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AUTHOR Cousins, J. Bradley
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ABSTRACT

The ways in which principals use performance appraisal data for personal professional development, the characteristics of those who use such information, and the features of performance appraisal systems and decision contexts that are predictors of appraisal use were studied through a series of interviews at four sites (two with high appraisal users and two with low appraisal users). In all, 37 administrators, vice principals, and parents were interviewed. In general, the use of performance appraisal data was low to moderate. The positive nature of communication of appraisal results and the congruence of these results with principals' expectations had moderate positive influences on the use of data in decision making. Also important were decision context variables corresponding to principals' experiences and knowledge, and the significance of the decision. Motivation for professional growth and attitude toward the appraisal were the most influential factors on learning about performance improvement. Appraisal systems for principals who are expert problem solvers might concentrate on improving aspects of the appraisal itself. Systems for moderately effective principals might be better concerned with decision setting variables that negatively influence use. (SLD)

Performance Improvement as Problem Solving: Principals' Use of Information Concerning Their Own Performance

J. Bradley Cousins

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> ... it's difficult ... being in something for a number of years, to make drastic changes. Not that anything drastic is needed.... I guess from past experience very little is going to change because of it [the appraisal]. (Principal, Site LU1)
>
> But if I have really thought about my strengths and weaknesses and the strengths and weaknesses within the school for that year, then we [principal and appraiser] can get into a more meaningful discussion that I think will lead to some definite plans for future [action].... I tended to direct it [appraisal process] through the kinds of paperwork I got ready and the information I wrote down and gave to him [appraiser] to read. I believed in the process. It was basically my process. (Principal, Site HU2)

These remarks from two different principals were excerpted from transcripts of interviews regarding perceptions about appraisal practices concerning their own performance. Together they illustrate a considerable range in such views. They also beg the questions: (1) to what extent do principals use information concerning their own performance? and (2) how do (a) their perceptions, beliefs, attitudes and other "internal processes", (b) characteristics of the settings in which they work, and (c) features of the appraisal systems influence their use of such data for the purpose of performance improvement?

In business and industry, where performance outcomes are relatively tangible (e.g., monetary profit margins, sales figures) and professionals usually aspire to vertical career progression, there is a need to rank or compare individuals according to productivity for purposes of promotion, remuneration compensation, and the like. However, in educational organizations (among some other publicly funded agencies) there is far less emphasis on vertical career progression. Consequently, appraisal systems are more likely to be geared to the assessment of current work rather than the potential for different kinds of work in the future. Decisions about matters such as pay

compensation are generally based on considerations other than performance: educational attainment and seniority are examples of such considerations (Ondrack & Oliver, in press). Nonetheless, the design, development, and implementation of performance appraisal systems in education has been stimulated in recent years largely by public demands for accountability. These systems are most often used by administrators to ensure that educators are not operating below minimum levels of competence and for the purposes of making administrative decisions (e.g., selection, tenure, promotion). But they also hold considerable promise for improving performance where improvement is defined by movement or professional growth from current performance levels toward organizational (government, system, school) goals or conceptions of effective practice. When performance appraisal is used for the purpose of professional development, the primary "users" of the data become the individuals being evaluated.

Recent research in education (e.g., Lawton, Hickox, Leithwood & Musella, 1986) suggests that although considerable time and effort are being devoted to personnel evaluation, its impact has been distressingly limited; this is so particularly when impact is defined by improved performance. These findings underscore the need to study the use for performance improvement of appraisal data by educators. In order to improve the benefits of performance appraisal systems such research should identify factors explaining the use of appraisal data.

The present paper, which is based on data from a larger study (Cousins, forthcoming), addresses such questions as they apply to school principals. Principals were selected for study for two reasons. First, much of the data about knowledge utilization in general, and evaluation utilization in particular, is associated with senior managerial personnel in various organizations. However, managers, such as principals are typically responsible for directing most of the core, technical activities within their organizations. Very little is presently known about factors influencing the use of information in relation to such technical activities. Second, the actions, behaviors and practices of principals have been shown to explain a substantial proportion of the

observed variation in school effectiveness (e.g., Leithwood & Montgomery, 1982; 1986). As yet, however, relatively little is known about why they act as they do. Systematic study of their internal mental states and processes is a promising way to improve such understanding.

To what extent and in what ways do principals use performance appraisal data for the purpose of personal professional development? What characteristics differentiate principals that are high users of such information from those who are not? What features of performance appraisal systems and decision contexts predict their use of appraisal data? These questions provide the central focus for the present paper.

Framework

The framework used for this study (see Figure 1) has been described in detail elsewhere (Cousins & Leithwood, 1986; Cousins, forthcoming). This framework is grounded in a considerable body of empirical research about the utilization of evaluation data. Evaluation is generally defined in broad terms that incorporate a wide range of purposes as well as objects of evaluation. Because performance appraisal can be viewed as a special case of evaluation, it follows that knowledge generated about the use of evaluation data has considerable relevance to questions about the use of performance appraisal data.

Conventional conceptions of knowledge utilization (e.g., Alkin, Daillak & White, 1979; Weiss, 1981) relied on a continuum that ranged from instrumental uses (support for decisionmakers' decisions) to uses for conceptual development (the contribution of knowledge to user learning or educational outcomes). As both Alkin et al. and Weiss observed, traditional research on use clearly favored the instrumental conception and this severely restricted the range of observed uses of knowledge. Patton and his associates (Patton et al., 1977) were among the first to recognize the inadequacy of conceptualizing use in strictly instrumental terms. This recognition has stimulated research on use considerably.

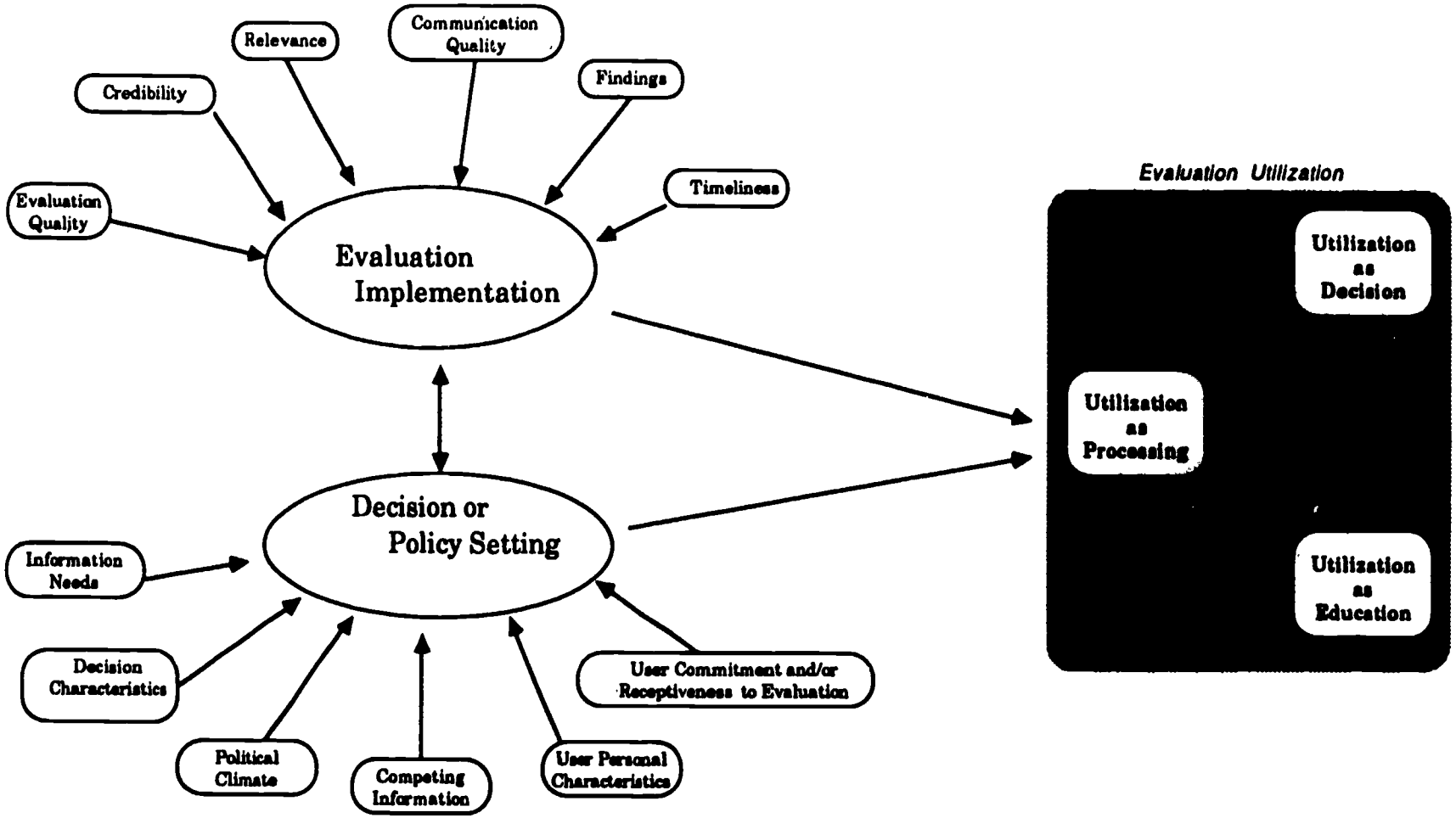

Figure 1

Evaluation Utilization Conceptual Framework

More recently, an even broader conception of the utilization process (e.g., Cousins & Leithwood, 1986; Huberman. 1987; Kennedy, 1983; 1984), has been suggested -- one that defines use as information processing by the user. According to this conception the mere psychological processing of evaluation data, without necessarily informing decisions, dictating actions or changing thought processes, constitutes use.

The framework for this study incorporated all three types of use in its definition of the dependent variable. Evaluation data could be used to support discrete decisions (e.g., staffing, program management. program funding) or to educate decisionmakers about aspects of the object of evaluation (e.g., nature of program impact. components of programs explaining outcomes, etc.). Prior to either type of use, however. data must first be cognitively processed by decisionmakers (e.g., given serious consideration) which might also result in it being discarded from further attention.

Factors in the framework are defined as the circumstances or conditions that influence the extent to which evaluation data are used. The array of factors appearing in Figure 1 was derived from an extensive review of the empirical literature (65 studies) concerning the utilization of evaluation data. The studies examined the influences of factors that could be categorized according to one of two major hypothetical dimensions: characteristics of the *evaluation implementation* and characteristics of the *decision or policy setting*. These dimensions are correlated and interact with one another to produce effects (inhibiting, stimulating) on use. Six factors are encompassed by each of the two hypothetical dimensions. Those associated with the evaluation implementation are:

- *Evaluation quality*. Characteristics of the evaluation process including the sophistication of methods. rigor. and type of evaluation model. An evaluation that attempts to link program components to program outcomes. for example, is considered to be more sophisticated than one that merely describes outcomes.

- *Credibility*. Credibility of the evaluator and/or the evaluation process defined by believability, objectivity, appropriateness of evaluative criteria, and the like. A well-seasoned evaluator with a proven track record is attributed higher levels of credibility than a novice, for example.
- *Relevance*. The relevance of the evaluation to the information needs of decisionmakers according to: (1) the purposes of the evaluation and (2) the organizational location of the evaluator. Do the purposes of the evaluation meet the explicit and implicit needs of the audience(s) for whom the evaluation is conducted? Do evaluators working within the organization tend to produce evaluations that are more relevant?
- *Communication quality*. Quality and/or clarity of the dissemination of results to the evaluation audience(s) according to characteristics such as the style of the report and the propensity of the evaluator to advocate its results. For example, is the report presented orally and/or in written form and does the evaluator follow-up the presentation with clarification?
- *Findings*. The nature of the evaluation findings was defined by their positive or negative valence (e.g., judgments about whether the program is meeting its objectives), their consistency with the expectations of the evaluation audience(s), their value for decisionmaking, and the like. To what extent are findings predictable to decisionmakers?
- *Timeliness*. The point in time at which evaluation results are disseminated to decisionmakers relative to impending decision(s). Are the results presented too late to have an impact on the decision process?

Factors associated with the decision or policy setting are:

- *Information needs*. The type of information sought, number of evaluation audience(s) with differing information needs, time pressure and perceived need for evaluation. To what extent are explicit and implicit needs for evaluation information shared among different audiences?
- *Decision characteristics*: Characteristics of decisions associated with the evaluation problem including decision impact area, type of decision, program novelty and significance of the decision, among other examples. Decisions regarding politically sensitive or controversial issues are of relatively high significance.

- *Political climate*. Characteristics associated with political climate such as political orientation of commissioners of the evaluation, dependence of decisionmakers on external sponsors, inter- and intra-organizational rivalries, budget fights and power struggles. Is it politically prudent for decisionmakers to decide in a manner that is consistent with the evaluation results?
- *Competing information*. Information from sources beyond the evaluation relevant to the research problem and competing with evaluation data to inform decisions. Personal experience, informal observations made by decisionmakers and working knowledge are examples.
- *User personal characteristics*. Decisionmakers' organizational role, information-processing style, organizational experience, and social characteristics, among other variables. Decisionmakers who carefully plan for the future and take preventative actions are distinguished from "crisis managers" who operate on more of a "reactive" basis.
- *User commitment and/or receptiveness to evaluation*. Extent to which decisionmakers are open-minded about decisions and the evaluation findings. Are the decisionmakers dogmatic about the decision? Are they predisposed to attitudes about the utility of evaluation?

The framework was used to help better understand principals' use of performance appraisal data defined quite broadly. All systematic attempts by appraisers to gather, analyze and interpret data relevant to principals' performance and to provide principals with the results of such assessments were included in the definition. This broad definition incorporated such supervisory practices as informal observations and visitations throughout the school year, requests for (collection of) information concerning the appraisee, responses to principals' requests for advice, communication of results or "feedback" to principals, and the like.

According to the framework, the dependent construct of use was defined by principals basing discrete decisions (e.g., staffing, instructional leadership, student placement) on appraisal data or learning about their performance from the information communicated to them. However, prior to the occurrence of either type of use the data in the form of informal verbal feedback, written memos, post-appraisal conferences or other modes of communication were cognitively processed by principals.

Method

A series of interviews were conducted in a single school system at each of four sites: two schools where principals had previously been designated "high appraisal data users" and two schools where principals had been designated "low" on this dimension.[1] The designations were made by a senior administrator in the system. At each site, the principal, the senior administrator responsible for the appraisal, the vice principal (if applicable), some teachers (selected within sites both randomly and in consultation with the principal) and parents with some knowledge of the principal's behavior were interviewed. Interview questions were refined after each of four rounds of data collection. After the first three rounds, repeat interviews with principals were conducted. Finally, documents relevant to the appraisals (e.g., manager's letters, summative letters of appraisal) were examined as an additional source of data. A total of 37 interviews were conducted and each was trascibed verbatim from audio tape. The transcripts and archival data were then content analyzed and the results were summarized both within and across cases.[2]

Results

The extent to which performance appraisal information was used by principals was typically low, or at best, moderate (see Table 1). To a modest extent, the appraisal results appeared to be taken seriously, or to have been cognitively processed by principals. Though the tendency to consider (process) appraisal information did not differ across sites, it appeared that some appraisal-based decisionmaking was more prevalent in sites identified prior to data collection as high use sites. In most cases, this was evident in decisions to continue with current administrative directions. One

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[1]For the purposes of the present discussion the codes "HU" and "LU" are used to identify high and low use sites, respectively.

[2]Further details regarding the methods used in this study for data collection, processing and analysis are provided by Cousins (forthcoming). For the purposes of the present discussion, suffice it to say that the methods and procedures developed by Miles and Huberman (1984) were followed reasonably closely, by that is meant, the framework described above significantly guided the collection, coding (content analysis) and display of data.

Table 1

Types and Extent of Use Across Sites

TYPE OF USE	Low Use		High Use	
	Site LU1	Site LU2	Site HU1	Site HU2
Processing	mod-high	mod	mod-low	mod-high
Education	low	low	mod-low	mod-low
Decision	mod-low	mod-low	mod	mod-high

principal (Site HU2) commented that "I communicated all those intents to [the superintendent] and he agreed with me that 'Yes those were worthwhile activities and yes that would be a good thing to pursue'". Some principals, however, made decisions to change their directions based upon appraisal information. A decision regarding career planning (Site HU2) was an example. Based on feedback from her superintendent the principal decided to pursue certification requirements for supervisory officer positions.

Very little appraisal-based learning concerning principal performance patterns was reported. One principal, for example, in a low-use site (LU1) paid attention to and fully understood what was communicated to him but subsequently based decisions on other information without learning much, if anything, about improving his performance.

> I think it [appraisal process] was a confirmation of what he already thought and felt all along. All we did was confirm each other's impressions in that experience.... There are not really many surprises. (Superintendent, Site LU1).

Analysis of observed patterns of use revealed that several factors had substantial influences. Many of these were associated with decision or policy setting dimension variables that characterized the principals themselves. In particular, principals' experience and working knowledge and motivation to grow professionally were antecedent variables that were found to be important predictors of use. They, in turn, influenced intervening variables such as principals' needs for information, attitudes toward the appraisal process, willingness to share information with appraisers and expectations regarding appraisal data. Other variables associated with the appraisal process, such as its rigor and aspects of the communication process, were also found to affect use. These variables differentially affected various types of use (processing, education, decision): such variations in influence are discussed below.

Processing Appraisal Data

As shown in Figure 2, principals' experiences and working knowledge were found to have moderate and negative effects on their propensity to give serious consideration to appraisal data. For the most part, this influence was indirect and became manifest

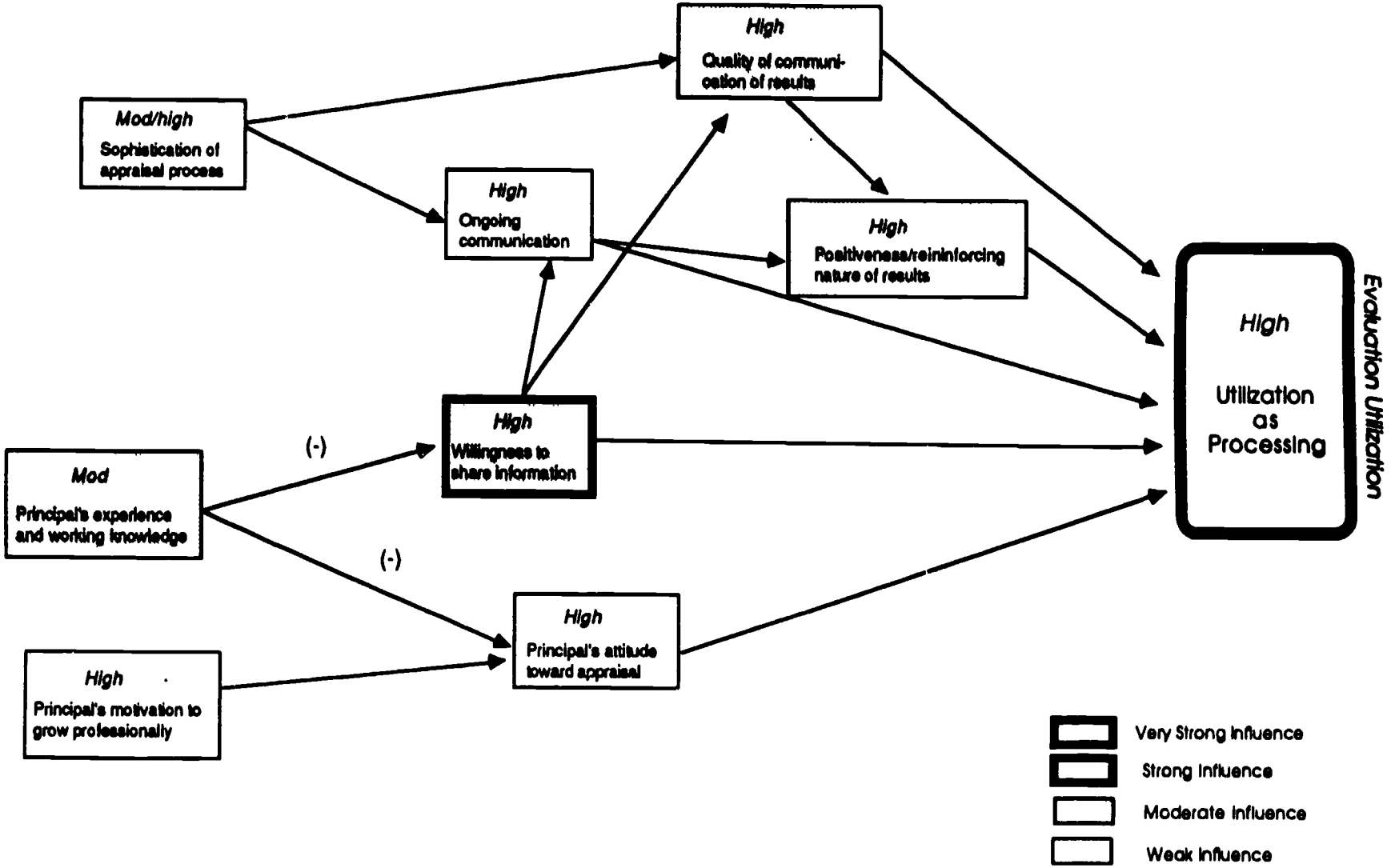

Figure 2

Data-based Model of Enhanced Processing of Appraisal Data

through other intervening factors. One such factor was principals' willingness to share information with appraisers. Principals with considerable experience in the role were less likely (although not exclusively) to be so inclined. They tended to minimize keeping their appraisers informed of issues and events in the school that had relevance to their own performance. The result was depressed data processing by the principals by (1) reducing the opportunities for ongoing communication (and ultimately the immediacy of evaluative feedback) between appraiser and appraisee and (2) impairing the meaningfulness of communication between appraisers and principals when evaluative information was given. Principals' willingness to share information with the appraiser turned out to be a fairly strong predictor of the extent to which principals paid attention to appraisal data. Following, is an example of criteria used by a principal to decide when to approach his appraiser (this principal was not particularly motivated to share information concerning his own performance):

> ... if I think the parent is going to call him [superintendent] am I going to call him first? I suppose the answer is 'yes'. I think he should know if he's going to be called. If I think the parent is not going to call him the answer is 'no' because it depends on the degree of unhappiness. (Principal, Site LU1)

Clearly this principal's motives for approaching the superintendent were based on protection (for himself and for his superintendent). His insistence on maintaining an autonomous existence in his role effectively precluded his willingness to share information with [illegible] over virtually all issues with the exception of those that became visible to the appraiser for various reasons.

Principals' motivation to improve their performance was found to combine with experience to influence processing of appraisal data. Both factors acted indirectly on such mental processing through their influence on principals' attitudes toward appraisal. However, there was a negative relationship (correlation) between experience and motivation. Motivated principals who were relatively inexperienced in the role were found to have more favorable attitudes toward the appraisal. They were inclined to participate in the appraisal process by ensuring that the appraiser had all available

information relevant to their performance. The more common scenario was one where experienced principals had developed poor attitudes toward the process and were not typically motivated to seek information relevant to improving their performance. A principal's (Site LU2) comments regarding the purposes of the appraisal system show that he did not include personal professional development among the expected benefits of the process.

> One purpose would be to let him [superintendent] get some insight and understanding of what's happening at the school ... it gives him an opportunity to give some praise for work that's well done ... to make sure we are communicating.

The superintendent' understood the principal's narrow view and expectations of the appraisal process. In the following excerpt he compared two of his principals, the other previously designated as a high user of appraisal data.

> He'd really go through it [appraisal process] as an expectation because he has to go through it. I would think that that may be a greater tendency with [him] than say with [the principal at Site HU2]. I would see [her] going through it because she really feels that it would be worthwhile for her own growth.

Mentioned above were positive influences on processing of appraisal data attributable to opportunities for ongoing communication throughout the year and meaningful, quality, end-of-year communication sessions. Both of these factors were attributable to the relative sophistication of the appraisal process and they both had direct and indirect effects on the seriousness with which appraisal data were considered. As shown in Figure 2, another aspect of communication that was influential was its positiveness. Appraisal feedback presented in a positive, constructive and reinforcing manner, rather than being highly critical and negative was more likely to be taken seriously.

Learning from Appraisal Data

Factors associated with the decision setting and in particular, with characteristics of principals, were found to have quite powerful effects on the extent to which appraisal-based learning took place (see Figure 3). Principals' motivation for professional growth

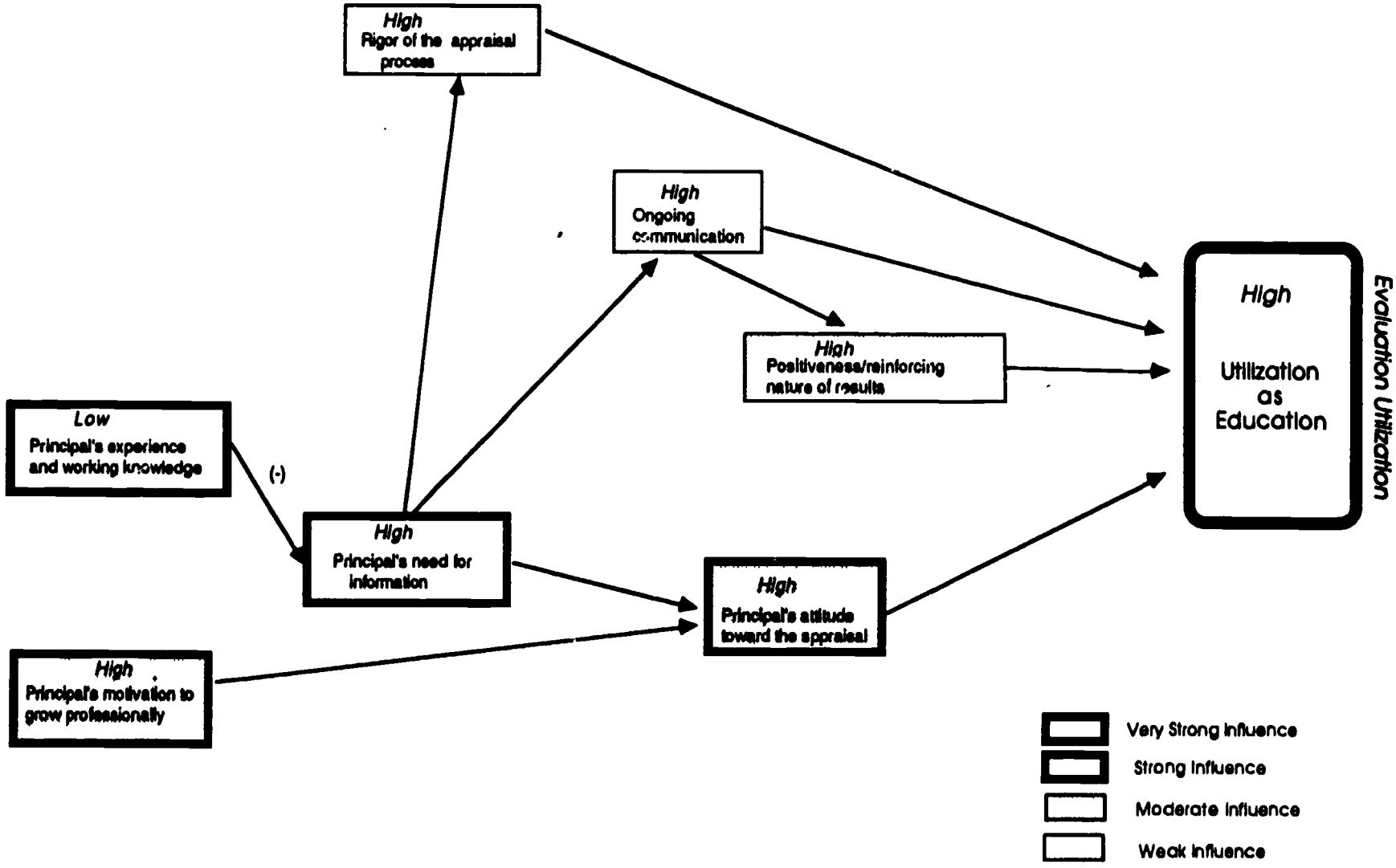

Figure 3

Data-based Model of High Appraisal-based Learning

had a strong effect on this type of use (albeit indirect) through influencing attitudes toward the appraisal process. Principals who were genuinely motivated to improve their performance welcomed all opportunities for evaluative feedback and, in fact, were sometimes observed to stimulate such opportunities (see comments by the principal of Site HU2 on page 1). The appraisal process was viewed as one of many ways in which such information could be obtained. They also tended to reflect about their performance and to engage in self-evaluation exercises.

Principals' attitudes were also influenced by other variables that had an indirect impact on use. Again, experience in the role was found to have a negative or inverse influence through its effects on principals' needs for information. Where principals were relatively experienced, this need was found not to be as great and, as a consequence, (1) they tended to be less receptive to the appraisal process, (2) the process was usually less rigorous, and (3) there was comparatively little ongoing communication between appraisers and principals throughout the school year. An experienced principal's (Site HU1) description of why he did not learn much from the appraisal process illustrates this trend.

> I would say the purpose was to identify for me areas for growth; areas where I could concentrate on improving my performance, and also very definitely to provide encouragement, and a few fuzzies and strokes I guess for the job I do ... there weren't too many areas identified for growth ... I had no input into it ... I would hope that this year there will be areas that would help me formulate a manager's letter [action plan].

It is interesting that even though this principal perceived the focus of the appraisal to be on his professional development, its lack of thoroughness and ongoing interchange appeared to preclude effective conceptual development.

Use of Appraisal Data for Decisionmaking

As seen in Figure 4, there were comparatively few decision setting variables that influenced the extent to which principals based decisions on appraisal data. Only one of these -- experience and working knowledge -- was associated with the personal characteristics of principals. Information from sources beyond the appraisal process were

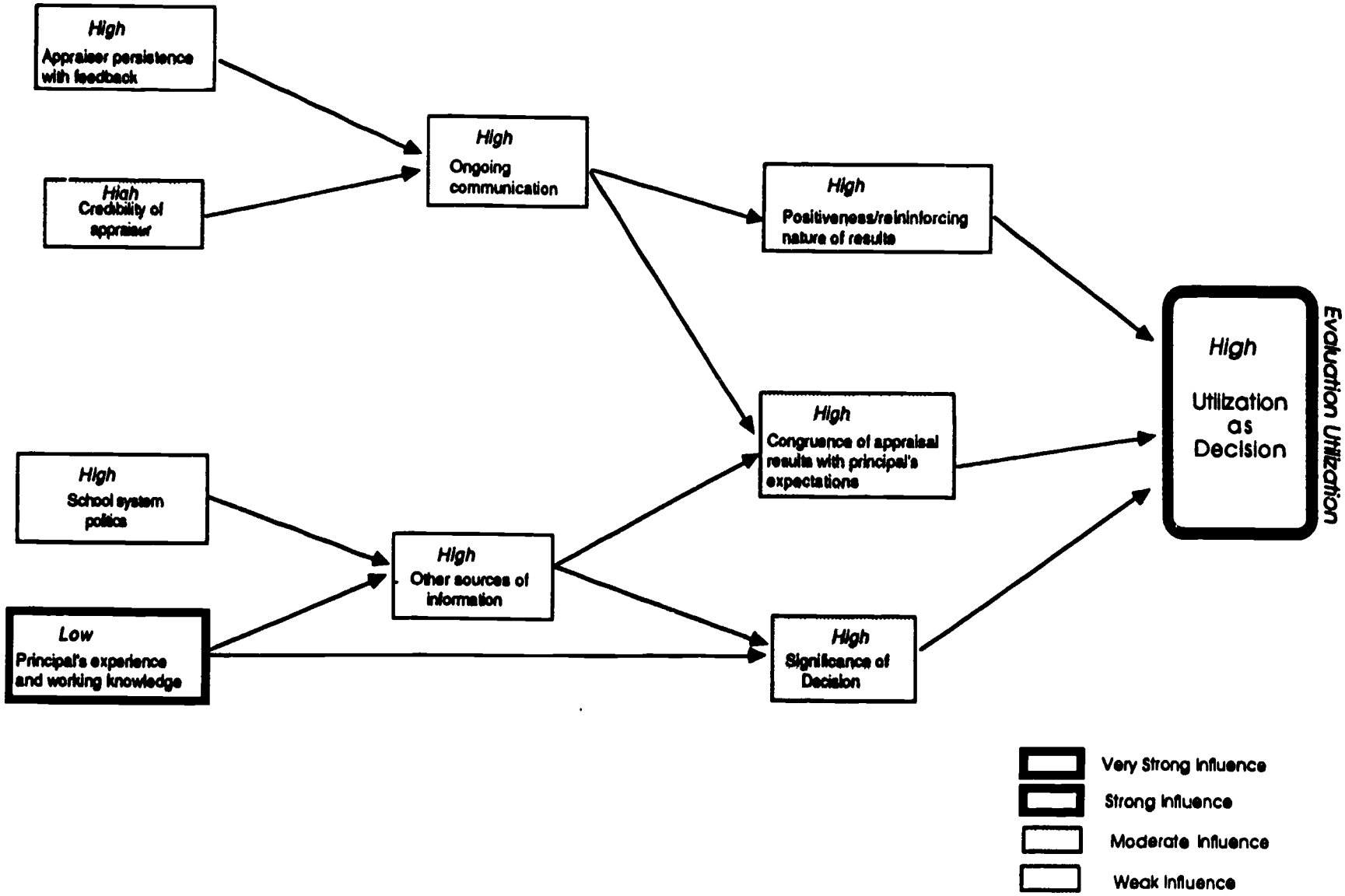

Figure 4

Data-based Model of High Appraisal-based Decisonmaking

found to derive from such variables as political concerns in the school system and principals' acquired knowledge from years of practical experience in the role. This information influenced appraisal-based decisionmaking favorably provided that it was congruent with appraisal data, or that it raised the significance of a particular decision.

An example comes from one of the low use sites (LU1). Given feedback from the appraisal in conjunction with other information, the principal decided to "step up" efforts in improving relations with his local community. He encouraged teachers to report to parents positive as well as negative information about students. he "beefed up" the school's newsletter and held more information sessions for parents in the school. The decision to improve community relations was significant to him because (1) from his own knowledge of the community he sensed that a problem existed and (2) the director of his school district had identified relations with the community to be a system-wide priority. This information was found by the principal to be entirely consistent with the evaluative feedback given by the appraiser and the result was the decision to move in this direction.

Other factors associated with the implementation of the appraisal process also had substantial impact on appraisal-based decisionmaking (see Figure 4). Persistent communication of information about a particular issue from an appraiser viewed to be credible will have a positive influence on use of this type if (1) it is communicated in a constructive and reinforcing fashion and (2) it is congruent with information that has as its source something external to the appraisal. Mentioned previously was another principal's (Site HU2) decision to pursue the certification required of supervisory officers based largely on continued encouragement from her superintendent. She described her perceptions of him and how his persistence influenced her decision.

> I trust [his] judgment. I think he's a pretty astute judge of people .... He's a clear thinker and says what he thinks, and I like that kind of relationship.... Yes he has continued to say 'go ahead with the exams' .... He has certainly never let me drop it.

The strength of influence of these variables became apparent when the principal was asked about the effect on her decision if her superintendent had not been viewed by her

as being credible. Her response was "I'd probably disregard [what he was saying] and go to what other people were saying ... that would likely influence me more".

The influence of characteristics of the appraisal process and of characteristics of the decision setting not associated with the principal appeared to play an important role in influencing the use of appraisal data for decisionmaking As described above, this was not the case concerning the extent to which principals learned from the appraisal process. Personal characteristics were found to be much more predictive of such conceptual outcomes.

Discussion and Conclusions

Prior to an interpretation of the present results it is important to recognize the limitations of the data. The design of the study relied on triangulation to foster the validity of the data. Data were collected in multiple sites from multiple sources (i.e., interviews, archival data) within each site. Data collection was guided by a conceptual framework grounded in empirical evidence but allowances were made for the emergence of unanticipated variables or relationships among variables. Further, interview data were collected based on knowledge from previous interviews. These design features support arguments for acceptable levels of internal validity but do not speak to issues of external validity (generalizability) or issues of reliability. Indeed, reliability is brought into serious question by the fact that only a single researcher (the present author) analysed the data. Replication of the findings through further research is one way of estimating the reliability of the data. Replication using different methods of data collection and analysis would help to establish the external validity or generalizability of the results (Brinberg & McGrath, 1982). In the absence of such evidence the reader must recognize the tentativeness of interpretations made here. With these considerations in mind, the following interpretations of the data are made.

Results of the present study largely confirm in the context of personnel evaluation previous findings about the use of evaluation defined more broadly (Cousins &

Leithwood, 1986). In each of the two studies, factors associated with both the evaluation implementation and the decision or policy context were found to predict instrumental (decision oriented) uses of data. In the Cousins-Leithwood study (1) methodological attributes of the evaluation, (2) characteristics of the evaluation results, and (3) characteristics of the decision or problem focus for the evaluation were found to be the most prevalent factors influencing utilization as decision. Data from the present study suggested that the positive nature of communication of appraisal results and the congruence of those results with principals' expectations had moderate, positive influences on principals' use of data for decision. Also important were decision context variables corresponding to principals' experience and working knowledge and the significance of the decision for the principal.

Evaluation-based conceptual development (learning) outcomes appear to be more dependent on attributes of the users or decisionmakers in both studies. According to Cousins and Leithwood,

> Evaluation quality was still found to be the most prevalent factor affecting this type of use. However, user commitment and/or receptiveness to the evaluation was the second most influential factor in determining the extent of staff or user conceptual development. Three factors, political climate, competing information, and personal characterisitics ... represented the next most influential factors at this level ... (1986, p. 358)

In the present study, (1) principals' motivation for professional growth and (2) attitude twoard the appraisal were the most influential factors on learning about performance improvement. This dependent variable was also influenced by principals' experience and working knowledge and needs for information. These findings suggest that a suitable interpretation of the data is one that relies on conceptions of information processing characteristics of the users. Interpretation of this type is further justified by its consistency with current conceptions of the utilization process described earlier (e.g., Kennedy,1984; Huberman, 1987). Such an approach to interpretation is described below.

Performance Improvement as Problem Solving

Considerable research on human information processing has inquired about how individuals solve problems. Cognitive scientists have examined human problem solving capabilities in a wide range of domains including managerial information processing. Ungson, Braunstein and Hall (1981) provided a comprehensive review of research on managerial information processing and concluded that research in the area was moving in favorable directions, particularly regarding the selection of problems to be solved.

> Information processing research has undergone an evolution in the past two decades from a research area focusing on well-structured problems in highly controlled settings to one examining ill-structured problems that more accurately reflect organizational decision making. (p. 130)

Leithwood and Stager (1986, 1987) made similar observations about information processing literature. By applying an information processing framework to the study of principals' problem solving, they examined differences between high and moderately effective principals in solving "most-structured" and "least-structured" problems. They acknowledged that principals do face many well-structured problems solved by choosing from a set of known alternatives and basing choice on readily available decision rules. They also argued for the prevalence of less-structured problems facing principals.

> ... school administrators also face "messy" situations in which they must first spend considerable effort in clarifying just what is the problem and what values are at stake in the solution. When such clarification has been achieved, there remains uncertainty about the goals to be accomplished, what constitutes an adequate solution process, and the nature of the constraints or obstacles to solution that are likely to be encountered. (1987, p. 3)

Due to a lack of readily available solutions and defensible criteria for choosing among them, personal professional development may be viewed by principals as an ill-structured problem to be solved. In this context, the use of appraisal data concerning their own performance is a solution process or strategy taken with the goal of solving the problem of performance improvement. Accordingly, the findings of Leithwood and Stager (1986, 1987) provide a interesting base from which to make comparisons. This is particularly the case since their research culminated in the development of a grounded framework for describing principals' problem solving processes.

Several findings from Leithwood and Stager's (1986) initial study are relevant to the present discussion. They concluded that the problem solving strategies of effective principals are characterized by an overall style that provides a central role in problem solving for others (e.g., peers, staff) and greater effort to systematically collect data. These principals were described as being willing to take risks in defining problems but to solve them in a comparatively risk-free style. In the present study relatively high users of appraisal data were shown to take an active role in their own appraisals by fostering the collection of information from a wide variety of sources and to ensure that such data were taken into consideration by appraisers. They also risked sharing information about their performance with their appraiser with the goal of coming to a more complete understanding of their own professional development needs. Low users of appraisal data, on the other hand, tended to take such action for reasons unrelated to their own development needs. Compared with their high use counterparts, they were "risk-averse" about the disclosure of personal performance information with their supervisors and were not inclined to systematically collect relevant information.

In their 1987 paper, Leithwood and Stager developed a grounded framework describing the components of principals' problem solving. Five main components were identified: (1) interpretation, principals' understanding of what is the nature of the problem; (2) goals, the immediate purposes principals try to achieve in response to their interpretation of a problem; (3) principles, the long term purposes, values, fundamental laws, doctrines and assumptions guiding principals' thinking; (4) constraints, the immovable barriers, obstacles and factors severely narrowing the range of possible solutions principals believe to be available; and (5) solution processes, what principals do to solve problems in light of their interpretation, principles, goals and perceived constraints. Variations within each component were attributable to effectiveness in the role for both most- and least-structured problems.

Effective principals were found to view least structured problems as solvable if careful thinking was used. They were very explicit about assumptions and used them for

interpretation in addition to past experience and information collection. Effective principals were also better able to arrive at a clear comprehensive interpretation of the problem allowing them to get on with the solution. Variations in interpretation of performance improvement problems by relatively high and low users of appraisal information, were apparent in data from the present study. Higher needs for information about personal performance were noted for a principal in the high use category who had comparatively less experience and working knowledge about the role of principal. High users of appraisal data tended to operate under the assumption that the appraisal process held potential value for them in fostering their professional growth and they assumed that there was room for improvement. Principals in the low use category, on the other hand, did not make these assumptions. They tended to equate greater experience in the role with effectiveness in school administration. Recognition that there was room for growth was downplayed and their appraisals were assumed to benefit others (e.g., enabling supervisor to keep tabs on a school).

Effective principals were found to pursue a broader range of goals and to be more concerned with knowledge than with the feelings of others according to Leithwood and Stager. The present study did not address, in an explicit way, the principals' goals nor their effect on use. There was modest evidence to show that educational goals had some influence on the significance of specific decisions for which appraisal information was available. The significance of decisions was also raised by external factors such as community concerns or appraiser persistence. The claim that this was more the case for low appraisal data users received mild support.

Data from the present study about longer term goals or principles were equally indirect here. However, principals' drive and motivation for professional growth was found to be highly predictive of appraisal-based learning. One interpretation of this finding is that principals in the high use category had principles that were (1) more defensible and (2) they helped develop a better understanding of development needs. This assertion is consistent with Leithwood and Stager's findings concerning problem solving processes of effective principals.

The tendency to regard appraisals as being insufficient in rigor, credibility and ongoing communication was more typical of principals in the low use group. In situations where principals stimulate much of the data collection and interaction with supervisors, these appraisal process deficiencies might be interpreted as sub-problems to be solved rather than constraints. Data from Leithwood and Stager concerning the solving of least-structured problems suggested that only moderately effective principals view such problems to be constraints that either impair or seriously restrict successful problem solving.

Previously described patterns of information collection, initiation of interaction with supervisors, self-evaluation and reflection typical of principals that were relatively high users of appraisal data are consistent with Leithwood and Stager's observations about solution processes adopted by effective principals for least-structured problems. They described such processes as being well thought-out, planned, involving higher levels of consultation with others, and having greater emphasis on information collection for least-structured problems.

Implications

The interpretation of performance improvement as an ill-structured problem to be solved and the use of appraisal data as a solution process reveals a significant overlap between knowledge about principals that are relatively high users of appraisal data and knowledge about expert principal problem solving. This suggests that continued research about utilization would do well to be grounded in a human information processing framework. The work of Kennedy (1983, 1984) and of Huberman (1987), for example, seems promising because of attention paid not only to how data-based knowledge structures are influenced but to the influence such structures have in their own right. Kennedy showed how such knowledge structures can compete with and, consequently, minimize the use of external evidence. But as external information is processed, knowledge structures can, in turn, be altered and a research report, for example, can be seen to have impact defined in these terms.

> The conceptual model assumes these participants approach new evidence with an already-existing body of working knowledge, and that they use the evidence primarily to modify that knowledge. (Kennedy, 1984, p. 210)
>
> If I am an "instrumentalist", I am assuming a more passive, "reproductive" user of research information.... From a transactional or conflict-theoretic perspective, users are active strategists who transform information to preserve cognitive consonance ... (Huberman, 1987, p. 590)

The conceptual link to principal effectiveness made here carries with it implications for appraisal practice. An argument for diversification in appraisal system design seems appropriate. Appraisal systems designed for principals who are expert problem solvers might do well to concentrate on improving aspects of the appraisal itself such as rigor and communication quality in order to foster appraisal data use for performance improvement. These appear to be sub-problems whose solution might enhance use. Systems designed for moderately effective principals, on the other hand, might be more concerned with decision setting variables that operate to negatively influence use, particularly ones associated with the characteristics of principals (motivation, attitiude, experience). It seems apparent that these are variables that will preclude effective use of appraisal data regardless of the characteristics of the appraisal or evaluation system. Improving the condition or state of some of these factors may well foster the use of performance appraisal for systematic and effective professional development.

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