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PREVIEW

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**Effects of information ordering and knowledge of outcomes on
judgment**

Kuehn, Kermit William, Ph.D.

The University of Nebraska - Lincoln, 1993

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300 N. Zeeb Rd.
Ann Arbor, MI 48106

PREVIEW

EFFECTS OF INFORMATION ORDERING AND KNOWLEDGE
OF OUTCOMES ON JUDGMENT

by

Kermit W. Kuehn

A DISSERTATION

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Major: Interdepartmental Area of Business

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Lincoln, Nebraska

January, 1993

DISSERTATION TITLE

Effects of Information Ordering and Knowledge of Outcomes

on Judgment

BY

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EFFECTS OF INFORMATION ORDERING AND KNOWLEDGE
OF OUTCOMES ON JUDGMENT

Kermit W. Kuehn, Ph.D.

University of Nebraska, 1993

Advisor: John Schaubroeck

The independent effects of presentation order and knowledge of outcomes (e.g., hindsight bias and judgment by outcomes) have been well established in the respective literatures as a significant influence on human judgment. The current study was conducted to test whether the judgment-by-outcomes effect could be explained as a special case of order effect. Typical research in judgment-by-outcomes literature provide subjects outcome information last in the information sequence suggesting a recency effect. This question was examined using the Belief-Adjustment Model proposed by Hogarth and Einhorn (1992) to predict order effects. It incorporates several task characteristics as well as cognitive processes believed to be used by decision makers.

Using 254 college students in a fully randomized 3 X 2 X 2 incomplete factorial design, the effects of outcome information order (i.e., presented first, last, or not at

all), outcome sign (i.e., successful or unsuccessful outcome), and decision-process information (i.e., positive-negative and negative-positive order) were examined as to their influence on ratings of the way a leader made decisions, of the decision itself, and of responsibility for the outcomes of that decision.

Results provide partial support for a recency effect of outcome information. An outcome sign-by-order interaction was observed with positive outcome information presented last influencing ratings more than this information presented first. This effect was not found for negative outcome information. Recent outcome information influenced ratings of the recommendation decision more than this information presented first. A marginal effect was found for leader process ratings at $p < .10$. Strong support for the judgment-by-outcomes effect was found with all ratings of leader performance and responsibility significantly influenced by outcome sign. Positive outcome ratings were higher than negative outcome ratings on the performance dimensions. Subjects rated the leader as more responsible for negative outcomes than for positive outcomes. A significant order effect was also observed for process information where recent process information significantly influenced leader performance ratings, but not ratings of responsibility.

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PREVIEW

CHAPTER 1

INTRODUCTION

Judgment is a pervasive life activity, and it appears that we make many of these judgments with little conscience thought; that is, judgments are made largely intuitively, seemingly without engagement of detailed reasoning processes (Hogarth, 1987). From reading the morning newspaper to financial proposals, from assessing peoples' intentions to evaluating employee's behavior, we encounter seemingly endless judgmental tasks in a given day.

Understanding these broader judgmental processes in decision making has received increasing attention in the past 20 years. Particularly active during this period, have been efforts in judgmental heuristics within the behavioral decision literature (Kahneman, Slovic, and Tversky, 1982), and social attribution processes from the broader social psychology literature (Heider, 1958; Kelley, 1972). Research in the attribution and judgmental heuristics literatures, particularly their recent convergence (Nisbett and Ross, 1980; Kahneman et al, 1982), has contributed much to our understanding of cognitive processes within varied social contexts and task situations.

Two specific areas being examined in these literatures involve the influences of different task characteristics on

judgment: information presentation order effects and the effects of outcome knowledge. Each of these aspects of the judgment context have demonstrated systematic influences on judgment and choice behaviors. A brief discussion will be made of each of these areas, followed by a description of the proposal for this study.

Presentation Order and Outcome Knowledge

As discussed above, decision theory research has in the last two decades focused considerable attention on non-normative aspects of decision behavior. Within the judgment and choice literatures, considerable attention has been given to understanding the effects of information ordering and outcome knowledge on appraisals of performance, decision processes, and on ratings of characteristics of the actors themselves in varied contexts.

Order effects and knowledge of outcomes have been found to systematically influence decision maker judgments, and to have considerably robust effects across situations (Fischhoff, 1974; Moser, 1988; Lipshitz, 1989). Because these terms have been examined under different labels and ways in psychological and organizational literatures, a brief discussion of terms, researcher interest and findings will be made.

Presentation Order Effects

In organizational life decision makers are regularly called upon to make judgments regarding such diverse areas as another's performance, attitudes, employability, promotability, or regarding assessments about a project's viability, or about the quality of another's decisions, to name a few. An unrelenting pace, brevity, variety, and fragmented characterize decision maker activities (Mintzberg, 1975). Decision makers receive information in a disjointed, incomplete, and ambiguous fashion requiring integration of diverse types, quantities and qualities of information to reach a decision. Rarely does one receive information that is complete, unambiguous, and temporally ordered, waiting for a rational decision.

How information is ordered has been the object of much research and theorizing for much of this century (Lund, 1925; Asch, 1946; Hovland, 1957), and continues to receive considerable attention (Anderson, 1981). The order in which subjects are presented with information has been found to influence predictive judgments (Moser, 1989; Luchins and Luchins, 1965), personality impressions (Anderson, 1981; Luchins et al, 1965; Asch, 1946), moral judgments (Luchins and Luchins, 1986), and recall of subsequent information (Moser, 1989; Anderson, 1981) in such areas as accounting

(Moser, 1989), economics (Camerer, 1987), social cognition (Nisbett and Ross, 1980), decision theory (Shanteau, 1970; Winkler, 1972), and law (Pennington and Hastie, 1986).

There are essentially three possibilities with regard to effects of ordering of information on judgments: 1) *primacy*, where early-presented information has undue influence on judgment; 2) *recency*, where later-presented information has undue influence on judgment; or 3) there is no effect of ordering on judgment. It is often observed that primacy effects are "overwhelmingly more probable" than either of the other two (Nisbett and Ross, 1980). This conclusion, however, is disputed in some areas (e.g., jurors use of evidence reflected a recency effect; Davis, 1984). In fact, the debate as to when, how, and why either of these effects will occur continues to be hotly contested (Nisbett and Ross, 1980; Anderson, 1990; Hogarth and Einhorn, 1992).

Hogarth and Einhorn (1992) have suggested that the occurrence of these effects is a result of the interaction of information-processing strategies and task characteristics. Their belief-adjustment model proposes that an "anchoring-and-adjustment" (Tversky and Kahneman, 1974) process explains these effects under differing situations. This model attempts to provide a more comprehensive theory of order effects, incorporating a number of contextual factors found to be relevant to order effects. Considerable attention will be given to this model

in subsequent chapters.

A related phenomenon found in this literature is termed output interference. *Output interference* refers to that process whereby a person's recall of information used in a judgment task is inhibited by whatever information a person is first presented with or asked to focus on (Hoch, 1984). It appears that previously presented information interferes with recall of other relevant information, typically, reflecting a primacy-type affect.

Within this research area, availability-based decision strategies and anchoring-and-adjustment strategies have been suggested as an explanation for these output interference effects. In the case of the availability heuristic, persons are believed to gauge the likelihood or frequency of an event based upon the ease of recall of examples of the event or object of interest. In information recall tasks, or in scenario construction tasks such as imagining an outcome, information presented first would presumably be most salient, and thus, most available for recall, accounting for the observed primacy effect.

An anchoring-and-adjustment explanation suggests that early information is believed to serve as an "anchor", or arbitrary reference point, of initial opinions with subsequent adjustments made depending on the information received. This explanation would suggest a primacy effect as well.

While heuristic research has received considerable acceptance in decision literature in recent years, cognitive psychology researchers, particularly from the information integration theory approach, have questioned their usefulness (Anderson, 1981), as have others (Slovic, Fischhoff, and Lichtenstein, 1977), due to the inability to predict when a particular heuristic will be used.

The primary purpose of this study is to investigate the relationship between order effects and the outcome knowledge effects from within a potentially stronger theoretical model. The central question of interest here may be stated as follows: Are outcome knowledge effects simply a particular case of order effect? Or do they contribute independent influences on judgment?

Outcome Knowledge Effects

In a given day, we are offered considerable amounts of summarized, prepackaged information through various media. From our network evening news programs to newspapers and magazines, information about various people and events are packaged for our consumption. Such information outlets often use outcome information to headline their presentation.

This year, headlines related to the political campaigns are just one example of this use of information. "Bush,

Taking a Beating in Recent Polls", and "Clinton Gains Endorsement" are just two examples of a daily diet we receive from these information outlets. What impact does this use of outcome information have on our subsequent judgments about the people and events we read about? This question has received considerable attention within the decision literature.

Knowledge of outcomes of a decision process have been shown to influence a decision maker's judgments of a person's performance and behavior (Lipshitz, 1989). This phenomenon has been studied in differing ways as reflected in judgment-by-outcomes and hindsight bias literatures.

Hindsight bias refers to a persons consistent tendency to overexaggerate what could have been known in foresight (without outcome knowledge) (Fischhoff, 1975). Subjects in hindsight (with outcome knowledge) seem to be unable to ignore this knowledge, even when instructed to do so, when making estimates of the probabilities of a given outcome assuming (pretending) a foresight position. Likewise, subjects seem unaware that their judgments are influenced by this knowledge (Fischhoff, 1982).

Judgment-by-outcome studies, unlike most hindsight bias studies, do not attempt to make subjects pretend to "go back" to their pre-outcome-knowledge perspectives, but simply attempt to understand the degree that knowledge of the success or failure of a decision process influences

judgments of the process, the decision maker, and other relevant factors. The results tend to suggest that outcome information has a significant influence on these judgments (Mitchell and Kalb, 1981; Brown and Solomon, 1987).

Much of the theoretical argument within the outcome effects literature, and particularly the judgment-by-outcomes literature, originates from the work of Heider (1958) and Kelley (1972) in their formulations of attribution theory. Lay attributions of causal and probabilistic inferences which permit observers to assign responsibility for events to actors or situations have received considerable research attention. From this larger literature we learn that assignment of responsibility is apparently moderated by outcome sign (success or failure); that is, degree of responsibility or blame attributed to an actor seems influenced by *what* happened (success or failure) as much as the actor's intentions, actions, or decision processes (Shaver, 1985; Walster, 1966).

A common finding within the attribution literature is that observers judge the actor to be more responsible for outcomes than is merited by the circumstances (Jones and Nisbett, 1972). Referred to as the fundamental attribution error, this consistent finding is particularly relevant when looking at judgment in the presence of process and outcome knowledge. In these experiments, subjects are asked to focus on evaluating the actor (common in many organizational

contexts such as performance appraisal, leader-member relations, disciplinary activities, legal settings, etc.) usually in a posthoc fashion.

The underlying assumption seems to be that judges see persons as causal agents with regard to actions and outcomes. This is particularly true in the presence of negative outcomes (Shaver, 1985). Particular task characteristics seem to be more salient, and thus relevant, to various judgment dimensions, e.g., responsibility.

Conclusion

This discussion has surveyed research and theory as it relates to human judgment under conditions of uncertainty. The study of these processes suggests many areas where heuristic processes may be used, at times biasing judgment. These biases continue to receive considerable research emphasis owing to the fact that we understand very little as to the complex relationship between cognitive processes of the subject (perception, encoding, memory, and judgment) and the contextual factors (e.g., information ordering, outcome knowledge) which influence decision behavior (Hogarth, 1987).

Several of these heuristics have been used to describe the effects of a number of contextual factors such as order