DOCUMENT RESUME

ED 205 600 TM 810 507

AUTHOR O'Reilly, Charles, III
TITLE Evaluation Information and Decision Making in Organizations: Some Constraints on the Utilization of Evaluation Research. Evaluation Design Project.
INSTITUTION California Univ., Los Angeles. Center for the Study of Evaluation.
SPONS AGENCY National Inst. of Education (ED), Washington, D.C.
REPORT NO CSE-R-142
PUB DATE Jun 80
NOTE 66p.

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS *Decision Making; *Information Utilization; Models; Organizational Objectives; Political Power; *Program Evaluation
IDENTIFIERS Evaluation Research; *Evaluation Utilization

ABSTRACT

In the past several years, evaluation researchers and practitioners have become concerned about the apparent failure to utilize evaluation information. A simplified model of decision making is presented, in which the decision maker is confronted with a situation requiring a choice, generates potential solutions, assesses the probabilities that a given alternative will lead to certain outcomes, and develops a preference ordering among outcomes. Two arguments are made: (1) that in organizations, participants have preferences for outcomes which reflect organizational as well as individual goals; and (2) that the decision process is one of bargaining and negotiation as various actors attempt to pursue their interests. In this political process, information becomes a potentially important, or threatening, commodity. This paper discusses the concept of "rationality" as it applies to organizational decision making and information use, the impact of organizational goals and incentives on the model already presented, and a number of potential biases in information processing which may affect the use of evaluation information. (Author/BW)

EVALUATION INFORMATION AND DECISION MAKING IN ORGANIZATIONS: SOME CONSTRAINTS ON THE UTILIZATION OF EVALUATION RESEARCH

by

Charles O'Reilly III*

CSE Report No. 142

June, 1980

Evaluation Design Project

Center for the Study of Evaluation
Graduate School of Education, UCLA
Los Angeles, California 90024

*The author would like to thank John C. Anderson, Susan Resnick, and Bill Glick for helpful comments on an earlier version of this manuscript.

The research reported herein was supported in whole or in part by a grant to the Center for the Study of Evaluation from the National Institute of Education, U.S. Department of Education. However, the opinions and findings expressed here do not necessarily reflect the position or policy of NIE and no official NIE endorsement should be inferred.

Table of Contents

INTRODUCTION

A central focus of the CSE project relating to evaluation activities in school districts is the question of the extent to which school district evaluation offices are contributing to the renewal of public education. Part of this question can be answered empirically by examining data which describes how local evaluation agencies (LEA's) are organized and staffed and what functions they serve (Lyon et al, 1978). Still another part of this larger question can be addressed through organizational analyses using survey data to test propositions concerning the impact of structure or conflict (cf. on evaluation activities, Grusky, 1980; Zucker, 1980). As David (1978) has recently documented, it appears clear that Title I evaluation results do not serve, primarily, as a means of judging the effectiveness of a program or as a guide to further program improvement; that evaluation information is rarely seen as important in the context of decisions about program changes. David goes on to point out that "literature on evaluation has only recently included attempts to understand the role and use of evaluation results...in the realm of decision making" (1978, p. 8). Her study, in fact, provides evidence of the almost total lack of utilization of evaluation data by decision makers in school districts.

Since the CSE survey data does not directly address the empirical testing of the propositions generated here, this paper may best be seen as an attempt to render the reader sensitive to some factors which may preclude evaluation information as a force for change. From this perspective, local evaluators may be able to anticipate what aspects of their evaluation will be seen as convincing or useful by various decision making audiences.

BACKGROUND

In the past several years, evaluation researchers and practitioners have become concerned about the apparent failure to utilize evaluation information. For instance, Davis and Salasin (1975) acknowledged that even methodologically sound research is often not used. Because many people accept the proposition that the purpose of evaluation research is to produce information primarily for use by decision makers, their concern about a lack of utilization of evaluation findings by decision makers addresses a fundamental issue as it calls into question the very purpose of the evaluation function.

No true consensus can be said to exist about whether this perceived lack of utilization is accurate. There is evidence both supporting and attacking the claim of non-utilization. For example, a number of authors have noted that the Head Start program continues, in spite of the results of almost ten years of research demonstrating that it has had almost no effect on cognitive abilities (e.g., Goldstein, Marcus, and Rausch, 1978). Similar instances of what appears to be non-utilization can also be found: Ward and Kassebaum (1972), for example, report that program administrators in a state correctional system counseling program systematically ignored evaluation data showing that the program was ineffectual with respect to the specified outcomes, decided to extend the program and, in certain cases, to make it mandatory.

A number of authors have catalogued possible explanations for such situations.

1. A lack of rigor in the design and conduct of the evaluation study (e.g., Goldstein et al, 1978).

2. Too much rigor so that the research fails to assess the true purpose of the program (e.g., Cox, 1977).

3. Studies which provide outcomes which aren't helpful (such as negative findings), results which aren't timely enough, or reports which are too lengthy and filled with jargon (Alkin, Cox, 1977; Goldstein et al, 1978).

4. Communication problems between evaluators and program administrators (Cox, 1977; Goldstein et al, 1978).

Arrayed against these arguments and examples are counter-examples and claims that utilization does, in fact, occur. Patton (1978), in a survey of federal evaluators, reported that 78 percent of those surveyed felt that evaluation studies had an impact on their programs. He, and others, argue that a broader definition of "utilization" must be in order properly to assess the impact of evaluation research. When the definition of utilization is extended to include impacts such as providing additional credibility for a program, verifying managers' suspicions, and generally providing additional information, then, it is argued, the utilization of evaluation information is more widespread than is commonly believed (Levine & Levine, 1977). The problem, in this view, is primarily that the definition of "utilization" is too narrow and "overly rational" (Patton, 1978, p. 40).

Essentially, whether utilization is or is not problematic depends on the definition of the term, on what is meant by "rational," and on the evidence the discussant uses in arriving at a conclusion; on what information the discussant seeks out or is exposed to, how closely he or she chooses to attend to the various arguments, and whether he or she has a vested interest in the outcome of the dispute. From this perspective, ultimately the problem of utilization or non-utilization of evaluation

information is one of organizational processes and pressures which encourage or discourage the production, transmission, and use of information by relevant decision makers.

The purpose of this paper is to analyze the utilization of evaluation research from an organizational behavioral perspective. To accomplish this, we will present a simplified information-processing model of decision making. With this orientation, the utilization or non-utilization of evaltion information may be seen as a function of two primary factors: (1) the organizational context in which decision makers function, including an awareness of operating goals and incentives, and (2) the information processing constraints on the decision makers, including availability of information, costs of search, and the manner in which information is perceived and processed. Drawing on the research literature related to information use and organizational decision making, a series of propositions will be generated that suggest conditions under which evaluation information is likely to be used, or not used, by decision makers.

AN INFORMATION PROCESSING MODEL FOR DECISION MAKING

Decision making is, simply put, the act of choosing among alternatives. Ideally, the decision maker is presumed to have a set of values or evaluative criteria, the perception of a problem which requires action, a number of potential alternative solutions, and a calculus for comparing alternatives and estimating the likelihood of attaining certain outcomes given certain alternatives. With perfect rationality, the assumptions leading to choice generally include complete information about the alternatives, knowledge

of the probabilities associated with different alternative-outcome links, a consistent ordering of preference among outcomes, and a selection mechanism which maximizes the value attained by a choice. However, viewed against the conflict of bounded rationality, the decision maker is seen as intendedly rational but acting with limited computational abilities. In both cases, however, the process of choice is one of information assimilation and use, suggesting that an information processing model may be a fruitful way to examine the decision making process.

Consider the simplified model of decision making presented in Figure 1. In this schema, the decision maker is confronted with a problem or situation requiring a choice, generates potential alternative solutions, assesses the probabilities that a given alternative will lead to certain outcomes, and develops a preference ordering among outcomes. In this view, information and the ability to process it are paramount. Information processing is required in all phases, i.e., to define the problem, develop alternatives, estimate probabilities, and order outcomes.

- - - - - - - - - - -

Insert Figure 1 here

- - - - - - - - - - -

The emphasis in this model is not that it is a complete or literal representation of the decision making process. A variety of similar models have been proposed (i.e., Cohen, March, & Olsen, 1974: Janis & Mann, 1977; MacCrimmon, 1974), and evidence is available which suggests that such models may be oversimplifications (Witte, 1972). Mintzberg, Raisinghami, and Theoret (1976), for example, traced 25 complex organizational decisions

and characterize the process as a plurality of sub-decisions without a simple sequential relationship such as indicated in Figure 1. Nevertheless, the model in Figure 1 is useful in that it emphasizes the centrality of information and information processing in the decision process. It also suggests a framework for organizing and investigating the limitations and constraints on organizational decision making.

In a typical formulation, decision makers encounter or are presented with problems which require choices, e.g., continue funding for a project or reallocate funds to other purposes, or allow the hiring of additional staff. The decision maker then considers a variety of alternatives for solving the problem. Each alternative is examined and some subjective weight or probability estimated that selection of given alternatives will lead to particular outcomes. Typically, the decision maker is not indifferent among the set of outcomes but has preferences reflected by weights for at least some of the outcomes. Given that information processing limits exist, it may be that the decision maker will not have complete knowledge of the alternatives, probabilities or outcomes. In general, however, the decision making process is presumed to operate from left to right. Under the traditional assumptions of rationality ascribed to evaluation researchers, it is assumed that the decision maker will search for unbiased information about the various components in the model, and that the weights attached to various outcomes are determined by organizational goals; that is, the decision maker will attempt to make the choice such that the maximum net benefit accrues to the organization or the agency.

But is this left-to-right progression an accurate description of how

decisions are made? Several authors have proposed that, in organizations, problems are seldom clearly defined and alternatives become known only after certain outcomes were preferred (Cohen et al, 1974; Weick, 1977). It may be, in fact, that in organizations, the decision making process begins with the preference ordering for outcomes as a set of rather fixed constraints. Simon (1964) suggested this when he proposed that organizational goals be viewed as constraint sets. Certainly, in organizations individuals and subunits typically have vested interests. The loss of resources, status, and power are to be avoided. Even the uncertainty caused by change may be resisted. Increases in resources, for example, more funding or more staff, are typically preferred. Decision makers are indifferent about outcomes only when they are unaffected. In fact, decision makers may become participants in a decision making process to insure that they remain unaffected.

The fact that organizational decision makers have strong preferences for certain outcomes is well documented (e.g., Pfeffer & Salancik, 1977, 1978). These preferences, discussed at greater length later in this paper, reflect not only organizational and subunit goals, but also individual desires and concerns such as promotion and salary. Because these preferences exist, it follows that managers or administrators are unlikely to remain passive when decisions are to be made which affect them. Conflicts may develop when decisions can result in gains and losses to the participants. Under these circumstances, alternatives which lead to undesired outcomes may become unacceptable to certain participants. In addition, as Thompson (1967) observed, uncertainty threatens rationality. Managers,

especially those in power, attempt to eliminate potentially disruptive uncertainty. Information, in this context, becomes a political resource. Data which supports desired outcomes is sought out, while information which supports opposite views is to be rebutted by questioning its accuracy, for example, by obtaining other information which supports a countervailing view, or by impugning the credibility of the source of the threatening information. Information, then, is a commodity used for a variety of purposes. Under some circumstances it may be used as a basis for decision making; in others, as corroboration for decisions already made, and in still others, for symbolic reasons. Information, in this milieu, is not a fixed substance, but one which may be selectively perceived and processed.

Thus, the argument being made is twofold. First, that in organizations, participants typically have preferences for outcomes which reflect organizational as well as individual goals. These outcomes act to define a set of constraints which result in the decision process moving from right to left as portrayed in Figure 1. Second, that because of the potential for disagreements among participants, the entire decision process may be one of bargaining and negotiation as various actors attempt to pursue their interests. In this political process, information becomes a potentially important, or threatening, commodity. It is generally not perceived of as "objective." Rather, depending on the nature and importance of the goals sought, decision makers may systematically search for supporting information while ignoring other types.

It is this organizational context in which evaluation research and

evaluation units whether at local, state or federal level, should be examined. Both the evaluation unit and the information it produces may be assets or liabilities for decision makers.

Evaluation information may be categorized in several ways. For example, one can distinguish between formative and summative evaluation, with the former referring to information focused on improving the workings of a given program and the latter more concerned with overall impact or effectiveness of a given project. Formative evaluations are typically used to provide information to administrators to improve the conduct of the program, and, as such, may be less threatening than a summative evaluation which may dictate the continuation or discontinuation of the entire project. We can make still another distinction between information collected for routine compliance with funding agency guidelines and non-routine information used to assess goal attainment. The former information is often critical in that continued funding is predicated on demonstrated compliance and substantial efforts and resources are often required to collect such information. This information, however critical, is not typically used to assess program performance. For the purposes of this paper, "evaluation information" or "evaluation research" will refer primarily to the more non-routine summative aspects of evaluation research. While some of the material developed may be relevant to an understanding of routine or formative evaluation, the primary focus here is on information about non-routine or summative events.

We propose to discuss the concept of "rationality" as it applies to organizational decision making and information use, the impact of

organizational goals and incentives on the model present in Figure 1, and finally, drawing upon a diverse body of research on cognitive information processing and decision making, a number of potential biases in information processing which may affect the use of evaluation information are explored.

RATIONALITY AND THE DECISION MAKING PROCESS

As indicated previously, the notion of rationality implied by Figure 1 is not the comprehensive rationality of economic theory in which unbiased decision makers use perfect information to maximize utility according to some completely specified and ordered preference set. Instead, as suggested in Figure 1, decision makers begin with preferences and select actions based on imperfect expectations about the effect of these actions upon future preferences and that these actions may include limited and focused information search and selective perception and processing of information. Thus, "rationality," as used here, does not even refer solely to the notions of bounded rationality in which choices are made by decision makers who use imperfect information in a satisfying manner to maximize goal attainment subject to actual rather than perfect knowledge (March & Simon, 1958). Instead, the appropriate calculus for Figure 1 appears to be one which March (1978, p. 592) refers to as "contextual rationality" in which choice behavior is embedded in a complex of other claims on the attention of decision makers and other structures of social and cognitive relations. Organizational decision makers, in this view, are pursuing multiple objectives subject to a variety of pressures and constraints, and often with considerable ambiguity surrounding the choice process.

Under these circumstances, preferences for outcomes may be the least ambiguous component of the decision process, more certain than the definition of the problem, the range of feasible alternatives, or the probabilities associated with various alternatives. In this situation, it is argued that decision makers are likely to take action which both reduces their uncertainty and helps them achieve desired outcomes (e.g., search for supportive information or selectively interpret signals as favorable to a preferred outcome). Lindblom (1959) offers some support for this when he observed that the selection of goals and the empirical analysis of the needed actions to obtain the goals are not distinct from one another but are closely intertwined. Since ends typically come before means and may be known with greater certainty, it is likely that the search for appropriate means will be highly focused.

Since individual decision makers are known to be limited in their ability to solve problems, organizational routines are often established to increase the likelihood that individuals will behave in a traditionally rational way. This focus is on the effectiveness of *procedures* used to make choices, what Simon refers to as "procedural rationality" (1978, p. 8). These routines are established, in light of the limitations suggested by bounded and contextual rationality, to emphasize rational search procedures and, insofar as possible, to ensure that decision makers have complete information. This procedural rationality may easily include provisions for information and control systems, carefully prescribed review processes, and even mandated program evaluations. The explicit attempt is to ensure that the organizational context promotes an approximation to comprehensive

rationality by decision makers. These manifestations of procedural rationality may be of considerable symbolic importance (e.g., Meyer & Rowan, 1977), but of limited efficacy if decision makers are only contextually rational.

Such a reformulation of traditional notions of rationality is hardly new. For a number of years economists, political scientists and others have acknowledged that "perfect rationality" is not an apt description of real-world decision making (e.g., Etzioni, 1967; Floden & Weiner, 1978; Gershuny, 1978; Lindblom, 1959). What is, perhaps, relevant here is that some of the disillusionment with social science evaluation can be partly attributed to at least an implicit acceptance of the assumptions underlying traditional rationality. It is worth re-emphasizing that in an organizational context, unlike what is implied in the traditional rational model, goals are often ill-specified or lack consensus, information may be incomplete, ambiguous and imperfect, and decision makers may be pursuing multiple-competing objectives and lacking the time and computational abilities necessary to adequately utilize the available information. It may even be, as suggested here, that the decision itself may be driven by the solution rather than the problem. Acknowledging these constraints, let us now turn our attention to: (1) some of the relevant organizational properties alluded to by the notion of contextual rationality, and (2) the cognitive processing limitations suggested by the notion of bounded rationality.

Organizational Power and Evaluation

To understand the impact of contextual influences on evaluation research, let us first consider the evaluation unit in an organizational context; that is, consider the evaluation unit as one group among many subunits. As Pfeffer and Salancik (1978) have noted, subunits within organizations may be viewed as actors competing for resources in a political arena. Power, in this milieu, becomes a critical determinant of the unit's ability to acquire scarce and critical resources (Pfeffer & Salancik, 1974).

Power, the crucial ingredient in this contest, may be envisioned as resulting from the subunit's ability to control critical contingencies; that is, power stems from the ability to reduce the primary uncertainty which faces the organization. As formulated by Hickson, et al (1971), power or the ability to control contingencies and reduce uncertainty, may vary according to: (1) how critical the uncertainty is which the subunit can reduce, that is, how central the contingencies are for the overall functioning of the organization, (2) how effective the subunit is in reducing the uncertainty, and (3) how "substitutable" the function served by the subunit is, that is, how easily the uncertainty reduction can be obtained from other sources within the organization. Subunits that are successful according to these criteria are likely to be powerful. Those units that do not act to reduce important uncertainty for the organization, or whose ability to reduce uncertainty is not uniquely held, are unlikely to exert substantial influence with the organizations.

Subunit power has important ramifications for an understanding of the utilization of evaluation information for several reasons. First, Pfeffer and Salancik (1974) have shown that power is directly related to a subunit's ability to obtain scarce and critical resources, for example, budget allocations and staff. Without these, it may be difficult for an evaluation unit to perform effective evaluations. Second, Pfeffer and Salancik (1977) have also demonstrated that power is used to define the criteria used in decision making. More powerful subunits may successfully emphasize those criteria on which they compare favorably. This ability to define or specify evaluative criteria may have direct impacts on program evaluation, allowing powerful programs to either specify the basis on which they are to be evaluated and thereby insuring their continued success, or by redefining a posteriori the evaluative criteria to invalidate unfavorable findings. Without power, members of the evaluation unit are likely to find that they lack discretion in selecting the criteria and accepting others' definitions (e.g., Meltsner, 1976), or that they adhere to the more universalistic standards of research only to have their product labelled as irrelevant or ignored by decision makers.

A final ramification of power which has been noted is the tendency of those in charge to institutionalize their power and to resist changes which might alter their position. Goldstein, et al (1977) describe how groups often desire evaluation research to satisfy external demands to "do something," but simultaneously are looking for the results to justify established policies and procedures. Decision makers, it seems, are more receptive to research conclusions that fit nicely into established policies.

This tendency -and ability- of powerful units to maintain their position acts to slow down the process of change and may easily contribute to both a desire and an ability on the part of powerful subunits to attend to selectively (or ignore) utilization information, depending on their interests.

These findings suggest several propositions with respect to the influence of evaluation units and the utilization of evaluation research:

Proposition 1: Results of evaluation research is more likely to be used by decision makers when:

a. the evaluation unit is powerful compared to the unit being evaluated.

b. the evaluation information is not available from other sources; i.e., the control of uncertainty is not substitutable.

c. the evaluation study was on a program requiring a substantial proportion of the agency's resources; i.e., the project evaluated is central to the agency's functioning.

d. the criteria used for evaluation are criteria which the unit being evaluated has accepted, i.e., there is agreement between the evaluating unit and the one being evaluated on what is to be evaluated.

Organizational Goals, Incentives and Evaluation

If, as suggested in Figure 1, the use of information may be a function of the outcomes preferred by a decision maker, it is important to consider how these preferences might develop. In an unconstrained setting, predicting the preferences or tastes of decision makers is problematic. With the exception of some global notions of hedonic preferences or the idea that, in general, people will choose to be "better off" than "less well-off," it is virtually impossible to predict a priori what set of outcomes a given decision maker is likely to value. In organizations, however, preferences are far more predictable. Decision makers exist in settings

which act to constrain both the range of outcomes which might be preferred in situations where there is a choice and the preferences for particular outcomes within this reduced set. These contextual constraints are typically imposed through systems of goals, control systems and incentives. Decision makers are usually constrained first by the nature of the job; that is, organizational or subunit goals are imposed along with the responsibility to work toward attaining these goals. To ensure that this is accomplished, some form of control system is typically used which allows superiors in the hierarchy to monitor the achievement of subordinate decision makers. Upon discovery of a variance, sanctions can be applied. Thus, the organizational context acts to constrain decision makers to pursue a limited number of goals and to reward or punish them for success or failure.

Without digressing into a lengthy discussion of goals and goal formulation processes (cf., Mohrn, 1971; Perrow, 1970), it should be noted that this process involves the translation of often vague, non-operational, long-term goals into more specific, short-term outcomes. This activity may, as has been empirically demonstrated (e.g., Pfeffer & Salancik, 1978), be accomplished through a political process of negotiation, bargaining, co-opting, coalition formation, and the garnering and application of power. The process may also result in the adoption of symbolic and non-operative goals whose purpose is often to satisfy external audiences and to provide for minimum constraints on organizational actors (e.g., Perrow, 1970; Simon, 1964). Meyer and Rowan's (1977) interpretation of the symbolic nature of the operation of schools is an illustration of these goals. The concern

in many public organizations with accountability is another goal, perhaps more relevant as a symbolic effort to reassure taxpayers, than an operative goal relevant to effective and efficient organizational functioning.

With respect to evaluation, Orlans (1973) has noted that the wording in enabling legislation is often written in vague terms in order to gain sufficient backing from legislators to insure passage. However, since program goals are not well-defined, it is difficult to develop measurable criteria, despite the fact that the legislation often mandated an evaluation component. The lack of well-specified goals may encourage the political bargaining over criteria described by Pfeffer and Salancik (1977). It may also result in evaluations which opponents claim are not appropriate. Program Head Start legislation, for example, offered no delineation of goal priority or concrete objectives. The result was that results of evaluation studies which showed no impact of the program were often ignored by decision makers as inappropriate or assessing only a part of the program's intent (Gordon & Morse, 1975).

The result of the translation of organizational goals into short-term operative subunit goals, while perhaps an imprecise and ambiguous process, has several important ramifications for an understanding of the use of information by organizational decision makers. First, even when the goals are somewhat ambiguous, objectives act to focus the attention and efforts of those responsible. Second, although the goal may be imprecisely defined, control systems are almost always developed which include measures of objective outcomes. These measures of observable

outcome act as highly salient foci against which performance may then be assessed. A large and persuasive body of research has documented the motivating effect of setting simple goals (e.g., Latham & Yukl, 1975). For example, studies of budgeting (e.g., Wildavsky, 1974), public employees (Blau, 1964), students (Baum & Youngblood, 1975), homeowners (Erez, 1977), have all demonstrated that the mere setting of goals can act to direct behavior. Other research has also demonstrated that once an individual becomes committed to an outcome through public actions, there is a tendency to continue to pursue the same goal, even if preceding efforts met with failure (e.g., Salancik, 1977; Staw & Ross, 1978). These findings suggest that in an organizational context, decision makers will probably develop rather explicit preferences for outcomes.

Finally, and most important, these preferences are solidified through the operation of organizational incentive systems: decision makers are rewarded for pursuing certain ends and punished for others. The pervasive impact of incentive systems should not be underestimated. Steve Kerr (1975) provides a number of instances in which employees behaved in seemingly contradictory ways, often appearing to do the opposite of espoused goals. For example, directors of orphanages were found to establish policies that worked against the placement of children in foster homes, and acted to keep them in the orphanage; universities routinely establish incentive systems that militate against encouraging high quality teaching; sports teams often reward individual performance when a team-oriented effort is required. Upon analysis, the results were seen not

to be contradictory but to be entirely consistent with the incentive systems; that is, people in organizations typically do those things for which they are rewarded. In Kerr's (1975) example, for instance, orphanage directors who succeeded in placing children in foster homes would be "rewarded" by cuts in staff, resources, and prestige among peers. In a direct test of the hypothesis that decision makers would respond to the operative control system, Harrell (1977), demonstrated that subordinate decision makers would follow their superior's lead and make decisions using similar criteria. This effect persisted even when superiors began making decisions which were contrary to the official policy.

Obviously, the goals of survival and obtaining resources are probably more important to program administrators and staff than to independent evaluators. Information which suggests that the program is not effective or efficient is likely to result in negative sanctions against those running the program. Clearly, there may be conflicts between the program adminstrator's goal of survival and the evaluator's goal of an accurate assessment. The incentives for those with vested interests in the program may be to devise strategies to minimize the collection, dissemination, and use of such unfavorable information, even if such actions go against some "objective" assessment of overall worth.

These findings are applicable in understanding how decision makers develop preferences for outcomes: subunit goals are made salient, measurable and rewarded, control systems provide feedback and sanctions which act to focus attention on achieving certain ends, failure to attain the desired outcomes may result in the loss of important organizational rewards

such as promotion, pay, and status, as well as actual punishments such as demotion or termination. As individuals in organizations become more committed and less able to leave the organization, the importance of the outcomes is increased. Since there is seldom complete consensus among individuals and subunits on the goals or outcomes to be sought, the possibility of conflict and competition arises. Under these circumstances, it is possible that one person's gain is another's loss; hence, it is unlikely that decision makers will easily give up preferences for certain outcomes if it means personal loss.

Some indirect evidence of these effects may be seen in a review of 93 evaluation studies by Gordon & Morse (1975). These authors found that evaluation researchers with some affiliation with the project being evaluated were far more likely to report the project as successful than were non-affiliated evaluators (52 percent to 14 percent). Similarly, there was a greater tendency for non-affiliated researchers to report program failure than were affiliated evaluators (32 percent to 14 percent). While not suggesting directly that affiliated evaluators deliberately biased their studies, the results are consistent with the hypothesis that incentives may lead to conscious or unconscious biasing of information.

The set of acceptable or preferred outcomes on which a decision maker is likely to focus is, in part, made salient through the specification of a control system which assesses attainment of the assigned goals, incentive systems which sanction certain actions, and the committing effect of previous behaviors. These factors suggest the following proposition:

Proposition 2: Results of evaluation research are more likely to be used by decision makers when:

a. the evaluation information can be used to assess achievement of quantifiable goals.

b. the evaluation information is fed into a well-articulated and operating control system which includes an effective set of incentives; i.e., measured performance can be sanctioned.

c. the evaluation information does not recommend actions which are incompatible with the existing control system's ability to monitor and sanction.

d. the evaluation information results from studies performed by those who have a vested interest in the continuation of the project.

INFORMATIONAL IMPACTS ON DECISION MAKING

As suggested by Figure 1, information plays a central role in the decision making process. Before information can have an impact, however, it must reach, and be processed by, the relevant decision makers. In an evaluation context this means that the evaluation report must not only be available to users but must also be read, understood, believed, and acted upon. Failure by decision-makers either to obtain the information or to process it, can result in non-utilization. This suggests the need to examine two separate steps in the dissemination process: (1) how decision makers acquire information, and (2) how material is processed cognitively. A substantial body of research is available which suggests the limitations on and biases of organizational decision makers with respect to information acquisition and use.

Information Acquisition

Accessibility of Information. A large number of laboratory studies

of information and decision making have documented the intuitively reasonable conclusion that better quality information is generally associated with improved decision making performance (e.g., Porat & Haas, 1969; Streufert, 1973). Unfortunately, several authors have also noted that the majority of these studies may be overly structured when compared to the real-world situations they are meant to model (e.g., Connolly, 1977; Winkler & Murphy, 1973). Thus, while we have support for the importance of information in decision making, we need to examine the process by which decision makers acquire information before concluding that the mere availability of better quality information insures improved performance.

When we examine this evidence, doubts about the information-decision making link emerge. Decision makers of many types appear to be noticeably biased in their procurement of information. For example, in a direct test of the impact of accessibility and quality of information on information source use, O'Reilly (1979) found that although decision makers recognized information sources of high quality, they used sources which provided lower quality information but were more accessible. O'Reilly (1979) explains these results in terms of the costs involved in obtaining information from less accessible sources. Given that the decision makers were under time constraints and subject to numerous interruptions, it may have been that they were simply unable to seek out higher quality information when it came from less accessible sources. Similar findings have been reported about the information seeking behavior of physicians (Menzel & Katz, 1955), scientists (Gerstberger & Allen, 1969), policymakers (Clausen, 1973), and managers (Mintzberg, 1973).

This bias towards accessible information is also reflected in managers' strong preferences for oral as opposed to written information (e.g., Dewhirst, 1971) and for information from trustworthy or credible sources (e.g., Beach, Mitchell, Deaton & Prothero, 1978; Giffin, 1967). Research in these areas has shown that managers typically prefer shorter, oral reports to longer written ones. Interestingly, there is also evidence that when obtaining information in this manner, managers may judge the validity of the information, not on the facts of the matter, but on the credibility of the source. This may lead to the acceptance of a piece of information as "true" or "false" depending on how much the recipient trusts the sender. Clausen (1973), for instance, noted that Congressmen frequently cast votes on legislation based not on an understanding of the deeper issues but on the advice of a trusted colleague. This behavior is not necessarily bad, but simply reflects the inability of a Congressman to be fully informed on all issues.

The research on source credibility also suggests that it may be that it is the "safeness" or trustworthiness of the source, more than expertise, which determines whether information is believed (O'Reilly & Roberts, 1976). The ramifications of this finding for understanding the utilization of evaluation research may be important. Evaluation units, by their nature, may be perceived of as not sharing the same objectives as other subunits; i.e., not being trustworthy in terms of source credibility. These units may be seen as objective rather than sympathetic; that is, expert but not trustworthy. Thus, there is some possibility that the information produced may be used less by decision makers than information from "safer" sources.

David (1978), for example, found that the feedback of evaluation data which included personal explanations by evaluation staff personnel was much more likely to be made use of than a report that was merely delivered.

Together, these biases may lead decision makers toward preferences for information from particular channels which they may characterize as accessible, trustworthy, and which provide condensed treatments of complex issues. Information from these sources, as will be suggested later, may be concrete and easily assimilated, but not necessarily detailed or of the highest quality. With respect to the utilization of evaluation research this suggests the following proposition:

Proposition 3: Results of evaluation research are more likely to be used by decision makers if they are:

a. readily accessible to final decision makers

b. summarized

c. presented orally

d. from a source deemed as credible; i.e., trustworthy.

Information sign. An additional bias noted in studies of information acquisition by decision makers is a tendency to avoid information which may suggest undesirable consequences. Janis and Mann (1977) offer several examples of this behavior describing how politicians and policy makers, when faced with unpleasant alternatives, will avoid exploring ominous implications of desired courses of action. Several examples of this sort are available in studies showing that program administrators have exhibited tendencies to dismiss negative findings (e.g., Borgatta, 1966; Carter, 1971). Goldstein et al (1978, p. 33), report similar instances in which

evaluation results were selectively interpreted as offering support for a politically favored position. This willingness to avoid acquiring pejorative information and to seek out or selectively process favorable items has direct ramifications for evaluation research. As suggested earlier, decision makers often have vested interests in certain outcomes. This may predispose them to seek out information which supports their position. David (1978) quotes a decision maker as saying, "I want information to justify the expansion of the program" (p. 17). Bear and Hodun (1975), for example, found that subjects were likely to recall items of information that were confirmatory to their position rather than those that were contradictory. Interestingly, this bias extended to recalling some contradictory items as supportive and even to recalling missing data as confirmatory for a preferred position. In an interesting laboratory study, Morlock (1967) demonstrated that it required significantly *less* information for subjects to arrive at a decision favorable to their position than to arrive at a decision considered to be against their interests. In an organizational setting, groups of like-minded decision makers may exaggerate these biases toward selective perception and actually act collectively to censor or derogate information in opposition to their desired ends. Janis (1972), labelling this process as "groupthink," provides a number of retrospective accounts in which groups acted to bolster desired opinions and exclude contrary ones. For instance, decision making by President Kennedy's advisory committee during the Bay of Pigs incident was characterized afterwards by the suppression of doubts, creation of feelings of unanimity and invulnerability, and an unwillingness

to risk conflict within the group. Johnson (1974), in a study of group decision making, provides a nice example of this tendency to seek unanimity and avoid conflict. She hypothesized that executives would make a less desirable, but acceptable, short-run decision to avoid generating conflict with others in the group. Using 49 businessmen across ten situations she discovered that although subjects could identify the ideal decision for each situation, their overwhelming tendency was to make a sub-optimal decision in order to avoid conflict. David (1978) again quotes a user of evaluation data as saying, "I look at test scores mainly to confirm my own impression. If they differ, my impression counts" (p. 16).

These biases, that is, tendencies to avoid information which suggests undesirable consequences, to seek out supportive information, to require less supportive information to arrive at a favored decision, and a desire to avoid making decisions which will generate conflict, suggest the following proposition.

Proposition 4: Results of evaluation research are more likely to be used by decision makers if the information:

a. is supportive of the outcomes favored by the decision makers.

b. does not lead to conflict among the set of relevant actors.

Proposition 4 appears most appropriate when, as Janis and Mann (1977) suggest, the group is cohesive and members value their associations. Under these circumstances, it may be that group members will be more apt to suppress conflict in the name of group unaniminjty. When evaluation information is available to competing factions or decision makers belonging to differing groups, the following proposition is suggested:

Proposition 5: Results of evaluation research are more likely to be sought out and used by decision makers under competing or conflicting conditions when:

a. Information supportive of an undesired position is available to actors seeking different outcomes.

b. The decision making process is drawn out over a long period of time which allows alternative positions to be presented.

Communication of Information. A final set of potential biases on information acquisition by decision makers in organizational settings is related to the communication of information in organizations. Several authors have noted that communications in organizations may be withheld or distorted (e.g., O'Reilly & Pondy, 1979; Wilensky, 1967). Subordinates have been found to be biased toward passing superiors information which reflects favorably on the subordinate and suppressing unfavorable information. O'Reilly (1978) discovered that subordinates who did not trust their superior were willing to suppress unfavorable information even if they knew that such information was useful to their boss. Other investigations have shown similar results. For instance, Pettigrew (1973) documented how a single individual, acting as a gatekeeper for information flowing to a policymaking group, was able to determine the outcome of a purchasing decision by carefully allowing only certain types of information through to the decision makers. Plott and Levine (1978) demonstrated how, through the arrangement of the agenda of a meeting, outcomes could be determined in advance. Lowe and Shaw (1968) provided evidence that departments systematically inflate and bias budget requests to support claims for increased resources. In a slightly different vein, Kaufman (1973) showed how subordinates learned not to pass certain items of information upward in the hierarchy because superiors, upon learning of these, would be required to act in ways contrary to their self-interest. A classic example

of this system-induced distortion is provided by McCleary (1977) in a study of how parole officers report clients' violations, observing that parole officers under-reported deviant behavior to their supervisors. As noted by Kaufman (1973), subordinates are often punished for accurate reports. In McCreary's study, this resulted in incidents being reported only when the information sent upward would result in enhancing the subordinate's career.

Numerous other examples are available which attest to the fact that information is often selectively filtered and distorted as it is communicated in organizations (e.g., Allison, 1971; Janowitz & Delany, 1957, etc.). Such filtering and distortion appears to result, most often, from individuals or groups attempting either to gain desired outcomes (such as increased resources or power) or to avoid losses of these. When considered in conjunction with the biases toward reliance by decision makers on short, oral reports from trusted sources, the impact of distorted information is heightened.

Clearly, these biases have important consequences for the transmission and use of evaluation research since interpretation of the results of evaluation studies may be biased either to support or refute a particular position. If, as March and Simon (1978, p. 165) note, "inferences are drawn from a body of evidence and the inferences, instead of the evidence itself, are then communicated," the opportunity for subtle distortion is magnified. Findings which have undesirable consequences may be withheld by superior gatekeepers also. Direct evidence of this effect is recounted by Coleman (1972) who describes how HEW attempted to minimize the impact

of an EEO study because its findings were inimical to the interests of some other HEW agencies. Here we find decisions being made to suppress or alter information both to minimize conflict and to avoid undesirable outcomes.

It should be noted that not all distortion in organizational communication is necessarily intentional. With any transmission from one individual to another there is almost always some degradation of the message (e.g., see Campbell, 1958). Receivers of information recall certain parts of messages and forget or minimize others. This unintentional distortion, due to differences in cognitive tuning, may be increased when the communication occurs between groups who use different vocabularies, are sensitive to different goals and constituencies, or are using different criteria for determining what is important. Janis (1972), for example, describes how information during Pearl Harbor was not transmitted because senders, unaware of the broader picture, did not perceive certain information as important. Evaluation researchers, whose concerns are often somewhat different than administrators, may not be fully appreciative of the concerns of users of their studies. This last, the use of a different vocabulary and the requirements for communication through several hierarchical levels, may lead to evaluation reports which are seen by adminstrators as not timely, too technical, focused on issues which aren't central, and generally unconvincing (e.g., Alkin, 1975; Cox, 1977). Such opinions on the part of administrators coupled with biases mentioned previously, such as a reliance on accessible and credible information sources, make it clear that evaluation information may not have the impact expected by evaluation researchers.

Acknowledging that information may be blocked or altered during communication within organizations suggests the following proposition:

Proposition 6: Results of evaluation research are less likely to be useful when:

a. transmitted through several intermediate links in a communication network rather than delivered directly to the relevant decision makers.

b. transmitters of the information are likely to suffer personal or organizational losses from the message.

c. senders and receivers do not trust each other.

d. the information is transmitted to decision makers in another agency or organization.

d. the information is transmitted to decision makers in a different functional group within the same organization.

Information Processing

Until this point, our discussion has focused on biases which may affect the acquisition of information by decision makers in an organizational context. Once the information has been acquired, however, it may still be that individuals will fail to process it accurately. A diverse and well-developed body of research is available which documents these limitations in cognitive information processing (e.g., Slovic, Fischhoff & Lichtenstein, 1977). Two general themes from this research are relevant to an understanding of the use of evaluation research by decision makers: (1) factors which limit one's ability to assimilate information, and (2) processing strategies which may result in inaccurate or misleading inferences.

Cognitive Limits on Information Processing. Early studies of human information processing demonstrated unambiguously that only limited amounts of information could be used by decision makers. Miller (1956), in a classic study, demonstrated experimentally that short term memory is limited in most people to seven "chunks" of information plus or minus two, (a "chunk" being the largest single item of information recognized by the processor) and that an individual's ability to "chunk" information acts as a direct constraint on the input of data. What is important to us is that this fundamental physiological limitation appears to act as a constraint on all decision makers. Numerous studies have demonstrated that physicians, stockbrokers, meteorologists, policymakers, and a variety of other "experts" all appear to use only a very limited number of cues in making complex decisions (e.g., Dawes & Corrigan, 1974; Slovic et al, 1977; Slovic & Lichtenstein, 1971). Other research in this area has also shown that variables such as personality, cognitive structure, and demographics are related to the ability to process information (e.g., Nystedt, 1972, Schroder, Driver & Streufert, 1965; Taylor & Dunnette, 1974). Further evidence of limitations on the ability to process information is available in studies showing the biased nature of memory and perception. Buckhout (1974), for example, lists three common sources of unreliability in recall: (1) insignificance in the original situation, i.e., cues which were later deemed important were not closely attended to at the time, (2) the degradation of information in memory over time, and (3) pressures and distractions on the information processor which reduce the amount and accuracy of information used.

Each of these limits is potentially important for an understanding of how decision makers may use evaluation information. For instance, given that decision makers are able to use relatively little information, it becomes problematic to know which items of information of the total quantity available a decision maker will focus on and use. Studies of experts are consistent in finding that experts on the same subject typically use different information in making expert judgments (e.g., Slovic et al, 1977). This suggests that decision makers, when presented with evaluation research results, may interpret and weight the information differentially. Hawkins et al (1978), for example, in a drug evaluation study, showed that various actors were weighting information differently according to the evaluation criteria they were using. Other studies have also demonstrated variations in preferences for types of information across decision makers (e.g., Kilmann & Mitroff, 1976), as well as in how stress reduces one's ability to process information (e.g., Wright, 1974). Since, as Mintzberg (1973) has shown, managers' work is characteristically fragmented and subject to distractions and time pressures, it is likely that users of evaluation research will be unable to assimilate fully all the information contained in a report. Instead, users are likely to form overall impressions, subject to the biases mentioned previously, and to weight the results accordingly. This interpretation is consistent with studies which show that with the passage of time details are forgotten, that the reconstructed meaning is often less ambiguous than originally portrayed, and is then interpreted as offering support for a favored position (e.g., Buckhout, 1974; Ross, 1977); that is, information

contained in the original signal which is unfavorable is likely to be either forgotten or reinterpreted so as to minimize its negative consequences.

These and other studies of individual limits on cognitive information processing corroborate a reasonable but often neglected fact: memory is a selective and often fallible source of information. The perceptual process of detecting and attending to stimuli is affected by factors such as stress. With the passage of time there is also a tendency to reorganize our "memory" into coherent recollections by stripping away contradictory evidence and filling in any gaps with "constructed" facts. These limitations suggest the following propositions:

Proposition 7: Only limited amounts of information from an evaluation study are likely to be used for decision making purposes.

Proposition 8: Given the same evaluation information, different experts will use different parts of the report in different ways; that is, judges will weight differently the same evaluation information.

Proposition 9: Over time, decision makers will be more likely to interpret favorable information from an evaluation study as less ambiguous than originally perceived.

Proposition 10: Over time, decision makers will be more likely to forget unfavorable information from an evaluation study or reinterpret such information as either irrelevant (e.g., does not address the "relevant" question) or favorable.

Selective Processing. Aside from these limits on decision makers' ability to process information, there also exist biases in the manner in which information is cognitively processed by individuals. Three of these biases have direct ramifications for evaluation research utilization: (1) selective perception, (2) self-serving biases, and (3) a preference for vivid, concrete information for use in decision making. The first

relates to the tendency, described in the previous section, for users to "reinterpret" information which has been acquired to fit preconceptions or to allow the user to maintain a consistent set of attitudes and beliefs about a given topic. This bias toward consistency injected by the reconstruction of facts, is dramatically increased through the three selective processing mechanisms mentioned above.

Janis and Mann (1977) offer a number of excellent illustrations of instances in which decision makers either defensively avoided acquiring or processing unfavorable information or bolstered their position through the selective acquisition and interpretation of favorable data. This tendency may be seen in decision makers' willingness to overweight negative information when they desire to make a negative decision (Kanouse and Hansen, 1972). In these circumstances, when a decision maker desires to reject an opposing view, judges have been shown to use whatever negative information is available to say no. Selection interviewers when presented with a large number of positive cues and very few negative ones have been shown to attend to the negative information systematically and to use it to reject applicants even though the positive information is far more potent. Miller and Rowe (1967), for example, found that when subjects were required to make assessment decisions, there was a significant tendency to be influenced by negative rather than positive adjectives used to describe a candidate. Other corroborative evidence is available from studies of personal perception among those who make investment decisions, among gamblers, and others (Kanouse & Hansen, 1972). When decision makers favor a position, the bias has been shown to operate towards the selection of favorable information as well (e.g., Morlock, 1967).

It should be noted that this bias does not necessarily suggest that decision makers truncate their search for information having once obtained data which can be used to support a desired position or oppose an undesired one. The apparent tendency is to selectively seek out information which bolsters one's position and avoid unsupportive information in either acquisition or processing, but not necessarily to avoid searching. In fact, a number of laboratory studies have demonstrated an interesting propensity among decision makers to desire more information than can be effectively used (Chervany & Dickson, 1974). The paradox is that decision makers appear to seek more information than required, even to the point of inducing overload. While the overload may actually impair performance, the additional information has been shown to increase the decision maker's confidence (Chervany & Dickson, 1974; Oskamp, 1965). The net results may be that decision makers arrive at poorer decisions but are more confident in their choices.

Thus, it may be that decision makers will selectively seek out information which supports or opposes a position, acquire as much of this information as possible, and be increasingly confident in their decision although such decisions may be substantially biased. Meltsner (1976), in a book on policy analysts in bureaucratic settings, makes a relevant distinction between two categories of information sought by decision makers; that is, information used to make decisions and information used to support decisions. The latter category is indicative of the type sought by decision makers to justify a position. Meltsner describes at some length how it is not uncommon for decision makers to hire outside consulting

groups to do evaluation studies, not to be used for decision making purposes but solely to provide credible information which supports a decision which has already been made. This idea is directly related to the earlier discussion of information as a political resource and suggests the following proposition:

> *Proposition 11:* Results of evaluation research are more likely to be used if portions of the study can be selectively interpreted as either supportive of a desired position or unsupportive of opposing positions.

Self-Serving Biases. Aside from propensities to perceive and process information selectively, decision makers have also been shown to engage consistently in what has been labelled "self-serving" biases; that is, researchers have noted that individuals often view themselves more favorably than seems objectively warranted (e.g., Miller & Ross, 1975). Thus, for example, people have been shown to overpredict their gambling successes consistently (Blasovich, Ginsburg & Howe, 1975), production managers overpredict their performance (Kidd & Morgan, 1969), and corporate presidents overpredict their firm's success in meeting competition (Larwood & Whitaker, 1977). Aside from this future-oriented optimism, investigators have also shown that, in retrospect, members of successful groups see themselves as more responsible for their groups than do members of groups that have failed. Schlenker and Miller (1977), for example, found that members of groups that had failed assigned less responsibility for the group's poor performance to themselves than they typically assigned to any other member of the group.

In organizations, such pervasive "self-serving" biases have important ramifications for the acquisition and interpretation of information.

These biases become especially important when participants are linked to, or are responsible for, previous decisions to allocate resources. Under these conditions, decision makers may be committed to a particular program. Staw and his colleagues (e.g., Staw, 1974; Staw & Fox, 1977) have demonstrated how commitment to a course of action may result in escalating commitments of resources to failing projects. Staw and Ross (1978), for instance, demonstrated that policymakers who had allocated resources to projects which subsequently failed for reasons that they should have foreseen, were more likely to devote even more resources to the project in successive time periods than were decision makers who had sponsored successful projects or whose projects had failed for exogenous reasons beyond the decision maker's control. This example is similar to foreign policy failures such as the United States' involvement in Vietnam. Staw and Ross quote George Ball (1965), who in the early years of the Vietnam War stated that, "Once we suffer large casualties . . . our involvement will be so great that we cannot --without national humiliation-- stop short of achieving our complete objectives." These examples are disturbingly similar to certain educational programs which persist in spite of evaluation research which documents their failure to achieve stated objectives.

Two possible reasons for such events can be offered. First, the stated objectives of the program which are evaluated and found wanting are not representative of either the true objectives of the program (for example, when a program is established for political purposes and evaluated on educational attainments), or the evaluation is done on only a subset of the total program goals. Or, second, evaluation information attesting to the

program's inadequacies is ignored. It is in this latter instance that the effects of commitment described by Staw may be linked with self-serving biases.

We only speculate that the ability which individuals exhibit to be over-optimistic about future events predisposes them to commit themselves to courses of action. Further, when cohesive groups are involved, there may be an even greater impetus to choose risky options. Once committed, the selective perception biases described earlier can act to provide information supportive of the original decision. Halberstam (1974) provides numerous illustrations of how Robert McNamara and others engaged in this activitiy during the war in Vietnam. Gouran (1976) provides similar examples showing that Nixon and his aides persistently discounted the importance of evidence during the Watergate cover-up. Biases in selective perception allow the parties involved to choose information, as suggested in Proposition 11, which either supports the aims of the programs or rebuts opposition claims. Self-serving biases may also act to allow for the development of a false consensus or the illusion that their behaviors and choices are common and appropriate while opposing responses are uncommon and not widely supported. These self-serving biases also act to make the decision maker reluctant to abandon a chosen course of action. As long as information is available which can be interpreted as supportive of a given position, the bias on the part of the central actor will be to focus on this corroborative information. As Pfeffer and Salancik (1977) have shown, when ambiguity exists, particularistic criteria can be used by decision makers; that is, unless a widespread consensus exists,

it is possible for opposing decision makers to argue for their positions and selectively to use information to support their claims. Given that evaluation is often prescribed precisely because the situation is ambiguous with respect to a given program, it is obviously the case that the selective processing of information will occur. Under these circumstances, individuals are likely to be involved and committed to particular points of view and self-serving biases will be operating. This impact may be heightened since the results of evaluation research may also be ambiguous.

A final effect of self-serving biases may be seen should a program be declared a failure, either for political or substantive reasons. Under these circumstances, self-serving biases may allow involved participants cognitively to reconstruct their involvement and devalue their responsibility for the failure; selective perception may act to focus on exogenous events which explain lack of success in terms of others' actions and unforeseeable events. Thus, the operation of self-serving biases suggests the following propositions relevant to an understanding of the use of evaluation information.

Proposition 12: Responsibility for a program results in increased commitment on the part of decision makers and increases the likelihood that the results of evaluation research will be used when:

a. the evaluation information can be interpreted as favorable or supportive of the program.

b. the evaluation information is ambiguous and can be argued as not reflective of the overall scope of the program.

c. no strong consensus exists as to the specific goals of the program such that some evaluation information may be interpreted as favorable to some parts of the program.

Proposition 13. Results of evaluation which are unfavorable to a program are more likely to be used when:

a. there exist a set of actors with objectives contrary to those associated with the evaluated program.

b. resources are scarce, so that the competition for resources is greater.

Abstract Versus Concrete Information. Typically evaluations are conducted to assess whether a program meets its goals, is successful compared to other projects, or in order to provide for the feedback of information to improve performance in succeeding time periods. Underlying these reasons is the idea that evaluation information will allow decision makers to derive inferences about causal relationships (for example, between educational interventions and student achievement). An important postulate of this process holds that causal explanations will be influenced by consensus information, i.e., information concerning base rates and how a given project fares compared to the base rate. Attribution theory researchers (e.g., Nisbett, Borgida, Crandall & Reed, 1976) have drawn attention to the substantial amount of evidence which has failed to support the postulated effect of consensus information. For instance, Tversky and Kahneman (1973) have demonstrated this point by asking subjects to judge the probability that a target individual, described in a brief personality sketch, was an engineer, given:

(a) that he was drawn from a population of 70 engineers and 30 lawyers, or

(b) that he was drawn from a population of 70 lawyers and 30 engineers.

Knowledge of the population base rate for occupational categories had no effect whatever on judgments of the probability that the target individual

was an engineer. Instead, subjects relied exclusively on the personality sketch and based the decision on the degree to which the description fitted the stereotypic engineer or lawyer. Numerous other examples are available which demonstrate that decision makers, and even scientists familiar with statistics, habitually ignore information about the population and draw recklessly strong inferences about the underlying population from knowledge of a very small sample. Kahneman and Tversky (1973) refer to this as the "law of small numbers."

Observers offer some reasons why even expert decision makers ignore base rate or consensus information: Kahneman and Tversky, for example, speculate that people may not know how to combine base rate information and, therefore, ignore it. Nisbett, et al. (1976) propose that base rate information by its very nature, is abstract and pallid, and may simply lack the force to persuade subjects to attend to it and to use it. Outsiders, it seems, are unmoved by dry, statistical data dear to the hearts of scientists and evaluators. As Bertrand Russell observed, "Popular induction depends on the emotional interest of the instances, not upon their number" (1927, p. 269). Individuals respond to vivid, concrete information and ignore abstract data.

Nisbett, et al. (1976) offer several examples of this tendency. Consumers have long ignored medical advice to quit smoking and safety advice to fasten seat belts. Such appeals typically report numbers such as the probability of being a victim and are largely ignored. Yet when a highly visible and concrete incident occurs which people can focus on, results are often dramatic. For example, medical exhortation on the value of early

detection of breast tumor long went virtually unheeded. Yet, the waiting lists at cancer detection clinics became months long after television reported the mastectomies of Mrs. Rockefeller and Mrs. Ford. In an interesting experiment, Borgida and Nisbett (1977) provided prospective students with course evaluations based on ratings of students who had previously taken the courses. This information had little impact on course choices. In contrast, brief face-to-face comments about the courses had a substantial impact on course choices. Other studies have noted how vivid information which is non-diagnostic, that is unrelated to the decision to be made, may have an impact on the choice (Troutman & Shanteau, 1977).

Consider the ramifications of these biases for the use of evaluation information. The typical evaluation report is a document which relies heavily on the statistical analysis of data and variations from mean levels of performance. The essence of such a report is on base rates and variations from the mean. Complaints by consumers of such reports that the information is "not helpful," is "too dry," "relies too much on statistical analysis," or "doesn't get at the real problem" may, in fact by symptomatic of decision makers' inability to use abstract information. On the other hand, users of evaluation information often focus on a single, concrete, often dramatic, example even though the chosen example may not be representative of the larger picture. Patton (1978), in his discussion of the meanings of evaluation data, calls for evaluation reports which represent something meaningful to the identified information users, including efforts to reduce the mysticism of scientific jargon and to increase the face validity of measures. Clearly, concrete and vivid examples which are

accurate representations of the underlying results are likely to be accepted and remembered by decision makers more easily than compilations of statistics. Meltsner (1976, p. 234), reports the advice of a chief federal analyst that when writing two-page summaries of reports, it is important to "sprinkle them with juicy punch lines that will catch the readers' interest." Such pragmatic advice reflects the fact that not only are decision makers busy enough not to want to read reports, but they are also more likely to remember, and therefore more likely to use, vivid information. Another analyst reported that half his time was spent as a "rewrite man" trying to translate statistical material into a form which would be meaningful to the President and White House staff and agency heads. These observations underscore the bias people have toward concrete information and suggest the following proposition:

Proposition 14: Results of evaluation research are more likely to be used when vivid, concrete illustrations of the conclusions are available.

SUMMARY AND CONCLUSIONS

Our treatment of the utilization or non-utilization of evaluation information by organizational decision makers began with a simplified model of decision making whose purpose was to highlight the importance and potential impacts of information in the decision process. We then argued that, in organizational settings, it may be that rather than the decision making process proceeding from a problem to alternatives to a choice which optimizes, organizational decision makers have strong preferences for certain outcomes and act, in their information search and

processing, in ways calculated to maximize the attainment of desired ends. This view recognizes that information is only one commodity which may help or hinder goal attainment. This view also recognizes the fact that some choices are unacceptable to certain decision makers, regardless of the net benefit to the larger collective. Knowledge does not necessarily equate with action.

Given the political process through which goals and objectives are negotiated among groups of organizational participants (e.g., Pfeffer & Salancik, 1978), universal agreement on any allocation of resources is unlikely. This lack of consensus makes the process of organizational decision making a political one, often characterized by conflict and disagreement. In order to achieve a semblance of rationality, if only to satisfy constituencies outside the organization, we argued that procedures were established which give the appearance of comprehensive rationality, but, in fact, may be more symbolic than real. Within the bounds of this "procedural rationality" we argued that individual decision makers were "contextually rational," that is, attempted to maximize goal attainment given a set of situational organizational and individual constraints. Thus, it may be that the requirement for evaluation is a manifestation of the need for procedural rationality in public management while the actual use of evaluation information is subject to the contextual rationality of relevant decision makers. The fact that some evaluations are conducted as pro forma arrangements with funding agencies to insure compliance with regulations, but not intended for use in decision making, can be interpreted as an example of this procedural rationality. The

fact that other evaluations are conducted for support of previously made decisions may be an example of the contextual rationality of decision makers.

Since the decision-making process as illustrated in Figure 1 is an interactive one, and since the argument is that much of the information manipulation stems from the preferred set of outcomes, it is important to consider how these preferences are developed as well as how information is used. We proposed that two primary sets of constraints were relevant. First, in organizational settings, decision makers are seldom indifferent about outcomes. Rather, goals are assigned, for example, profit or cost margins, and control systems established to monitor and sanction responsible individuals. Power, or the ability to induce other groups or individuals to behave in prescribed ways, becomes an important consideration for goal attainment. The effect of these variables on decision makers is to make both salient and desirable a limited set of outcomes. These constraints, when coupled with potential loss of personal rewards such as status, promotion, social approval, and money, act to commit decision makers to certain outcomes.

Once committed, we argued that decision makers were then potentially subject to biases in both the acquisition and processing of information for use in decision making. Evidence was cited which demonstrated that decision makers were biased in their search for information, preferring accessible information which supported their preferences rather than contrary information, even if such information was of higher quality. Further, evidence was also available which documented how commitment to

certain desired outcomes was associated with the distortion of information in organizational communication. Hence, it may also be that the information available to unbiased decision makers may, if it has been transmitted through an organizational hierarchy, already contain inaccuracies or distortions.

The information processing of decision makers was also considered as a potential source of non-utilization of evaluation information. In pursuing desired outcomes, decision makers were often shown to perceive and interpret information selectively. It has also been shown that human information processors do not deal well with dry, statistical data, but prefer more vivid, concrete examples, even though such information may be inaccurate or misleading. These biases may be important since evaluation information is typically quantitative and statistical. It was argued that the combination of decision makers' selective perceptions of supportive information and general preference for vivid examples, biases them away from the use of evaluation information unless such information is supportive.

The joint effects of the situational and individual constraints on information use by decision makers is outlined in Figure 2. Context variables such as incentive systems, group norms, and organizational structure may act to affect the information which is available to a decision maker. Context variables, as well as the manner in which information is processed cognitively, may also act to affect individual preferences for certain types of information. In turn, these variables may

determine how and what information is used by decision makers.

- - - - - - - - - - -

Insert Figure 2 here

- - - - - - - - - - -

When evaluation research is considered from the perspective developed in this paper, and subject to the constraints presented in Figure 2, several observations about utilization of evaluation information are noteworthy. First, evaluation research, regardless of the rigor with which the study was conducted, is not likely to be regarded by decision makers as objective, nonpartisan information. Rather, such information will likely be viewed as useful to some interested parties, threatening to some, and irrelevant to others. The utilization of such information in any decision making will probably reflect not any objective measure of quality of the research, but a number of factors independent of the evaluation study such as the degree of consensus or conflict among those involved in the decision process, the relative power of the participants, pressures on the primary decision makers, availability of other information, etc. In some cases, individual characteristics of the decision maker may also determine the utilization/non-utilization of evaluation results. When studies are undertaken, not to provide information for decision, but as a means of increasing confidence in a position or for symbolic reasons, it is unlikely that any direct impact of the research will be observable. This does not imply that such information is not useful, only that its function is not directly related to decision making.

Finally, the propositions developed in this paper are clearly tentative and somewhat simplistic and only suggest possible hypotheses which

might be tested empirically. Obviously, there are a large number of influences on the use of evaluation research which have been omitted here. Therefore, what is proposed in this paper is not a well-articulated theory of utilization of evaluation in decision making, but some tentative propositions based on previous research on organizational decision making and information use.

Future Research

Based on the empirical and theoretical evidence reviewed here, several tentative recommendations appear warranted. First, as suggested by David (1978), efforts to improve the quality of data are not likely to affect local use of evaluation. Instead, local evaluators might, as suggested in Figure 2, be attentive to understanding the goals and constraints operating on local decision makers. Rather than presuming that evaluation data are neutral and decision makers are rational, attempts might be made to present data in ways in which decision makers are likely to feel least threatened. These might include strategies to reduce commitments to competing goals, to increase trust by receivers, and the targetting of data to specific goals.

Actions such as these may improve the utilization of evaluation information by decision makers. One may question, however, whether this effort is desirable. As David (1978) discovered, one of the primary functions of local evaluation units is to meet Federal reporting requirements, not to serve as a guide for program improvement. Other sources of information may be more useful in improving local programs. Perhaps

local evaluation units should be serving more as a data collection and evaluation center for various interest groups as well as being involved with assessing student achievements; i.e., more responsive in terms of the provision of information than with evaluation per se. Certainly the evidence reviewed here would suggest that there are a plethora of "good" reasons why interested decision makers might not accept information from a local evaluation agency. If these evaluation units are to have an effect on decision making and program revision, more attention needs to be paid to the existing constraints and biases on interested participants.

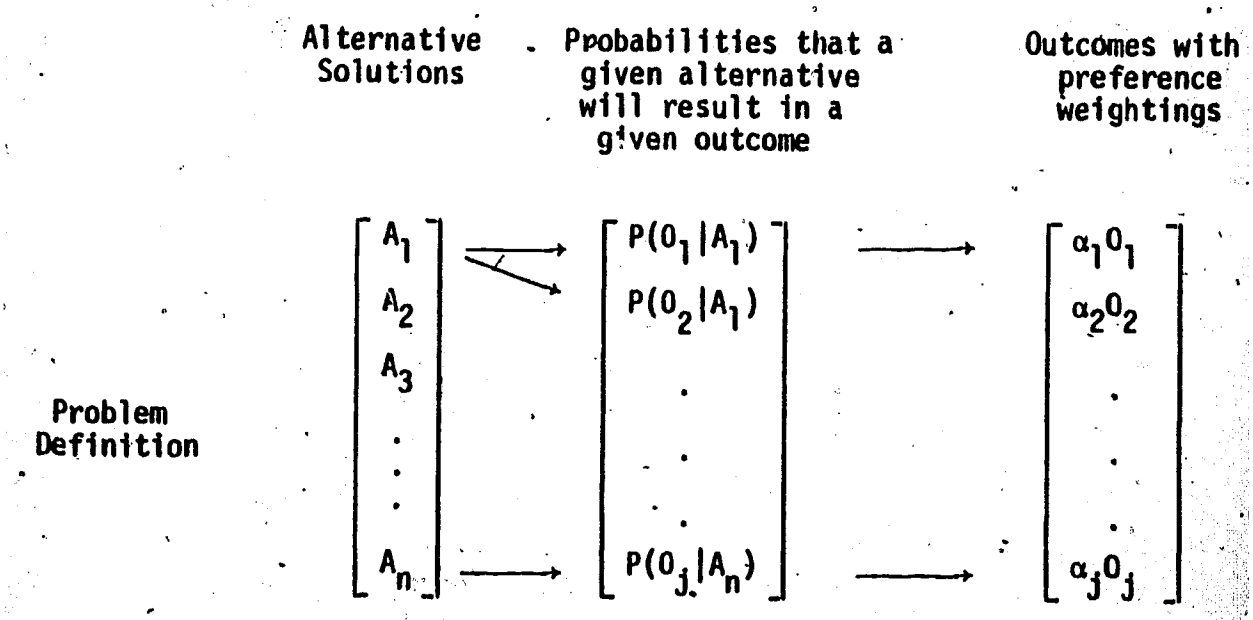

FIGURE 1

SIMPLIFIED MODEL OF THE DECISION MAKING PROCESS
(Campbell, 1971)

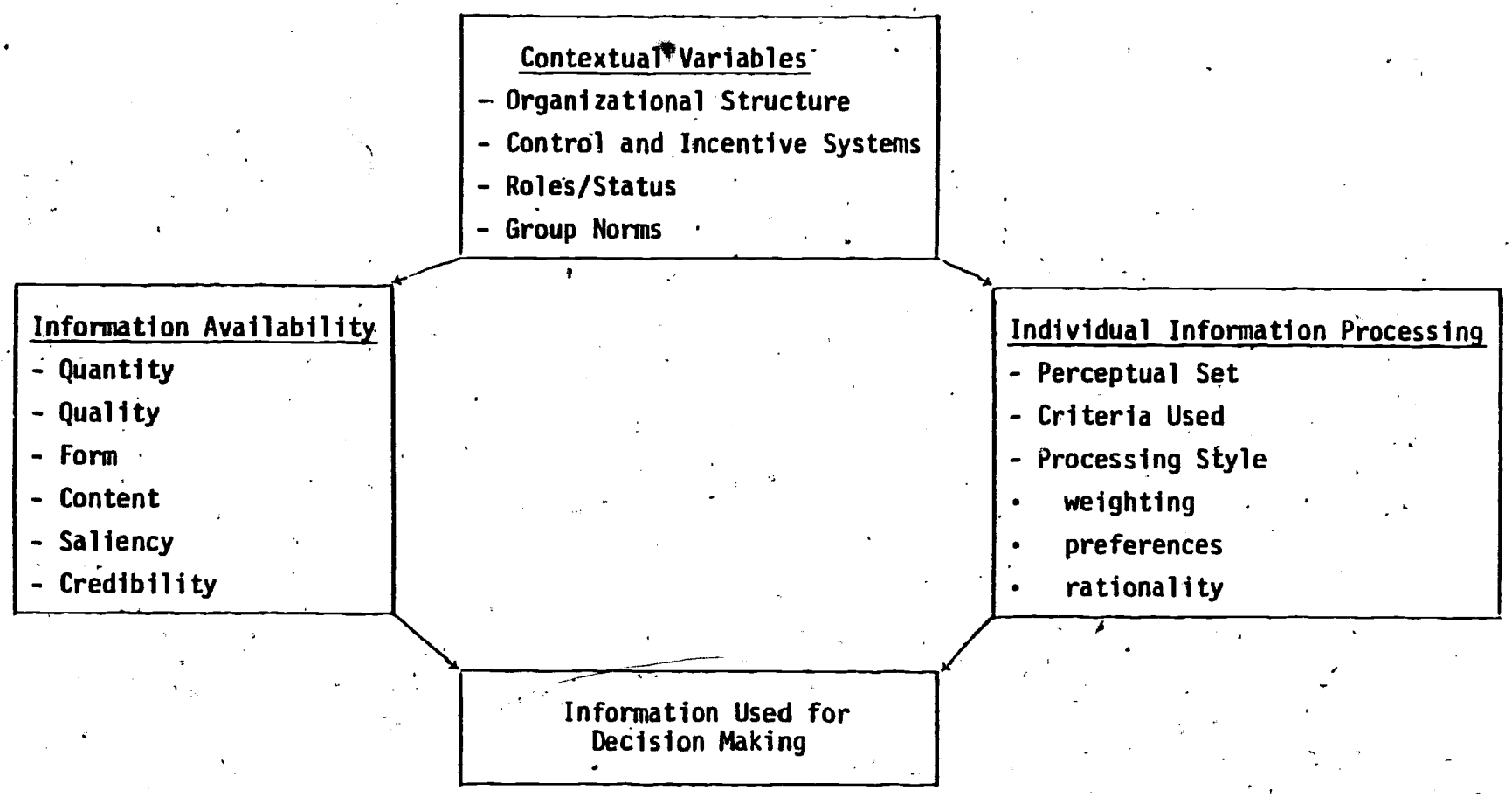

FIGURE 2

CONTEXTUAL AND INDIVIDUAL VARIABLES AFFECTING THE USE OF INFORMATION BY ORGANIZATIONAL DECISION MAKERS

REFERENCES

Alkin, M. Evaluation: Who needs it? who cares? *Studies in Educational Evaluation*, 1975, 1, 201-211.

Allison, G. *Essence of decision*. Boston: Little-Brown, 1971.

Ball, G. Memo to Lyndon Johnson dated July, 1965. As reported in N. Sheehan (ed.), *Pentagon papers*, New York: Bantam, 1971.

Baum, J. and Youngblood, S. Impact of an organizational control policy on absenteeism, performance and satisfaction. *Journal of Applied Psychology*, 1975, 60, 688-694.

Beach, L. R., Mitchell, T. R., Deaton, M. D. and Prothero, J. Information relevance, content and source credibility in the revision of opinions. *Organizational Behavior and Human Performance*, 1978, 21, 1-16.

Bear, G. and Hodun, A. Implicational principles and the cognition of confirmatory, contradictory, incomplete and irrelevant information. *Journal of Personality and Social Psychology*, 1975, 32, 594-604.

Blasovich, J, Ginsburg, G. and Howe, R. Blackjack and the risky shift II: Monetary stakes. *Journal of Experimental Social Psychology*, 1975, 11, 224-232.

Blau, P. *Exchange and power in social life*. New York: Wiley, 1964.

Borgatta, E. Research problems in evaluation of health service demonstrations. *Milbank Memorial Fund Quarterly*, 1966, 44, Part II.

Borgida, E. and Nisbett, R. E. The differential impact of abstract vs. concrete information on decisions. *Journal of Applied Social Psychology*, 1977, 7, 258-271.

Buckhout, R. Eyewitness testimony. *Scientific American*, 1974, 231, 23-31.

Campbell, D. T. Systematic error on the part of human links in communication systems. *Information and Control*, 1958, 1, 334-369.

Campbell, J. P. Decision making, conflict resolution and the steady state. Unpublished manuscript. University of Minnesota, 1976.

Carter, R. Client's resistance to negative findings and the latent conservative function of evaluation studies. *American Sociologist*, 1971, 6, 118-124.

Chervany, N. and Dickson, G. An experimental evaluation of information overload in a production environment. *Management Science*, 1974, 20, 1335-1344.

Clausen, A. *How congressmen decide: A policy focus*. New York: St. Martin's Press, 1973.

Coleman, J. *Policy research in the social sciences*. Morristown, N. J.: General Learning Press, 1972.

Cohen, M., March, J. and Olsen, J. A garbage can model of organizational choice. *Administrative Science Quarterly*, 1972, 17, 1-25.

Connolly, T. Information processing and decision making in organizations. In B. Staw and G. Salancik (eds.), *New directions in organizational behavior*. Chicago: St. Clair, 1977, 205-234.

Cox, G. Managerial style: Implications for the utilization of program evaluation information. *Evaluation Quarterly*, 1977, 1, 499-507.

David, J. *Local uses of Title I evaluations*. Stanford Research Institute Report EPRC 21, July, 1978.

Davis, H. and Salasin, S. The utilization of evaluation. In E. Struening and M. Guttentag (eds.), *Handbook of evaluation research*. Vol. 1, Beverly Hills: Sage, 1975, 621-666.

Dawes, R. and Corrigan, B. Linear models in decision making. *Psychological Bulletin*, 1974, 81, 95-106.

Dewhirst, H. D. Influence of perceived information-sharing norms on communication channel utilization. *Academy of Management Journal*, 1971, 14, 305-315.

Erez, M. Feedback: A necessary condition for the goal setting-performance relationship. *Journal of Applied Psychology*, 1977, 62, 624-627.

Etzioni, A. Mixed scanning: A 'third' approach to decision-making. *Public Administration Review*, 1967, 27, 385-392.

Floden, R. and Weiner, S. Rationality to ritual: The multiple roles of evaluation in governmental process. *Policy Sciences*, 1978, 9, 9-18.

Gershuny, J. Policymaking rationality: A reformulation. *Policy Sciences*, 1978, 9, 295-316.

Gerstberger, P. and Allen, T. Criteria used by research and development engineers in the selection of an information source. *Journal of Applied Psychology*, 1968, 52, 272-279.

Giffin, K. The contribution of studies of source credibility to a theory of interpersonal trust in the communication process. *Psychological Bulletin*, 1967, 68, 104-120.

Goldstein, M., Marcus, A. and Rausch, N. The nonutilization of evaluation research. *Pacific Sociological Review*, 1978, 21, 21-44.

Gordon, G. and Morse, E. Evaluation research. *Annual Review of Sociology*, 1975, 2, 339-361.

Gouran, D. The Watergate cover-up: Its dynamics and its implications. *Communication Monographs*, 1976, 43, 176-186.

Halberstam, D. *The best and the brightest*. New York: Random House, 1972.

Harrell, A. The decision-making behavior of our force officers and the management control process. *Accounting Review*, 1977, 52, 833-841.

Hawkins, J., Roffman, R. and Osborne, P. Decision makers' judgments: The influence of role, evaluative criteria and information access. *Evaluation Quarterly*, 1978, 2, 435-454,

Hickson, D., Hinings, C., Lee, C., Schneck, R. and Pennings, J. A strategic contingencies' theory of intraorganizational power. *Administrative Sciences Quarterly*, 1971, 16, 216-229.

Janis, I. *Victims of groupthink*. Boston: Houghton-Mifflin, 1972.

Janis, I. and Mann, I. *Decision making: A psychological analysis of conflict, choice, and commitment*. New York: Free Press, 1977.

Janowitz, M. and Delany, W. The bureaucrat and the public: A study of information perspectives. *Administrative Science Quarterly*, 1957, 2, 141-142.

Johnson, R. J. Conflict avoidance through acceptable decisions. *Human Relations*, 1974, 27, 71-82.

Kanouse, D. W. and Hanson, L. R. Negativity in evaluations. In E. E. Jones, et al., *Attribution: Perceiving the causes of behavior*. Morristown, N. J.: General Learning Press, 1972, 47-62.

Kaufman, H. *Administrative feedback*. Washington, D. C.: Brookings, 1973.

Kerr, S. On the folly of rewarding A, while hoping for B. *Academy of Management Journal*, 1975, 18, 769-783.

Kidd, J. and Morgan, J. A predictive information system for management. *Operational Research Quarterly*, 1969, 20, 149-170.

Kilmann, R. and Mitroff, I. Qualitative versus quantitative analysis for management science: Different forms for different psychological types. *Interfaces*, 1976, 6, 17-27.

Larwood, L. and Whittaker, W. Managerial myopia: Self-serving biases in organizational planning. *Journal of Applied Psychology*, 1977, 62, 194-198.

Lathan, G. and Yukl, G. A review of research on the application of goal setting in organizations. *Academy of Management Journal*, 1975, 18, 824-845.

Levine, A. and Levine, M. The social context of evaluation research. *Evaluation Quarterly*, 1977, 1, 515-542.

Lindblom, C. E. The science of "muddling through." *Public Administration Review*, 1959, 19, 79-88.

Lowe, E. and Shaw, R. An analysis of managerial biasing: Evidence from a company's budgeting process. *Journal of Management Studies*, 1968, 5, 304-315.

MacCrimmon, K. R. Managerial decision-making. In J. W. McGuire (ed.) *Contemporary management: Issues and viewpoints*. Englewood Cliffs, N.J.: Prentice-Hall, 1974, 445-495.

March, J. G. Bounded rationality, ambiguity, and the engineering of choice. *Bell Journal of Economics*, 1978, 9, 587-608.

March, J. and Simon, H. *Organizations*. New York: Wiley, 1958.

McCleary, R. How parole officers use records. *Social Problems*, 1977, 24, 576-589.

Meltsner, A. J. *Policy analysts in the bureaucracy*. Berkeley: University of California Press, 1976.

Menzel, H. and Katz, E. Social relations and innovation in the medical profession. *Public Opinion Quarterly*, 1955, 19, 337-352.

Meyer, J. and Rowan, B. Institutionalized organizations: Formal structure as myth and ceremony. *American Journal of Sociology*, 1977, 83, 340-363.

Miller, G. A. The magical number seven plus or minus two: Some limits on our capacity for processing information. *Psychological Review*, 1956, 64, 81-97.

Miller, D. T. and Ross, M. Self-serving biases in the attribution of causality: Fact or fiction? *Psychological Bulletin*, 1975, 82, 213-225.

Miller, J. W. and Rowe, P. M. Influence of favorable and unfavorable information upon assessment decisions. *Journal of Applied Psychology*, 1967, 51, 432-435.

Mintzberg, H. *The nature of managerial work*. New York: Harper and Row, 1973.

Mohr, L. On organizational goals. *American Political Science Review*, 1973, 66, 470-481.

Morlock, H. The effect of outcome desirability on information required for decision. *Behavioral Science*, 1967, 12, 296-300.

Nisbitt, R. E., Borgida, E., Crandall, R. and Reed, H. Popular induction: Information is not necessarily informative. In J. S. Carroll and J. W. Payne (eds.), *Cognitions and social behavior*. Hillsdale, N. J.: Erlbaum, 1976, 113-133.

Nystedt, L. Judgments in quasi-clinical situations: Accuracy and process. Reports from the Psychological Laboratories #12, University of Stockholm, April, 1972

O'Reilly, C. and Roberts, K. Relationships among components of credibility and communication behaviors in work units. *Journal of Applied Psychology*, 1976, 61, 99-102.

O'Reilly, C. A. Superiors and peers as information sources, work group supportiveness, and individual decision making performance. *Journal of Applied Psychology*, 1977, 62, 632-635.

O'Reilly, C. A. Variations in decision maker use of information sources: The impact of quality and accessibility of information. Unpublished manuscript, University of California, Berkeley, February 1979.

O'Reilly, C. and Pondy, L. Organizational communication. In S. Kerr (ed.), *Organizational behavior*. Columbus, Ohio: Grid, 1979, in press.

Orlans, H. *Contracting for knowledge*. San Francisco: Jossey-Bass, 1973.

Oskamp, S. Overconfidence in case study judgments. *Journal of Consulting Psychology*, 1965, 29, 261-265.

Patton, M. W. *Utilization-focused evaluation*. Beverly Hills: Sage, 1978.

Perrow, C. *Organizational analysis: A sociological view*. Belmont, Calif.: Wadsworth, 1970.

Pettigrew, A. Information control as a power resource. *Sociology*, 1972, 6, 187-204.

Pfeffer, J. and Salancik, G. Administrator effectiveness: The effects of advocacy and information on achieving outcomes in an organizational context. *Human Relations*, 1977, 30, 641-656.

Pfeffer, J. and Salancik, G. Organizational decision making as a political process: The case of a university budget. *Administrative Science Quarterly*, 1974, 19, 135-151.

Pfeffer, J. and Salancik, G. *The external control of organizations: A resource dependence perspective*. New York: Harper and Row, 1978.

Plott, C. and Levine, M. A model of agency influence on committee decisions. *American Economic Review*, 1978, 68, 146-160.

Porat, A. and Haas, J. Information effects on decision making. *Behavioral Science*, 1969, 14, 98-104.

Ross, L. The intuitive psychologist and his shortcomings: Distortions in the attribution process. In L. Berkowitz (ed.), *Advances in experimental social psychology*, New York: Mcadmic Press, 1977, 173-220.

Salancik, G. R. Commitment and the control of organizational behavior and belief. In B. M. Staw and G. R. Salancik (eds.), *New Directions in Organizational Behavior*. Chicago: St. Clair, 1977, 1-54.

Schlenker, B. R. and Miller, R. S. Egocentrism in groups: Self-serving biases or logical information processing? *Journal of Personality and Social Psychology*, 1977, 35, 755-764.

Schroder, H., Driver, M. and Streufert, S. *Human information processing*. New York: Holt, Rinehart and Winston, 1967.

Simon, H. On the concept of organizational goal. *Administrative Science Quarterly*, 1964, 9, 1-22.

Simon, H. Rationality as a process and as product of thought. *American Economic Review*, 1978, 68, 1-16.

Slovic, P., Fischhoff, and Lichtenstein, S. Behavioral decision theory. In M. Rozenzweig and L. Porter (eds.), *Annual Review of Psychology*. Palo Alto: Annual Review, Inc., Vol. #28, 1977,1-39.

Slovic, P. and Lichtenstein, S. Comparison of Bayesian and regression approaches to the study of information processing in judgment. *Organizational Behavior and Human Performance*, 1971, 6, 649-744.

Staw, B. M. Attitudinal and behavioral consequences of changing a major organizational reward: A natural field experiment. *Journal of Personality and Social Psychology*, 1974, 30, 742-751.

Staw, B. M. and Fox, F. V. Escalation: Some determinants of commitment to a previously chosen course of action. *Human Relations*, 1977, 30, 431-450.

Staw, B. M. and Ross, J. Commitment to a policy decision: A multi-theoretical perspective. *Administrative Science Quarterly*, 1978, 23, 40-64.

Streufert, S. C. Effects of information relevance on decision making in complex environments. *Memory and Cognition*, 1973, 1, 224-228.

Taylor, R. and Dunnette, M. Relative contribution of decision-maker attributes to decision processes. *Organizational Behavior and Human Performance*, 1974, 12, 286-298.

Thompson, J. D. *Organizations in action.* New York: McGraw-Hill, 1967.

Troutman, C. M. and Shanteau, J. Inferences based on nondiagnostic information. *Organizational Behavior and Human Performance*, 1977, 19, 43-55.

Tversky, A. and Kahneman, D. Judgment under uncertainty: Heuristics and biases. *Science*, 1974, 185, 1124-1131.

Ward, D. and Kassebaum, G. On biting the hand that feeds. Some implications of sociological evaluations of correctional effectiveness. In C. Weiss (ed.), *Evaluating action programs: Readings in social action Research*. Boston: Allyn & Bacon, 1972, 300-310.

Weick, K. Enactment processes in organizations. In B. Staw and G. Salancik (eds.), *New directions in organizational behavior*. Chicago: St. Clair, 1977, 267-300.

Wildavsky, A. *The politics of the budgetary process.* Boston: Little-Brown, 1974.

Willensky, H. *Organizational intelligence.* New York: Free Press, 1967.

Winkler, R. and Murphy, A. Experiments in the laboratory and the real world. *Organizational Behavior and Human Performance,* 1973, 10, 252-270.

Witte, E. Field research on complex decision-making processes--the phase theorem. *International Studies of Management and Organization,* 1972, 156-182.

Wright, P. The harassed decision maker: Time pressures, distractions, and the use of evidence. *Journal of Applied Psychology,* 1974, 59, 555-561.