily into their own cognitive schema, that is, their unique conception of the problem based on past experience, values, and so forth. Contributions that fit into such preexisting schemata are more likely to be retained (Bartlett, 1932; Bruner, 1961).

Differential retrieval

The availability bias could also be produced by the selective retrieval of information from memory. In allocating responsibility for a joint outcome, the essential question from each participant's point of view may be, "How much did I contribute?" Participants may, therefore, attempt to recall principally their own contributions and inappropriately use the information so retrieved to estimate their *relative* contributions, a judgment that

cannot properly be made without a consideration of the inputs of others as well.

Informational disparities

There are likely to be differences in the information available to the contributors that could promote egocentric recall. Individuals have greater access to their own internal states, thoughts, and strategies than do observers. Moreover, participants in a common endeavor may differ in their knowledge of the frequency and significance of each other's independent contributions. For example, faculty supervisors may be less aware than their student colleagues of the amount of time, effort, or ingenuity that students invest in running subjects, performing data analyses, and writing preliminary drafts of a paper. On the other hand, supervisors are more cognizant of the amount and of the importance of the thought, reading, and so on that they put into the study before the students' involvement begins.

Motivational influences

Motivational factors may also mediate an egocentric bias in availability. One's sense of self-esteem may be enhanced by focusing on, or weighting more heavily, one's own inputs. Similarly, a concern for personal efficacy or control (see deCharms, 1968; White, 1959) could lead individuals to dwell on their own contributions to a joint product.

The preceding discussion outlines a number of processes that may be operating to render one's own inputs more available (and more likely to be recalled) than the contributions of others. Consequently, it may be difficult to imagine a disconfirmation of the hypothesis that memories and attributions are egocentric. As Greenwald (1978) has observed, however, the egocentric character of memory "is not a necessary truth. It is possible, for example, to conceive of an organization of past experience that is more like that of some reference work, such as a history text, or the index of a thesaurus" (p. 4). In addition, we were unable to find published data directly supportive of the hypothesized bias in availability. Finally, recent developments in the actor-observer literature seem inconsistent with the hypothesis that memories and attributions are egocentric. Jones and Nisbett (1971) speculated that actors are disposed to locate the cause of their behavior in the environment, whereas observers attribute the same behavior to stable traits possessed by the actors. Though a variety of explanations were advanced to account for this effect (Jones & Nisbett, 1971), the recent emphasis has been on perceptual information processing (Storms, 1973; Taylor & Fiske, 1975). The actor's visual receptors are aimed toward the environment; an observer may focus directly on the actor.

Thus, divergent aspects of the situation are salient to actors and observers, a disparity that is reflected in their causal attributions. This proposal seems to contradict the thesis that actors in an interaction are largely self-absorbed.

Two studies offer suggestive evidence for the present hypothesis. Rogers, Kuiper, and Kirker (1977) showed that trait adjectives were recalled more readily when subjects had been required to make a judgment about self-relevance (to decide whether each trait was descriptive of them) rather than about a number of other dimensions (e.g., synonymity judgments). These data imply that self-relevance increases availability; however, Rogers et al. did not contrast recall of adjectives relevant to the self with recall of adjectives relevant to other people - a comparison that would be more pertinent to the current discussion. Greenwald and Albert (1968) found that individuals recalled their own arguments on an attitude issue more accurately than the written arguments of other subjects. Since the arguments of self and other were always on opposite sides of the issue, the Greenwald and Albert finding could conceivably reflect increased familiarity with, and memory for, arguments consistent with one's own attitude position rather than enhanced memory for self-generated statements (although the evidence for attitude-biased learning is equivocal, e.g., Greenwald & Sakumura, 1967; Malpass, 1969).

We conducted a pilot study to determine whether we could obtain support for the hypothesized bias in availability. Students in an undergraduate seminar were asked to estimate the number of minutes each member of the seminar had spoken during the immediately preceding class period. An additional 26 subjects were obtained from naturally occurring two-person groups approached in cafeterias and lounges. The participants in these groups were asked to estimate the percentage of the total time each person had spoken during the current interaction.

It was assumed that subjects would base their time estimates on those portions of the conversation they could recall readily. Thus, if there is a bias in the direction of better recall of one's own statements, individuals' estimates of the amount of time they themselves spoke should exceed the average speaking time attributed to them by the other member(s) of the group.

The results were consistent with this reasoning. For seven of the eight students in the undergraduate seminar, assessments of their own discussion time exceeded the average time estimate attributed to them by the other participants ($p < .05$, sign test). Similarly, in 10 of the 13 dyads, estimates of one's own discussion time exceeded that provided by the other participant ($p < .05$, sign test). The magnitude of the bias was highly significant over the 13 dyads, $F(1, 12) = 14.85$, $p < .005$; on the average, participants estimated that they spoke 59% of the time. These data provide preliminary, albeit indirect, evidence for the hypothesized availability bias in everyday situations. . . .

In this experiment, we wished to examine egocentric biases in naturally occurring, continuing relationships. Married couples appeared to represent an ideal target group. Spouses engage in many joint endeavors of varying importance. This circumstance would appear to be rife with possibilities for egocentric biases.

Accordingly, the first experiment was conducted (a) to determine if egocentric biases in allocations of responsibility occur in marital relationships; (b) to replicate, using a different dependent measure, the egocentric bias in availability obtained in the pretest; and (c) to correlate the bias in availability with the bias in responsibility. If the bias in responsibility is caused by a bias in availability, the two sets of data should be related.

Method

Subjects. The subjects were 37 married couples living in student residences. Twenty of the couples had children. The subjects were recruited by two female research assistants who knocked on doors in the residences and briefly described the experiment. If the couple were willing to participate, an appointment was made. The study was conducted in the couple's apartment; each couple was paid \$5 for participating.

Procedure. A questionnaire was developed on the basis of extensive preliminary interviews with six married couples. In the experiment proper, the questionnaire was completed individually by the husband and wife; their anonymity was assured. The first pages of the questionnaire required subjects to estimate the extent of their responsibility for each of 20 activities relevant to married couples by putting a slash through a 150-mm straight line, the endpoints of which were labeled "primarily wife" and "primarily husband." The twenty activities were making breakfast, cleaning dishes, cleaning house, shopping for groceries, caring for your children, planning joint leisure activities, deciding how money should be spent, deciding where to live, choosing friends, making important decisions that affect the two of you, causing arguments that occur between the two of you, resolving conflicts that occur between the two of you, making the house messy, washing the clothes, keeping in touch with relatives, demonstrating affection for spouse, taking out the garbage, irritating spouse, waiting for spouse, deciding whether to have children.

Subjects were next asked to record briefly examples of the contributions they or their spouses made to each activity. Their written records were subsequently examined to assess if the person's own inputs were generally more "available." That is, did the examples reported by subjects tend to focus more on their own behaviors than on their spouses'? A rater, blind to the experimental hypothesis,

In the preliminary interviews, we used percentage estimates. We found that subjects were able to remember the percentages they recorded and that postquestionnaire comparisons of percentages provided a strong source of conflict between the spouses. The use of the 150-mm scales circumvented these difficulties; subjects were not inclined to convert their slashes into exact percentages that could then be disputed.

recorded the number of discrete examples subjects provided of their own and of their spouses' contributions. A second rater coded one third of the data; the reliability (Pearson product-moment correlation) was .81.

Results

The responses of both spouses to each of the responsibility questions were summed, so that the total included the amount that the wife viewed as her contribution and the amount that the husband viewed as his contribution. Since the response scale was 150 mm long, there were 150 "units of responsibility" to be allocated. A sum of greater than 150 would indicate an egocentric bias in perceived contribution, in that at least one of the spouses was overestimating his or her responsibility for that activity. To assess the degree of over- or underestimation that spouses revealed for each activity, 150 was subtracted from each couple's total. A composite score was derived for the couple, averaging over the 20 activities (or 19, when the couple had no children).

An analysis of variance, using the couple as the unit of analysis, revealed that the composite scores were significantly greater than zero, $M = 4.67$, $F(1, 35) = 12.89$, $p < .001$, indicating an egocentric bias in perceived contributions. Twenty-seven of the 37 couples showed some degree of overestimation ($p < .025$, sign test). Moreover, on the average, overestimation occurred on 16 of the 20 items on the questionnaire, including negative items - for example, causing arguments that occur between the two of you, $F(1, 32) = 20.38$, $p < .001$. Although the magnitude of the overestimation was relatively small, on the average, note that subjects tended to use a restricted range of the scale. Most responses were slightly above or slightly below the halfway mark on the scale. None of the items showed a significant underestimation effect.

The second set of items on the questionnaire required subjects to record examples of their own and of their spouses' contributions to each activity. A mean difference score was obtained over the 20 activities (averaging over husband and wife), with the number of examples of spouses' contributions subtracted from the number of examples of own contributions. A test of the grand mean was highly significant, $F(1, 35) = 36.0$, $p < .001$; as expected, subjects provided more examples of their own ($M = 10.9$) than of their spouses' ($M = 8.1$) inputs. The correlation between this self-other difference score and the initial measure of perceived responsibility was determined. As hypothesized, the greater the tendency to recall self-relevant behaviors, the greater was the overestimation in perceived responsibility, $r(35) = .50$, $p < .01$.

The number of words contained in each behavioral example reported by the subjects was also assessed to provide a measure of elaboration or richness of recall. The mean number of words per example did not differ as a function of whether the behavior was reported to be emitted by self

($M = 10.0$) or spouse ($M = 10.1$), $F < 1$. Further, this measure was uncorrelated with the measure of perceived responsibility, $r(35) = -.15$, *ns*.

In summary, both the measure of responsibility and the measure reflecting the availability of relevant behaviors showed the hypothesized egocentric biases. Moreover, there was a significant correlation between the magnitude of the bias in availability and the magnitude of the bias in responsibility. This finding is consistent with the hypothesis that egocentric biases in attributions of responsibility are mediated by biases in availability. Finally, the amount of behavior recalled seemed to be the important factor, rather than the richness of the recall. . . .

Experiment 2

In Experiment 2, we had the players on 12 intercollegiate basketball teams individually complete a questionnaire in which they were asked to recall an important turning point in their last game and to assess why their team had won or lost.

It is a leap to go from the self-other comparisons that we have considered in the previous studies to own team-other team comparisons. There are, however, a number of reasons to expect that the actions of one's own team should be more available to the attributor than the actions of the other team: I know the names of my teammates, and therefore, I have a ready means of organizing the storage and retrieval of data relevant to them; our success in future games against other opponents depends more on our own offensive and defensive abilities than on the abilities of the opposing team. Consequently; I may attend more closely to the actions of my teammates, which would enhance encoding and storage. Also, there are informational disparities: The strategies of my own team are more salient than are the strategies of the opposing team (Tversky & Kahneman, 1973, 11). If the initiatives of one's own team are differentially available, players should recall a turning point in terms of the actions of their team and attribute responsibility for the game outcome to their team. . . .

Method

Subjects. Seventy-four female and 84 male intercollegiate basketball players participated in the study. The team managers were contacted by telephone; all agreed, following discussions with their players, to have their teams participate in the study.

Procedure. The questionnaires were administered after six games in which the teams participating in the study played each other. Thus, for the three male games chosen, three of the six male teams in the study were competing against the other three male teams. Similarly, the three female games selected included all six of the female teams. The questionnaires were administered at the first team practice

following the target game (1 or 2 days after the game), except in one case where, because of the team's schedules of play, it was necessary to collect data immediately after the game (two female teams). The questionnaires were completed individually, and the respondents' anonymity was assured. The relevant questions, from the current perspective, were the following:

1. Please describe briefly one important turning point in the last game and indicate in which period it occurred.
2. Our team won /lost our last game because. ...

The responses to the first question were examined to determine if the turning point was described as precipitated by one's own team, both teams, or the other team. Responses to the second question were examined to assess the number of reasons for the win or loss that related to the actions of either one's own or the opposing team. The data were coded by a person who was unaware of the experimental hypotheses. A second observer independently coded the responses from 50% of the subjects. There was 100% agreement for both questions.

Results

There were no significant sex differences on the two dependent measures; the results are, therefore, reported collapsed across gender. Since team members' responses cannot be viewed as independent, responses were averaged, and the team served as the unit of analysis.

A preliminary examination of the "turning point" data revealed that even within a team, the players were recalling quite different events. Nevertheless, 119 players recalled a turning point that they described as precipitated by the actions of their own team; 13 players recalled a turning point that they viewed as caused by both teams; 16 players recalled a turning point seen to be initiated by the actions of the opposing team (the remaining 10 players did not answer the question). Subjects described such events as a strong defense during the last 2 minutes of the game, a defensive steal, a shift in offensive strategies, and so on.

The percentage of players who recalled a turning point caused by their teammates was derived for each team. These 12 scores were submitted to an analysis that compared them to a chance expectancy of 50%. The obtained distribution was significantly different from chance, $F(1, 11) = 30.25$, $p < .001$, with a mean of 80.25%. As hypothesized, most reports emphasized the actions of the players' own team.

The percentage of players who recalled a turning point caused by their teammates was examined in relation to the team's performance. The average percentage was higher on the losing team than on the winning team in five of the six games ($p < .11$, sign test). The mean difference between the percentages on losing ($M = 88.5$) and winning ($M = 72.$) teams was nonsignificant ($F < 1$).

The players' explanations for their team's win or loss were also examined. Of the 158 participants, only 14 provided any reasons that involved

the actions of the opposing team. On the average, subjects reported 1.79 reasons for the win or loss that involved their own team and .09 reasons that involved the opposing team, $F(1, 11) = 272.91$, $p < .001$. Finally, the tendency to ascribe more reasons to one's own team was nonsignificantly greater after a loss ($M = 1.73$) than after a win ($M = 1.65$), $F < 1$.

Discussion

The responses to the turning point question indicate that the performances of subjects' teammates were more available than those of opposing team members. Further, subjects ascribed responsibility for the game outcome to the actions or inactions of their teammates rather than to those of members of the opposing team. Thus, biases in availability and judgments of responsibility can occur at the group level. Rather and Heskowitz (1977) provide another example of group egocentrism: "CBS [news] became a solid Number One after the Apollo moonshot in 1968. If you are a CBS person, you tend to say our coverage of the lunar landing tipped us over. If you are a NBC person, you tend to cite the break-up of the Huntley-Brinkley team as the key factor" (p. 307). . . .

Experiment 3

In Experiment 3, we attempted to vary the individual's focus of attention so as to affect availability. We employed a manipulation designed to promote selective retrieval of information directly relevant to attributions of responsibility.

In our initial analysis, we suggested that egocentric attributions of responsibility could be produced by the selective retrieval of information from memory and that retrieval might be guided by the kinds of questions that individuals ask themselves. Experiment 3 was conducted to test this hypothesis. Subjects were induced to engage in differing retrieval by variations in the form in which questions were posed. Graduate students were stimulated to think about either their own contributions to their BA theses or the contributions of their supervisors. The amount of responsibility for the thesis that subjects allocated to either self or supervisor was then assessed. It was hypothesized that subjects would accept less responsibility for the research effort in the supervisor-focus than in the self-focus condition.

Method

Subjects. The subjects were 17 female and 12 male psychology graduate students. Most had completed either 1 or 2 years of graduate school. All of these students had conducted experiments that served as their BA theses in their final undergraduate year.

Procedure. The subjects were approached individually in their offices and asked to complete a brief questionnaire on supervisor-student relations. None refused to participate. The two forms of the questionnaire were randomly distributed to the subjects; they were assured that their responses would be anonymous and confidential.

One form of the questionnaire asked the subjects to indicate their own contribution to each of a number of activities related to their BA theses. The questions were as follows: (a) "I suggested _____ percent of the methodology that was finally employed in the study." (b) "I provided _____ percent of the interpretation of results." (c) "I initiated _____ percent of the thesis-relevant discussions with my supervisor." (d) "During thesis-related discussions I tended to control the course and content of the discussion _____ percent of the time." (e) "All things considered, I was responsible for _____ percent of the entire research effort." (f) "How would you evaluate your thesis relative to others done in the department?"

The second form of the questionnaire was identical to the above, except that the word *I* (self-focus condition) was replaced with *my supervisor* (supervisor-focus condition) on Questions 1-5. Subjects were asked to fill in the blanks in response to the first five questions and to put a slash through a 150-mm line, with endpoints labeled "inferior" and "superior," in response to Question 6.

Results and discussion

For purposes of the analyses, it was assumed that the supervisor's and the student's contribution to each item would add up to 100%. Though the experiment was introduced as a study of supervisor-student relations, it is possible that the students may have considered in their estimates the inputs of other individuals (e.g., fellow students). Nevertheless, the current procedure provides a conservative test of the experimental hypothesis. For example, if a subject responded 20% to an item in the "I" version of the questionnaire, it was assumed that his or her supervisor contributed 80%. Yet the supervisor may have contributed only 60%, with an unspecified person providing the remainder. By possibly overestimating the supervisor's contribution, however, we are biasing the data against the experimental hypothesis: The "I" version was expected to reduce the percentage of responsibility allocated to the supervisor.

Subjects' responses to the first five questions on the "I" form of the questionnaire were subtracted from 100, so that higher numbers would reflect greater contributions by the supervisor in both conditions. Question 5 dealt with overall responsibility for the research effort. As anticipated, subjects allocated more responsibility to the supervisor in the supervisor-focus ($M = 33.3\%$) than in the self-focus ($M = 16.5\%$) condition, $F(1, 27) = 9.05$, $p < .01$. The first four questions were concerned with different aspects of the thesis, and the average response revealed a similar result: supervisor-focus $M = 33.34$; self-focus $M = 21.82$; $F(1, 27) = 5.34$, $p < .05$. Finally, subjects tended to evaluate their thesis more positively in

the self-focus condition than in the supervisor-focus condition: 112.6 versus 94.6, $F(1, 27) = 3.59$, $p < .10$.

The contrasting wording of the questions had the anticipated impact on subjects' allocations of responsibility. The supervisor version of the questionnaire presumably caused subjects to recall a greater proportion of their supervisors' contributions than did the "I" form of the questionnaire. This differential availability was then reflected in the allocations of responsibility. Note, however, that the questions were not entirely successful in controlling subjects' retrieval. The supervisor was allocated only one-third of the responsibility for the thesis in the supervisor-focus condition.

In light of the present data, the basketball players' attributions of responsibility for the game outcome in Experiment 2 need to be reexamined. Recall that the players were asked to complete the sentence, "Our team won /lost our last game because. . . ." This question yielded a highly significant egocentric bias. With hindsight, it is evident that the form of the question — "Our team . . . our last game" — may have prompted subjects to focus on the actions of their own teams, even though the wording does not preclude references to the opposing team. The "turning point" question in Experiment 2 was more neutrally worded and is not susceptible to this alternative interpretation.

The leading questions in these studies emanate from an external source; many of our retrieval queries are self-initiated, however, and our recall may well be biased by the form in which we pose retrieval questions to ourselves. For example, basketball players are probably more likely to think in terms of "Why did *we* win or lose?" than in terms of a neutrally phrased "Which team was responsible for the game outcome?" . . .

The present research demonstrates the prevalence of self-centered biases in availability and judgments of responsibility. In everyday life, these egocentric tendencies may be overlooked when joint endeavors do not require explicit allocations of responsibility. If allocations are stated distinctly, however, there is a potential for dissension, and individuals are unlikely to realize that their differences in judgment could arise from honest evaluations of information that is differentially available.