

Consumer Evaluations of Decision Makers
When Process Conflicts with Outcome for
Decisions Made Under Uncertainty

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Author Footnote

John C. Mowen is the Carson Centennial Professor of Business Administration, College of Business Administration, Oklahoma State University, Stillwater, OK 74078. The project was supported by a grant received from the Oklahoma State University Center for Water Research. The author would like to thank James Bost for assistance in collecting the data for the studies.

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Abstract

Two studies were run in order to investigate the outcome bias in a consumer setting for a decision made under uncertainty. The outcome bias occurs when an individual bases his or her evaluation of a decision maker on the outcome of the decision rather than upon the process used to reach the decision. In the studies simulated consumers evaluated the manager of a Corps of Engineer dam. The manager made a decision under uncertainty to hold, rather than release, excess water from a dam. Process was manipulated by varying the likelihood of rain so that the decision was either correct or incorrect based upon its expected value. Independently, outcome was manipulated by varying whether or not heavy rains occurred. The studies provided strong evidence of the existence of the outcome bias. Implications are discussed for the effects of consumer evaluations of managers who must make decisions under uncertainty.

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During the summer of 1988, Yellowstone Park burned. Fires raged uncontrolled over half of the park's 2.2 million acres, and \$100 million dollars was spent to fight and clean up. Criticism of the Park Service was extremely severe, and opponents charged that the "natural burn" policy needlessly endangered lives and cost the government millions. (The natural burn policy allows lightning caused fires to burn unless they threaten towns or park buildings.) Wyoming's U.S. senators called for the resignation of the head of the park service. However, when scientific experts discuss the fires, they argue that the natural burn policy was the correct one, and that in the long run it minimizes fire damage. Yellowstone's chief of research said, "We see what's going on here not as devastation and destruction, but, rather, rebirth and renewal of these ecosystems."(McMurray 1988) Why is it that a policy that seems clearly based upon solid scientific and social footings should receive such criticism?

In the Yellowstone situation, a good policy received harsh criticism after a negative event occurred. A similar circumstance occurs when the head coaches of basketball, football, and baseball teams are fired after experiencing a losing season? In many instances outstanding coaches are fired after a losing season that may have been caused by injuries to key players or other factors completely out of their control.

However, the reverse situation also occurs; decision makers may also be applauded for decisions that were poorly made but turned out well. An example is the Ford Motor Company. In 1987 and 1988 Ford's profits were higher than

GM's and the highest in automotive history. Analyst's are praising Ford for its innovative design. However, much of Ford's success is attributable to luck. It was Ford's financial poverty that kept it from downsizing its aging models in the early 1980s. The company retained the outdated models, and as luck would have it, the gasoline surpluses of the late 1980s brought back into favor its large gasoline guzzlers.(Thurow 1988)

What caused the criticism of decision makers at Yellowstone and the praise of the managers of Ford, when neither was fully deserved? This paper proposes that the evaluators of decision makers have a strong tendency to evaluate the decision based upon its outcome, rather than upon the "correctness" of the process used to make the decision. Such an "outcome bias" will result in a tendency to blame the decision maker for poor outcomes, even when the best decision under the circumstances was made. Similarly, the outcome bias suggests that decision makers will receive credit for positive outcomes, even when a poor decision was made. Another way to phrase the outcome bias is that the evaluators of decisions tend to focus on the outcome of a decision more than they do on the process that lead to the decision.

Decision makers frequently must make decisions that have outcomes contingent upon environmental factors beyond their control. The various outcomes may range from highly negative to highly positive. In these instances the decisions are made under conditions of uncertainty, and only estimated likelihoods of the occurrence of the outcomes can be made. Thus, even decisions that are "correctly" made, according to an appropriate normative model, can have negative outcomes. The result is the possibility of criticism by outside observers as well as self-doubt on the part of the decision makers themselves when the outcome of the decision is negative.

Marketing managers and public policy makers frequently face such decisions. When deciding whether or not to launch a product, managers are making a decision under uncertainty. Various environmental factors, over which management has no control, can occur and influence its outcome. If the environment is favorable, the outcome is likely to be positive. However, if the environment turns unfavorable, the outcome may be negative, even though the process of making the decision was appropriate. For example, in contrast to Ford in the early 1980s Chrysler made a decision to focus on building smaller fuel efficient cars, because of the energy crisis and governmental regulations. In 1988, however, Chrysler was loosing sales because of falling energy prices and the government failing to enforce regulations on mileage requirements.

In the public policy arena, managers frequently make decisions under uncertainty that impact upon consumers. The Corps of Engineers faced such a problem during October of 1986, when massive rains led to large scale flooding in northeast Oklahoma. During the crisis, the Corps faced a classic decision dilemma. The dilemma consisted of deciding whether to release water from Keystone Dam at an early point in time, or wait in the hope that no water would have to be released. If no water was released and no additional rains occurred, no flooding would result from the actions of the Corps. However, if heavy rains occurred, the Corps would have to release large amounts of water and create major flooding. The Corps opted not to release water at an early stage in order to avoid creating certain minor flooding in downstream communities. (Even at this early stage the release would have caused minor flooding, because the streams were already swollen.) As it turned out, the Corps was forced to begin releasing large amounts of water after heavy rains

occurred. The result was major flooding in downstream communities. As a result, the Corps received major criticism for its actions. In essence, a massive public relations problem resulted, even though the decision was probably the correct one given the information available.

The problem faced by the Corps was a classic example of decision making under uncertainty. What caused the uncertainty was the difficulty of predicting the weather conditions above and below the dam. The decision problem faced by the Corps can be reduced to two alternatives. Should water have been released from the dam early and created certain minor flooding, but avoid major flooding if it should rain? Or, should water not be released from the dam early in order to avoid certain minor flooding, but risk major flooding if it should rain more? The "correct" decision depended entirely on something out of the control of the Corps--the weather.

The issue addressed by the present research concerns how consumers evaluate decision makers after an outcome of a decision made under uncertainty is known. Under such conditions, how should consumers evaluate managers? Edwards (1984) argued that it is a very elementary point that such decisions are like bets, and "...evaluating it as good or not must depend on the stakes and the odds, not on the outcome"(p.7). In other words when evaluating a manager, who has made a decision under uncertain, consumers should not even consider the outcome. What they should consider is the information held by the manager prior to making the decision. This is equivalent to saying that evaluators should focus on process and not outcome.

However, as the managers of Keystone dam learned, consumers can frequently become extremely hostile when a decision turns out poorly. As stated by one wiseman in 1662:

"A fault condemned, but seldom avoided is the evaluation of the intention of an act in terms of the act's outcome. An agent who acted as wisely as the foreseeable circumstances permitted is censured for the ill-effects which to pass through chance or through malicious opposition or through unforeseeable circumstances." (Arnauld, 1663/1964, 285)

The purpose of the present research is to test empirically the extent that consumers tend to focus on outcomes rather than process when evaluating decision makers. The paper will first discuss the issue from the perspective of behavioral decision theory. It will then present two experiments in which process and outcome are manipulated orthogonally. In the experiments respondents evaluated a manager who had to make a decision under uncertainty. The results of the studies are discussed in terms of their implications for understanding the evaluation process.

Theoretical Background

A new branch of social science research has developed over the past 15 to 20 years, called behavioral decision theory. Behavioral decision theory investigates how individuals and groups make decisions by comparing actual decisions to those predicted by normatively correct models. When the decisions diverge from what would be called "normatively correct," the researcher then attempts to identify the cause of the "decision bias." Various normatively correct models have been used such as expected value analysis or the application of Bayesian principles. It is important to recognize that in many, if not most, instances humans do not, and possibly should not, follow normatively correct decision rules. The overall goal of behavioral decision theory is to explain how people go about making complex

decisions.

One of the findings in the behavioral decision theory literature is that decision makers are prone to have certain biases that influence their judgments. These biases result from the use of what have been called heuristics, or rules of thumb, to assist in making decisions. People tend to use such heuristics because of their information processing limitations and "bounded rationality" (Simon, 1957). The use of heuristics has certain advantages to decision makers. Frequently, they are efficient and provide good enough answers at relatively low cost (Hogarth, 1981). On the other hand they may lead decision makers into decisions that are inconsistent with what would be derived from the use of an appropriate normative model.

Space limitations make it impossible to fully discuss the various decision heuristics that have been identified. (The interested reader should see Nisbett and Ross, 1981). Some of these heuristics, though, include availability (Kahneman and Tversky, 1972), representativeness (Kahneman and Tversky, 1972), anchoring and adjustment (Biddle and Joyce, 1979), hindsight (Fischhoff, 1975), illusion of control (Langer, 1975), preference reversal (author and coauthor, 1980), and framing (Tversky and Kahneman, 1981). Two of these heuristics, framing and hindsight, are pertinent to the proposed research and are discussed below.

Work on heuristics and biases has been published to a large extent in psychology literature. However, a number of authors have utilized its concepts in consumer behavior and marketing. Alba and Marmorstein (1987) discussed and found evidence of a frequency heuristic in which consumers evaluate a brand by simply tallying up the number of positive and negative attributes associated with the brand irrespective of their meaning or

importance. Hoch (1984) has investigated anchoring and adjustment. He found that when spouses estimated the preferences of each other, they used their own preferences as an anchor. Hoch (In Press) found a similar effect when managers attempted to estimate the responses of a national sample of consumers to various opinion questions. Decision biases may also result from how people frame a problem. A number of consumer researchers have investigated the effects of the framing of decisions in a consumer context (eg., Monroe and Chapman, 1987, and Gentry, Wiener, and Burnett, 1987, Puto, 1987, and Levin 1987).

The outcome bias may represent a flaw in the consumer decision process that poses major problems for corporations and public policy makers. If consumers base their evaluations of decision makers, who must make decisions under uncertainty, upon outcomes, then one can anticipate instances in which such decision makers will be erroneously blamed for bad outcomes and erroneously applauded for good outcomes. One important issue, however, concerns why the outcome bias may occur.

A Possible Explanation of the Outcome Effect.

As suggested earlier in the paper, anecdotal evidence exists that people base their evaluations to a larger extent on the outcome of a decision than on the process of the decision. An important issue concerns the question of why evaluators use outcome information more than process information. One possible explanation is found in the availability heuristic. The availability heuristic is based upon the idea that people may assess the frequency of occurrence of an object in a class or the probability of an event by the ease that such instances are brought to mind (Tversky and Kahneman 1974). A classic demonstration of the availability effect was shown by Tversky and

Kahneman 1973). In this study subjects were given lists of famous men and women. In some of the lists the men were more famous than the women and some of the lists the women were more famous than the men. The subjects' task was to judge whether the list they received contained more names of men or more names of women. The results showed that even though the lists contained the same number of men and women, when the list contained names of famous males, subjects would estimate that it contained more names of males in it. Conversely, when the list had more names of famous females, subjects estimated that it contained the names of more females than males.

The availability heuristic may influence managerial judgments in cases in which estimates are made of the probability or frequency of an event (eg., "how likely is it that such and such will occur?"), based upon the ease with which the event can be recalled or imagined. Managers are frequently interested in estimating the likelihood of such events as a new product succeeding, of a new employee doing well on the job, or of a new advertising program having the desired impact. The availability heuristic suggests that if success is more easily imagined than failure, then the decision maker will estimate success as more likely to occur.

A variety of factors may influence the ability of a decision maker to more easily recall certain events. One such factor has been called egocentric biases. Ross and Sicoli (1979) argued that the availability of a person's actions in his memory will lead that person to attribute greater responsibility for himself in a joint project. Quite simply, ones own actions are more available to oneself than to other people. Thus, if several individuals are involved in a joint project, each person will tend to believe that he contributed more to the outcome than others will estimate, because

their own actions are more salient and more readily recalled than the actions of others. Similarly, a salesperson may take greater credit for a successful sale than a sales manager gives him, because his own actions to make the sale are more salient to him than to the sales manager.

The perceived salience of an event may also influence its availability. Salience refers to the idea that colorful, dynamic, or other distinctive stimuli disproportionately engage attention and disproportionately influence judgments (Taylor 1982). Salience may particularly influence managerial assessments of the cause of outcomes. Thus, if a manager were to assess which member of a group made the greatest contribution to a project, it is likely that the s/he would select the more salient member. The salience could result from the person being different from the other members of the team in some way, perhaps by his or her attractiveness, sex, or race. For example, experiments have shown that when a group member differs from others on the basis of sex or race, that person receives a disproportionate amount of approbation or blame for the success or failure of the group (Taylor et. al. 1976).

Closely related to the concept of the availability heuristic is the hindsight bias. As described by Fischhoff (1982) hindsight refers to the tendency of people to--

'"...consistently exaggerate what could have been anticipated in foresight. They not only tend to view what has happened as having been inevitable but also to view it as having appeared "relatively inevitable" before it happened.'

Because of the hindsight bias, people tend to believe that others should have been able to anticipate events much better than was actually the case. As shown by Fischhoff and Beyth (1975), people even misremember their own

predictions resulting in the exaggeration in hindsight what they knew in foresight.

Hindsight appears to be an excellent candidate to explain the outcome bias. Because the outcome of a decision is highly salient and available in memory, it is likely to dominate the evaluation process. In addition, the outcome may even affect the evaluator's estimation of probability of the outcome occurring in foresight.

Empirical evidence for the outcome bias has been found. Baron and Hershey (1988) published a study that appeared in print after the data were collected for the research reported herein. In a series of four, within-subject studies the researchers investigated subject evaluations of medical and gambling decisions made under conditions of uncertainty. In each study subjects were given a series of twelve to sixteen decisions to evaluate. In addition, they were given the outcome of each of the decisions. The results were highly consistent across the four experiments. The outcome of the decision systematically influenced subjects' evaluations of the quality of the decision. In addition, in Study 4 the bias was shown to extend to the evaluation of the physician, who made the decision as to what to do. A fifth study was conducted to replicate the results using a between subjects design, and the outcome bias was again found.

Design Overview

The purpose of the present research was to investigate the outcome bias in a consumer behavior context. The research was modeled upon the events that took place in Tulsa, Oklahoma, in 1986, when the Corps of Engineers had to make the decision of when to begin releasing water from Keystone dam. Based

upon ideas from the hindsight bias and availability, it was predicted that subjects would evaluate the decision maker in part based upon the outcome of the decision.

Two experiments were run. Both employed the same general methodology. In each study subjects received a folder that contained a fictitious description of the events surrounding the possible flooding of the Platte River in Nebraska. Subjects were asked to role play that they lived in a flood plain below the river. They were given information on the facts and data available to the manager of the dam at the time of his decision.

In the experiments process and outcome were manipulated independently. Process was manipulated by varying information on the likelihood of rain, which could be used to calculate an expected value for either releasing or holding water. In the studies, if water was released early, 400 homes (Study 1) or 300 homes (Study 2) would be certainly flooded. (If water was released early, additional rains would cause no additional flooding to occur.) Thus, the expected value of releasing water was either minus 400 homes (Study 1) or minus 300 homes (Study 2). In both studies if water was held, and no rain occurred, no homes would be flooded. However, if water was held and it did rain, massive amounts of water would have to be released and all 600 homes would be flooded. The expected value of holding water could be determined by multiplying the likelihood of rain times 600--the number of homes that would be lost if it did rain and water was held.

Subjects were told that the manager had to make the decision of whether to hold or release water at an early stage. In all cases the manager was described as deciding not to release water from the dam. When the expected value of the decision favored holding water over releasing water, the decision

represented a "good" decision. (That is, the manager held water when he should.) In contrast, when the expected value favored releasing water over holding water, the decision represented a "bad" process. Subjects were informed that all of the information on outcomes and the likelihood of rain was available to the decision maker at the time when he had to reach his decision. In Study 1 the expected value of holding water (and risking massive flooding) was either positive, neutral, or negative. In Study 2 the expected value was either positive or negative. As stated earlier, in both studies the manager decided to hold water.

Independent of the process of manipulation, the outcome was varied. Subjects learned that it subsequently rained or did not rain. In conditions in which it rained, massive flooding occurred--a bad outcome. In conditions in which it did not rain, no flooding occurred--a good outcome.

In summary, by independently manipulating process and outcome, one could determine the extent to which the subjects used each type of information in forming impressions of the decision maker. It was predicted that subjects would violate Edward's dictum, that decisions made under uncertainty should be evaluated based upon the stakes and the odds, and not on the outcomes. Specifically, it was expected that subjects' evaluations of the quality of the decision and of the decision maker's competence would be influenced by both the process and outcome independent variables.

Study 1

Experimental Design and Procedure.

Study 1 employed a 2 X 3 full factorial experimental design. Subjects received a packet in which process (good, neutral, or bad) and outcome (good

versus bad) were manipulated. Subjects role played that they lived in a flood plain on the Platte River in Nebraska. They were asked to imagine that they lived a mile below a Corps of Engineers dam. They were told that they had purchased flood insurance that covered 75 percent of any losses.

In the packet subjects received background information on the normal flow rate of the Platte River. In addition, they were told that excess water behind the dam could be drained, but that this would flood 400 homes in low lying areas. In the event of an emergency, greater flow rates could be achieved. However, at these rates all 600 homes would be flooded.

Subjects were then given information on the current situation. They were told that the Platte River was approaching flood stage due to heavy spring rains. They were asked to assume that the information that they now had was exactly the same as that which the manager of the dam had. Depending upon the condition, they learned that at the time of his decision either a 4 in 5 (bad process), 2 in 3 (neutral process), or a 1 in 3 (good process) chance existed that rains would continue. Subjects read that the manager knew that if he decided to release water early, 400 homes would be flooded for sure. If he held water, no homes would be flooded if it did not rain. However, if he held water and it rained, all 600 homes would be flooded. As a conclusion, subjects were told that the manager could:

- A. Release water and flood 400 homes, but save 200 homes for sure.
- B. Hold water. If no rains occurred, no homes would be lost. If rains continued a 4 in 5 (2 in 3, or 1 in 3) chance existed that all 600 homes would be flooded.

On the next page subjects learned the outcome. Either the skies cleared and no homes were lost or massive rains hit and 600 homes were flooded,

including the person's home. Subjects then answered six questions on eight point rating scales. The rated the decision of the manager (good to bad), the competency of the manager, the outcome of the decision (lucky to unlucky), the amount of anger they had towards the manager, how good a decision maker the manager was, and what would they do in a similar situation (hold or release the water).

Figure 1 reveals the experimental design of studies 1 and 2.

Place Figure 1 About Here

Subjects were 85 students enrolled in night MBA courses in the Tulsa area. The experiment was conducted as a class exercise.

Results.

Table 1 presents the results of the study. As can be seen in the table, the major prediction was confirmed. On each of the six dependent variables a significant main effect was found for the outcome independent variable. Indeed, some evidence was obtained that the outcome variable had a greater effect on the consumer evaluations than did the process variable. On only two of the six dependent variables was a main effect found for process. No significant effects were found for process on the dependent variables of decision quality, managerial decision competence, how good a decision maker the manager was, or decision outcome (lucky/unlucky).

Place Table 1 About Here

Main effects for decision process were found on two dependent variables.

The question asking subjects to evaluate how angry/pleased they were with the decision yielded a significant ($p < .05$) effect. Surprisingly, the pattern of the means reveals that subjects were more angry in the neutral process conditions ($M = 3.76$) than in the bad process ($M = 4.75$) or good process ($M = 4.74$) conditions.

The second main effect found for the process variable was an important one for the experiment. Question 6 asked the subjects, "What would you do if faced with a similar decision?" As the table reveals, main effects were found for process, outcome, and for their interaction. Figure 2 diagrams the interaction. As can be seen, in the good outcome conditions the subjects preferred to hold the water, as the manager did, whether the process was bad, neutral, or negative. However, a different pattern emerged when the outcome was bad. In this case when the process was bad or neutral, the subjects indicated that they would tend to release the water. However, when the process was good, they indicated that they would hold the water. These pattern of results indicate that the failure to find significant process effects for the other dependent variables did not result from the subjects simply not perceiving the process manipulation. Process did impact on what the subjects said they would do. However, it had little measureable impact on how they evaluated the manager or his decision.

Place Figure 2 About Here

An interaction was also found between process and outcome on the question asking subjects to rate the outcome of the decision in terms of it being lucky or unlucky. The pattern was similar to that found for the first interaction.

In the bad process conditions, the outcome was viewed as very unlucky when the outcome was bad and as very lucky when the outcome was good. However, when the process was good, the ratings were closer together in the good process cell. That is, when the outcome was good, subjects did not differentiate good and bad process to the same extent. A similar effect was found for question 1 ($p < .08$), that asked subjects to rate the decision of the manager. These data are shown in Figure 3. The pattern of results is indicative of what might be called the "hero effect." Note that the pattern for the goodness/badness of the decision found in Figure 3 shows that the highest rating for the decision occurred in the bad process-good outcome cell. It is as though the subjects were rewarding the decision maker when he went against the odds and won.

Place Figure 3 About Here

Study 2

Study 1 provided good evidence that simulated consumers used outcome information when evaluating a decision maker and the decision. Study 2 was developed to replicate the first study and to improve on certain aspects of its design. Specifically, more care was taken in developing the dependent variables. Multiple measures of the major constructs were taken. Also, manipulation checks were included. A sample of adults was used as subjects in the study. Finally, in Study 2 the manipulation of process was done in a more direct and obvious manner. The number of homes in the 50 and 100 year flood plains was set at 300 in each case. The likelihood of the rain continuing was set at either 1 in 3 or 2 in 3. Such a manipulation should make the

perception of process more salient and maximize the likelihood that it would influence the evaluations of the manager and the decision.

Experimental Design.

The study employed a 2 X 2 X 2 full factorial experimental design. The three variables manipulated were outcome, process, and whether the respondent role played that s/he lived in the 50 or 100 year flood plain. Outcome was manipulated in the same way as in Study 1. As in Study 1, the manager elected not to release water from the dam. A positive outcome occurred when it failed to rain, and no homes were flooded. A negative outcome occurred when it did rain and all 600 homes were flooded. Process was manipulated by varying the likelihood of rain occurring. Subjects learned that the manager had information that there was either a 2 in 3 chance (good process) or a 1 in 3 chance (bad process) that the rains would stop. In Study 2 three hundred homes were described as being in the 50 year and 300 homes in the 100 year flood plains. The third independent variable was whether the respondent role played that s/he lived in the 50 or 100 year flood plain. This variable is labeled "perspective."

Subjects.

One hundred-nine individuals participated in the study (59 males and 50 females). Seven people were less than 25 years of age. Fifty-two people were between 25 and 40 years of age. Thirty-eight were between 41 and 65 years old, and nine were over 65. Fifteen individuals had a high school education or less. Forty-eight individuals had attended college or received a college degree. Forty-six individuals had done postgraduate work. Subjects were recruited from various clubs and organizations in a Southwestern college town. Individuals came from the Kiwanis Club, three church groups, and a community

social service organization. Each subject was paid \$10 for his or her participation. Subjects were then given the opportunity to donate the money to a shelter for the homeless in the community. All but one individual made the contribution.

Procedure.

The general procedure of Study 2 was identical to that of the first. Subjects received a packet containing the experimental materials. Subjects role played that they lived in Nebraska in the flood plain of the North Platte River. Background information was given on page 1 of the handout. A description was given of the North Platte River and the town in which they lived. Information on the flow of water through the dam and on the effects of various levels of flooding were given to the subjects. Subjects were told that if flooding threatened the dam, excess water could be drained, but that this release would flood the 300 homes lying in the 50 year flood plain. They were told that if an emergency occurred massive discharges of water could be released, and that this would result in all 600 homes being flooded. On the background information page subjects learned whether they lived in the 50 or 100 year flood plain.

Page 2 of the handout gave the current situation. Subjects read:

"On 15th of May the North Platte river approached flood levels due to heavy spring rains. Because of the heavy rains over the past three days, you became concerned that, if they continued, the Corps would be forced to release above normal amounts of water from the dam.

On the 16th of May the rains had continued and the waters approached the 50 year flood stage. The manager at the dam had to decide whether or not to begin releasing water from the dam at the 99,000 cubic feet per

second rate. This level of release would flood the homes in the 50 year flood plain (including yours). It, however, would save (your home and) the homes in the 100 year flood plain from having any chance of flooding.

On the 16th of May, the weather forecast gave a 1 in 3 (2 in 3) chance that the rains would stop in the next six hours. However, there was a 2 in 3 (1 in 3) chance that the rains would continue for another 24 hours. If the rains continued and water was not released, a 100 year flood would occur, because of the need to release water at a rate of 300,000 cubic feet per second. If a 100 year flood occurred, your home would be flooded."

Subjects then read that in the early afternoon of the 16th of May, the manager had two options. The options that the subjects saw are presented below.

Option 1. "Begin immediately releasing water from the dam at the rate of 99,000 cfs. If this course of action were followed, 300 homes would definitely be flooded as a result of the release of the water. If this action your home would be flooded. (If the action were followed, there would be no chance that your home would be flooded.)"

Option 2. "Continue holding water in the dam. If this course of action were followed, a one in three (2 in 3) chance exists that no homes would be damaged by floods. However a two in three (one in three) chance exists that 600 homes would be damaged (your home and the 599 others) because water would have to be released at the 300,000 cfs rate, if it continued to rain."

Subjects were then told that the manager decided not to release water from the dam. At this point they read the outcome information. In the good outcome conditions they read:

"On the 17th of May the skies cleared, and the river began to recede. Above normal amounts of water did not have to be released from the dam. Thus, no homes were flooded."

In the bad outcome condition, subjects read:

"During the early morning hours of the 17th of May, massive rains hit the area. Over a period of twelve hours the region above the dam received five additional inches of rain. The manager was left with no option but to begin releasing water from the dam at the maximum rate possible. The 300,000 cubic feet per second rate quickly made the river rise to 100 year flood stage levels. All 600 homes in the 50 and 100 year flood plains were flooded."

"Your home was nearly a total loss. Your out-of-pocket costs will be about \$25,000. The managers of the dam did do a good job of warning people. Thus, while massive flooding occurred, no lives were lost."

Dependent Variables.

In Study 2 efforts were made to create multiple measures of the constructs to be measured. Four different indices were created to assess different elements of the consumer evaluation process. Table 2 summarizes the dependent variables and gives coefficient alphas or correlation coefficients, as appropriate. The indices created were: perceived decision quality, manager's decision competence, manager's personal evaluation, and the subjects' decision as to whether they would have released or held water. Subjects' responses were assessed on eight point likert scales bounded by strongly agree or strongly disagree. In all cases coefficient alphas or correlation coefficients were satisfactory. In addition, a single question asked subjects to assess how lucky the outcome of the decision was.

Place Table 2 About Here

Several manipulation checks were also taken. These are discussed first in the results section. In addition, age, education, and sex of subjects were assessed and used as covariates.

Results

Manipulation Checks.

Four questions were used as manipulation check items. To assess the extent that subjects perceived differences in overall outcome, they were asked to "rate the overall outcome of the decision." (Manipulation check items were assessed on eight point scales whose endpoints were anchored appropriately.) As expected, a main effect in the predicted direction was found for outcome [$F=345.0$, $p<.0001$]. In addition, a main effect was found for "perspective" [$F=4.33$, $p<.05$]. Individuals in the 100 year flood plain were significantly more likely to perceive the outcome as less bad than did the individuals in the 50 year flood plain.

A second question assessed the perception of subjects as to how likely it was that it would rain. The only significant effect for this variable was a main effect in the predicted direction for process [$F=41.7$, $p<.0001$]. The third question asked, "to what extent would you consider your home to have been in danger of flooding." It was expected that individuals living in the 100 year flood plain would perceive their home to have been in less danger those living in the 50 year flood plain. A significant "perspective" main effect occurred in the expected direction [$F=58.1$, $p<.0001$].

In sum, the manipulation check items indicated that subjects perceived the manipulations in the desired manner.

Analysis of Dependent Variables.

Table 3 presents the ANOVA table for the main dependent variables. The first index assessed subjects' perceptions of the overall quality of the decision. Main effects were obtained for process and outcome. However, these were superceded by a process by outcome interaction. Figure 4 diagrams the interaction. As can be seen, when the outcome was good, ratings of decision quality were not significantly different between the good and bad process cells. However, when the outcome was bad, subjects rated the quality of the decision significantly worse in the bad process conditions.

Place Table 3 and Figure 3 About Here

The results revealed that for the index that assessed perceptions of the competence of the manager only a main effect for outcome was obtained. Here subjects perceived the manager in the good outcome conditions (M = 8.09) to be significantly more competent than the manager in the bad outcome conditions (M = 5.62).

The results revealed a marginally significant process by rain interaction for the index that assessed subjects' evaluations of the personal characteristics of the manager. The pattern was one in which in good process conditions, no differences in ratings occurred across levels of outcome. However, in the bad process conditions, the manager was rated more negatively in the bad outcome than in the good outcome condition.

One dependent variable was used to assess subjects' perceptions that the

outcome was influenced by luck or chance. On this variable only a main effect for outcome was found. In the bad outcome conditions subjects rated the outcome of the decision as significantly more unlucky than subjects in the good outcome conditions.

An important issue in the research concerns whether subjects perceived the manipulation of the process variable. The manipulation check item indicated that the manipulation of the likelihood of rain was successful. In addition, the significant interaction for decision quality indicates that the manipulation had an impact on subject's evaluations. Another way to assess whether the manipulation of process was effective involved asking subjects what they would have done if they were the decision maker. The results showed that main effects occurred for both process and outcome on the index. Subject's indicated a greater tendency to hold water in the good outcome conditions than in the bad outcome conditions. In addition, there was a greater tendency to hold water in the good process conditions than in the bad process conditions. Thus, process did influence subjects' responses concerning what they would do if placed in the situation.

Analyses were also conducted to assess the proportion of variance (omega squared) accounted for across each of the significant effects. (Table 4 provides these results.) In each case outcome accounted for a greater proportion of variance than did process.

Discussion

The results of the two studies strongly indicated that the subjects' evaluations of the decision maker and of the quality of the decision were influenced by the outcome manipulation. Indeed, in both studies on the

ratings of managerial competence and decision quality, no main effects were found for process while strong effects were found for outcome. In both studies a significant process by outcome interaction was found for decision quality. Clearly, within this decision context subjects were unable to act as Edwards suggested they should. That is, for a decision made under uncertainty, subjects allowed the outcome of the decision to influence their evaluations of decision quality, managerial competence, and the effects of luck.

The impact of outcome on the decision was predicted, based upon previous work on availability and the hindsight bias. Outcome information is likely to be more salient to evaluators than is process information. In the present study information on outcome was highly direct and vivid, which may have made it highly salient and available to subjects (Kisielius and Sternthall 1986). In contrast, information on process had to be inferred from the more pallid statistical information on the likelihood of rain. Such information is analogous to base rate information, which has consistently been shown to be underutilized in decision making. (reference) Yalch and Yalch (1985) also revealed that individuals tend not to utilize numbers when making consumer decisions. Other research has shown that when sales managers evaluate sales personnel they tend to ignore task difficulty information (a type of background information) while focussing on effort information (a more salient type of information) (Mowen et. al. 1985).

The results are also consistent with those obtained by Baron and Hershey (1988). These authors found that outcomes did systematically influence subjects' evaluations of the quality of the decision. However, this research did not independently manipulate process. Thus, the present research shows

that even when process is varied, outcome information still influences evaluations. Indeed, for each dependent variable, the measure assessing the impact of outcome information accounted for a greater proportion of variance than did process information.

The implications of the research are strong and direct. The evidence indicates that evaluators will tend to second guess decision makers when outcomes are bad, even if the correct decision was made. Perhaps even more disturbing is the finding that when the outcome was good and the process was bad, decision makers were evaluated as positively as when the outcome was good and the process was good.

One can see these effects operating everyday. Coaches with a poor record are fired despite the quality of their decisions. Presidents are berated for good decisions that turned out poorly. Corporate and public policy decision makers are criticized for decisions that were appropriate for the conditions that could reasonably forecast at the time.

In consumer behavior settings the outcome effect has important managerial and public policy implications. When managers make decisions that become available for public scrutiny, the outcomes of those decisions are likely to have a major impact on consumers. In particular, consumers are unlikely to have available to them as much information on process as given in the present study. Therefore, negative or positive consequences are likely to be attributed to the manager and to the company. Previous work by Folkes (1988) indirectly supports this conclusion. She found that if consumers make attributions internal to the company for product problems, they will tend to react more negatively.

In public policy settings the outcome effect is also of importance. The

present research illustrates occasions when governmental decision makers can be harshly evaluated for good decisions that turn out poorly. Other public policy settings in which such an effect could occur concerns decisions on when to evacuate cities when faced with a possible hurricane or earthquake. Similarly, decisions involving potential environmental pollutants have the potential to receive strong criticism.

One finding in the research was that decision makers were particularly harshly evaluated when they made poor decisions that turned out badly. This effect was found on the occasions when an interaction occurred between process and outcome. Handling public relations is difficult enough when a bad outcome happened even though the decision was good. How to handle public relations when a bad decision was made and the outcome was bad is a major dilemma for a company or a governmental agency.

The Studys' Shortcomings and Future Research.

The generality of the results of the present studies are of course restricted by the task and subject samples used. In addition, the use of the experimental design in which subjects role played that a series of events occurred to them is another shortcoming. Future research could involve doing survey research to identify consumer reactions to the actual decisions of managers and governmental officials. While difficult to execute, the research could involve sampling consumers immediately after the outcomes of decisions are known. Of course, one difficulty with such research involves the problem of objectively identifying whether the decision process was good or bad. From this perspective the present research was a highly conservative test of the hypothesis. In this research the process could be objectively determined. Despite the ability to objectively determine the process, little evidence was

found that it was considered on some dependent variables.

The results revealed that no significant effects occurred for the perspective independent variable or for the covariates of age, sex, or occupation. It was anticipated that subjects who role played that they lived in the 100 year flood plain would react more negatively to the manager's decision to hold water than would subjects who role played that they lived in the 50 year flood plain. That is, only by holding water did the manager place those in the 100 year flood plain in jeopardy of losing their homes. Had the manager decided to release water early, those in the 100 year flood plain would have been guaranteed that their home would not be flooded.

A number of possible explanations exist for the failure to find an effect for perspective. One possibility is that the role playing methodology was simply ineffective in varying the perspective of the evaluator. Another possibility is that a floor effect occurred. That is, those in the 50 year flood plain reacted so negatively to the loss of their home in the "bad outcome" conditions, that differences in evaluation could not be obtained.

It remains for future research to identify what impact, if any, perspective has on the evaluation process. One possible line of future research would involve running a laboratory study in which the actual outcomes occurred to the evaluators. Three perspectives could be identified--the 50 year flood plain perspective, the 100 year flood plain perspective, and the neutral observer. Indeed, a particularly interesting line of study would involve investigating differences in evaluations of those who are hedonically involved (ie., the outcomes occur to them) and neutral observers, who experience no outcomes.

The concept that individuals use outcome information to evaluate decision

makers has strong implications for personnel evaluations. A future area of research involves investigating the extent that managers use outcome information, rather than process information, to evaluate sales personnel. Indeed, the author recently conducted an interview with a division manager of a large engineering firm. He stated that a major risk for him was negative evaluations by superiors resulting from good decisions that later turned out poorly because of a major change in the economic environment.

The research issues also have relevance to ethical behavior. It is a short generalization to state that the results may indicate that evaluators believe that the end justifies the means. Thus, as long as the outcome is good, it is okay to use any means to reach a decision or cause an outcome to occur. The general research procedure may be able to be recast in order to investigate the evaluation of ethics in decision making.

Another interesting issue that the research brings up concerns to what extent decision makers can anticipate the evaluations that they will receive from those who observe the outcomes of decisions. If decision makers can anticipate the outcome effect, a strong likelihood exists that they will avoid making choices that have lower uncertainty outcomes. For example, suppose that a manager has the option of taking two courses of action. One course has a relatively low likelihood of success, but its overall expected value is very high. The other course of action has a much higher likelihood of success, but its overall expected value is significantly lower. If people can anticipate the outcome effect, they may select the second choice. An example of an occasion when such decisions are made is when managers must decide whether or not to bring out an innovative product or attempt to market a product overseas. The literature on decision conservatism indicates that people tend

to avoid high variance bets of the type described in the first example. Could it be that knowledge of the outcome bias may in part explain such conservatism?

Another future area of research concerns identifying strategies that may act to lessen or eliminate the impact of the outcome bias. Possible approaches would involve attempting to make the process through which the decision was reached more salient to the evaluators. Perhaps having evaluators experience the effects of the outcome bias could make information on the process more available in memory. However, as work by Fishoff (1982) on debiasing has shown, the process is difficult.

Conclusions.

The research investigated the extent that simulated consumers exhibited the outcome bias. Strong evidence was found that the outcome of a decision influenced ratings of the quality of the decision and the perception of the decision maker's competence. Future research needs to replicate the results in other decision contexts and should use different methodologies, such as survey research. The outcome bias is likely to influence a variety of types of decisions. Consumer evaluations of corporations and their managers may be influenced by the outcome bias. Similarly, media representations of the decisions of public officials may also fall prey to the outcome effect. Finally, the evaluations of the decisions of employees by managers may also exhibit the effect.

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Figure 1

Experimental Designs*

A. Study 1.

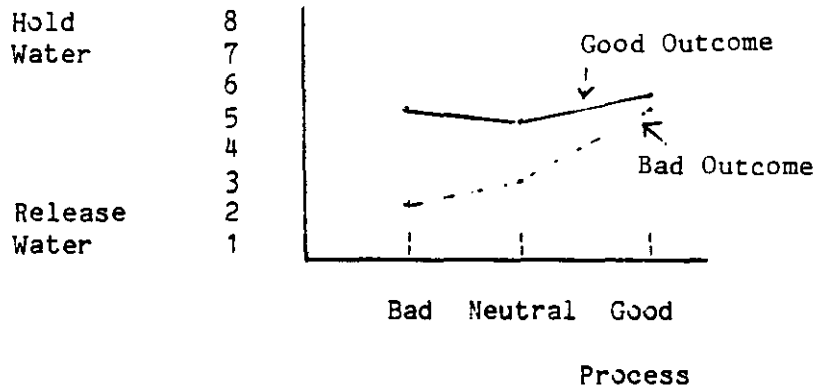
		<u>Process</u>		
		Bad (4 in 5 rain)	Neutral (2 in 3 rain)	Good (1 in 3 rain)
Outcome	Bad (rain)			
	Good (no rain)			

B. Study 2.

		<u>Process</u>	
		Bad (2 in 3 rain)	Good (1 in 3 rain)
<u>Bad Outcome</u>	100 year plain		
	50 year plain		
<u>Good Outcome</u>	100 year plain		
	50 year plain		

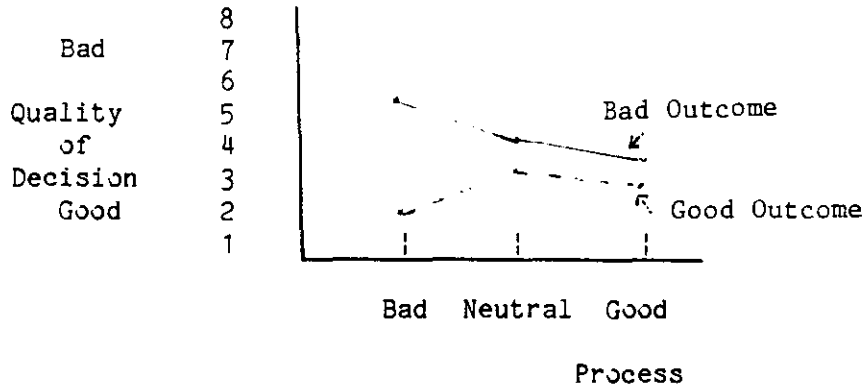
* In all cases a decision was made not to release water.

Figure 2
Study 1: Interaction Effect for
Subject Perception's of What They Would Do



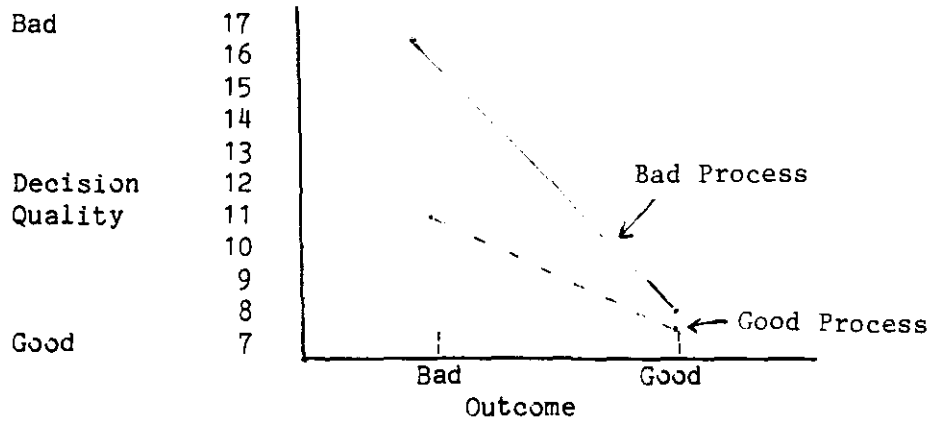
Note: Interaction significant at $P < .05$.

Figure 3
Study 1: Interaction Effect Found for
Rating of the Quality of the Decision



Note: Interaction significant at $P < .10$.

Figure 4
Study 2: Process by Outcome
Interaction for Decision Quality



Note: Interaction significant at $P < .05$

Table 1
Anova Table for Study 1

<u>Dependent Variable</u>	<u>MS Error</u>	<u>F Value: Process</u>	<u>F Value Outcome</u>	<u>F Value P X 0</u>
1. Decision Quality	3.46	.99	20.50*** (w ² = 19.2%)	2.65* (w ² = 5.0%)
2. How good a decision maker	2.76	.85	18.71*** (w ² = 23.7%)	1.07
3. Competence of manager	2.82	.43	14.35*** (w ² = 18.2%)	2.44* (w ² = 4.9%)
4. How lucky was decision outcome	3.10	.80	88.77*** (w ² = 50.4%)	3.38* (w ² = 3.8%)
5. Anger with manager	3.00	3.08** (w ² = 4.5%)	51.23*** (w ² = 37.4%)	.49
6. What would you have done?	4.26	5.40*** (w ² = 9.8%)	14.18*** (w ² = 12.9%)	3.16** (w ² = 5.7%)

* = p < .10
 ** = p < .05
 *** = p < .01

Table 2
Indices Developed
for Study II

1. Decision Quality Index. (Coefficient Alpha = .83)
 - a. The manager made an excellent decision under the circumstances.
 - b. The manager made the wrong decision.
 - c. Given the circumstances, the decision made by the manager was correct.
2. Manager Competence Index. (r = .62)
 - a. I view the manager to be highly competent as a decision maker.
 - b. I consider the manager to be a very poor decision maker.
3. Consumer Evaluator's Decision. (r = .75)
 - a. If I were manager, I would have released water from the dam.
 - b. If I were making the decision, I would have held water in the dam.
4. Personal Evaluation of Manager. (Coefficient Alpha = .81)
 - a. Likeable - not likeable.
 - b. Warm - cold.
 - c. Good - bad.
 - d. Smart - dumb.
 - e. Concerned - not concerned.

Table 3
Anova Table for Study II

	<u>Dependent Variable</u>	MS <u>Error</u>	F Value: <u>Process</u>	<u>Independent Variable</u>	
				F Value: <u>Outcome</u>	F Value: <u>P X O</u>
1.	Decision Quality	22.9	6.73** (w ² = 9.2%)	39.80*** (w ² = 25.2%)	6.13** (w ² = 3.9%)
2.	Competence of Decision Maker	18.68	2.44	15.57*** (w ² = 16.1%)	.37
3.	Evaluators' Decision	14.46	218.00*** (w ² = 10.6%)	361.86*** (w ² = 17.6%)	.20
4.	Manager's Evaluation	36.8	.00	2.06	2.87** (w ² = 2.79%)
5.	Outcome Luck	4.10	4.38** (w ² = 2.9%)	41.34*** (w ² = 28.0%)	2.05

* = p < .10
 ** = p < .05
 *** = p < .01

Note: All F values based upon Type III sums of squares. No significant main effects occurred for the "perspective" independent variable or for the covariates.