PERFORMANCE FEEDBACK: A REVIEW OF
ITS PSYCHOLOGICAL AND BEHAVIORAL EFFECTS

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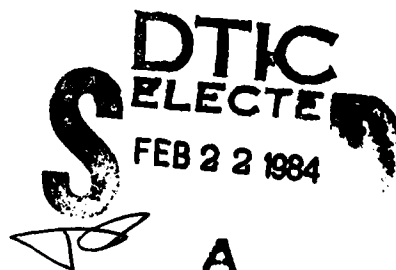**Research Institute for the Behavioral and Social Sciences**

February 1984

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84 02 21 155

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER Research Note 84-47	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE *(and Subtitle)* PERFORMANCE FEEDBACK: A REVIEW OF ITS PSYCHOLOGICAL AND BEHAVIORAL EFFECTS		5. TYPE OF REPORT & PERIOD COVERED Interim Report Series 1977-1978
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Daniel R. Ilgen, Cynthia D. Fisher, M. Susan Taylor		8. CONTRACT OR GRANT NUMBER(s) DAHC19-76-G-0017
9. PERFORMING ORGANIZATION NAME AND ADDRESS Purdue University West Lafayette, IN 47907		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS 2Q161102B74F
11. CONTROLLING OFFICE NAME AND ADDRESS US Army Research Institute for the Behavioral and Social Sciences 5001 Eisenhower Ave. Alexandria, Virginia 22333		12. REPORT DATE February 1984
		13. NUMBER OF PAGES 58
14. MONITORING AGENCY NAME & ADDRESS*(If different from Controlling Office)*		15. SECURITY CLASS. *(of this report)* Unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT *(of this Report)*

   Approved for public release; distribution unlimited

17. DISTRIBUTION STATEMENT *(of the abstract entered in Block 20, if different from Report)*

18. SUPPLEMENTARY NOTES

19. KEY WORDS *(Continue on reverse side if necessary and identify by block number)*

   Performance feedback, motivation, level of aspiration, anticipation of rewards, self-esteem, locus of control, perceived feedback, feedback stimulus

20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

   An extensive review of the performance feedback literature led to the presentation of a feedback model which stresses the psychological processes intervening between feedback and responses to the feedback. The literature was reviewed in light of the characteristics of feedback which have been found to influence the psychological processes. The tone of the review is directed toward identifying characteristics of feedback which may lead to more effective use of feedback to members of on-going, task-oriented organizations.
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This report is first in a series entitled "Motivational Consequences of Perceived Job Environments: The Critical Role of Feedback in Initial Work Experience."

Performance Feedback: A Review of Its Psychological
and Behavioral Effects

Feedback about the effectiveness of an individual's behavior has long
been recognized as essential for learning and for motivation in performance-
oriented settings. It consistently appears in theoretical treatments of
organizational behavior in discussions of training (Gagne, 1965; Goldstein,
1974) and work motivation (Campbell, Dunnette, Lawler, & Weick, 1970; Deci,
1975; Hackman and Oldham, 1975; Lawler, 1973; Vroom, 1964). Not surprisingly,
considerable research has been conducted on the topic (see reviews dealing
with various aspects of feedback by Adams, 1968; Ammons, 1956; Locke, Cartledge,
Koeppel, 1968; Sassenrath, 1975). Yet, in spite of the interest in feedback,
few stable generalizations can be reached beyond the fact that some feedback
is better than no feedback in most performance settings.

Feedback effects are difficult to glean from the large and diverse
literature for two major reasons. First, feedback is not a simple
stimulus presented to the individual. The diversity of elements assumed
under the single rubric of feedback may share the property of conveying
some degree of information about past performance, but they often share
little else. As a result many factors other than the amount or type of
feedback are confounded in the stimulus which make it difficult if not im-
possible to ascertain the influence of feedback per se on the behaviors
reported. Clearly there is a need for a taxonomy of feedback dimensions
(Greller & Herold, 1975; Herold and Greller, 1977). Secondly, feedback has
been investigated as it affects a diverse set of psychological and/or be-
havior variables. These variables may be affect-free cognitions such as
knowledge of results (KR) (Ammons, 1956; Baller, 1970; Cummings, Schwab, &
Rosen, 1971; etc.), observable performance (e.g., Adams, 1968; Ammons, 1956;
Anderson, Kulhavy, & Andre, 1971; Harari, 1969), or satisfaction (e.g.,
Feather, 1968; Ilgen, 1971) as well as many others.

The following review first will offer a framework or taxonomy from which to consider the feedback as a stimulus; then a model of feedback effects on behavior will be presented followed by a review of the feedback literature with respect to the model. An attempt was made to bring to bear research on feedback from many different disciplines such as human engineering, educational, developmental, and social psychology, as well as industrial/organizational and experimental psychology. Although we consider the review representative of research on the topic, it is by no means exhaustive.

The Nature of Feedback

Feedback varies on many dimensions. but three major ones tend to emerge. First, feedback originates from some source. The most common source is a person (or persons) who has observed the feedback recipient's behavior and evaluated it prior to giving the feedback. Although a person who provides feedback can obviously be described by a variety of characteristics, the two which seem to be most important are the other's credibility and his or her power over the feedback recipient. Credibility refers to the extent to which the feedback recipient believes that the person giving the feedback is knowledgeable of the performance dimension in question as well as of the recipient's own performance on that dimension so that the other is perceived as being able to provide valid feedback. Power, on the other hand, refers to the other's influence over the rewards and sanctions received or anticipated by the recipient. Theoretically, these two dimensions are relatively independent although we would hope that in many settings the two are positively correlated. Nevertheless, feedback may be received from a powerful other who really has very little knowledge about the task or the individual's performance on it. Furthermore, the recipient of the feedback may be acutely aware of the agent's shortcomings. In the latter case, the agent would have low credibility and could only expect compliance with his or her feedback as long as he or she maintains high power.

A second possible source of feedback is the task itself. The importance of task-supplied feedback is well documented in the area of human factors engineering (McCormick, 1970) and also job enrichment (Hackman and Oldham, 1974; McGrath, 1976). With some modifications the notions of credibility and power also apply to the task as a source of feedback. We shall argue that the credibility depends upon the extent to which the recipient of feedback believes that the performance information available from the task reflects his or her own effort and/or work strategy. As he or she perceives task performance displayed in the feedback from the task to be more and more a function of events beyond his or her own control, then this feedback should become less and less relevant to its recipient. In a very real sense, the task loses its credibility as a viable source of information for guiding the behavior of the individual working on the task.

The power of task feedback depends upon the amount of variance in individual performance that can be tolerated on the task. At the upper extreme is the task that can only be accomplished in one way. In this case, feedback about performance must be heeded if the task is to be accomplished. If, on the other hand, a task can be accomplished in many different ways, feedback information from the task may be less important. If the recipient feels there are other ways to accomplish the task than those that are reflected in the task attributes from which feedback is received, he or she may choose to pay less attention to that task feedback. We are suggesting that as the task becomes less programmed and moves away from the "one best way" for task accomplishment, any given feedback information which the individual receives has correspondingly less power to demand a specific response from him or her.

A third source of feedback is the recipient himself or herself. Past experience may allow individuals to evaluate their own performance. Credibility, in this case, would represent the extent to which the individual trusts his or her own judgment of performance and is willing to rely on these self-judgments

for guiding future behavior. In addition to past experience on the task, general personality orientations such as self-esteem (Korman, 1970) should influence the extent to which people have confidence in their own ability to judge performance. Power, on the other hand, poses a problem when the source of feedback is the individual who actually performs the task. Try as we did to squeeze all sources into our two-category taxonomic system, power simply does not apply to the self as the agent from which the feedback is received.

In many settings it is difficult if not impossible to disentangle the latter two sources - the task and the self. Obviously feedback from the task really is not feedback to the intended recipient until it is perceived. To the extent that the recipient must actively gather the information from the task, this information may at times seem like feedback from the self. More problematic is that self-feedback is almost always based upon some information from the task, and that task feedback may not be meaningful until compared with a self-provided standard. Therefore, the two sources are often confounded. However, conceptually, they are distinct. Furthermore, it has been demonstrated that, in the absence of any feedback from the task or others on correct performance on a task, people become more confident of their answers and more consistent around a certain self-defined "correct" area (Ammons, 1956; Ryback, 1967). These data imply that self-feedback does occur independent of the other two sources, in spite of the fact that under most naturally-occurring conditions it is often confounded with the occurrence of task feedback.

It is concluded that the source or sources of feedback can be either the self, another person(s), or the task and that, with the exception of the self, each source can be located in a two dimensional power-by-credibility space. In fact, in most performance settings, more than one source provides feedback. As a result, the power and credibility judgments of one source are often

made relative to other sources available in the environment.

A second major characteristic of feedback is that it varies on a qualitative dimension composed of nominal categories with little or no communality. Such factors as the immediacy of the feedback, the feedback schedule, whether it is relative or absolute, individual or group orientation, etc., represent types of variables that have been investigated in relation to feedback. These categories are very diverse and share only one thing in common: they convey some level of evaluation to the individual. That is, they convey information that can be placed somewhere along a goodness-badness dimension.

Finally, in most cases, performance feedback is purposeful. That is, when the source is some other individual, he or she often attempts to accomplish something with the feedback. First, feedback may guide behavior toward a desired response. This function has frequently been labeled coaching (Campbell, Dunnette, Lawler, & Weick, 1970). Secondly, feedback information is often used to make administrative decisions. Administrative decisions such as grades to assign, raises to distribute, and promotions often accompany the feedback and follow from an evaluation by other persons acting as the source.

Frequently, both the administrative and the coaching functions are served by the same set of performance data. Unfortunately, the two functions are not compatible (Meyers, Kay, and French, 1965). Meyers et al point out that the administrative function can override the coaching value of a performance appraisal interview between a supervisor and a subordinate. In a very real sense, the administrative function emphasizes the power associated with the agent and restricts the subordinate's perceived freedom to question and learn from the feedback session.

In summary, it is suggested that most feedback conditions can be located in a two dimensional space. These dimensions are (1) the source that administers the feedback and (2) the qualitative nature of the feedback. To assess

feedback effects on any psychological or behavior variables requires that both dimensions be considered. In addition, when the source of the feedback is some other individual(s), there often is some purpose to be served by the feedback. In this case, the purpose also should be taken into account.

Feedback Effects Model

Ultimately, performance feedback is expected to influence performance-related behaviors of the recipient. To consider the dimensions of feedback in terms of its qualitative nature and its source may be useful to describe the feedback as a stimulus but the taxonomy in-and-of itself reveals nothing about the major concern -- the effect of performance feedback on performance-relevant behaviors. Yet, to get from the stimulus provided by the feedback to the behavioral responses to it, the psychological processing of the feedback by its recipient before he or she responds must be considered. In our opinion, there are two major reasons why the understanding of feedback effects on responses have been difficult to ascertain. First, there has been a tendency to consider feedback as a generic quality of a stimulus, ignoring any considerations of the information conveyed by the sources and the qualitative characteristics of the feedback. Second, the psychological processes affected by the feedback have been overlooked by researchers whose main concern has been with the performance-related response made to the feedback. Our previous delineation of the feedback as a stimulus yielded a framework to explain the first of these issues. Let us turn to a consideration of the psychological antecedents of a response to feedback in an attempt to address the second issue.

The feedback process is outlined in Figure 1. As depicted in the model, the complex feedback stimulus reaches the individual and is transformed into a perception of the feedback. Very frequently, it is assumed that the perceived feedback is the same as that sent to the individual in question. This

Figure 1

Model for the Effects of Performance Feedback
on the Individual's Response
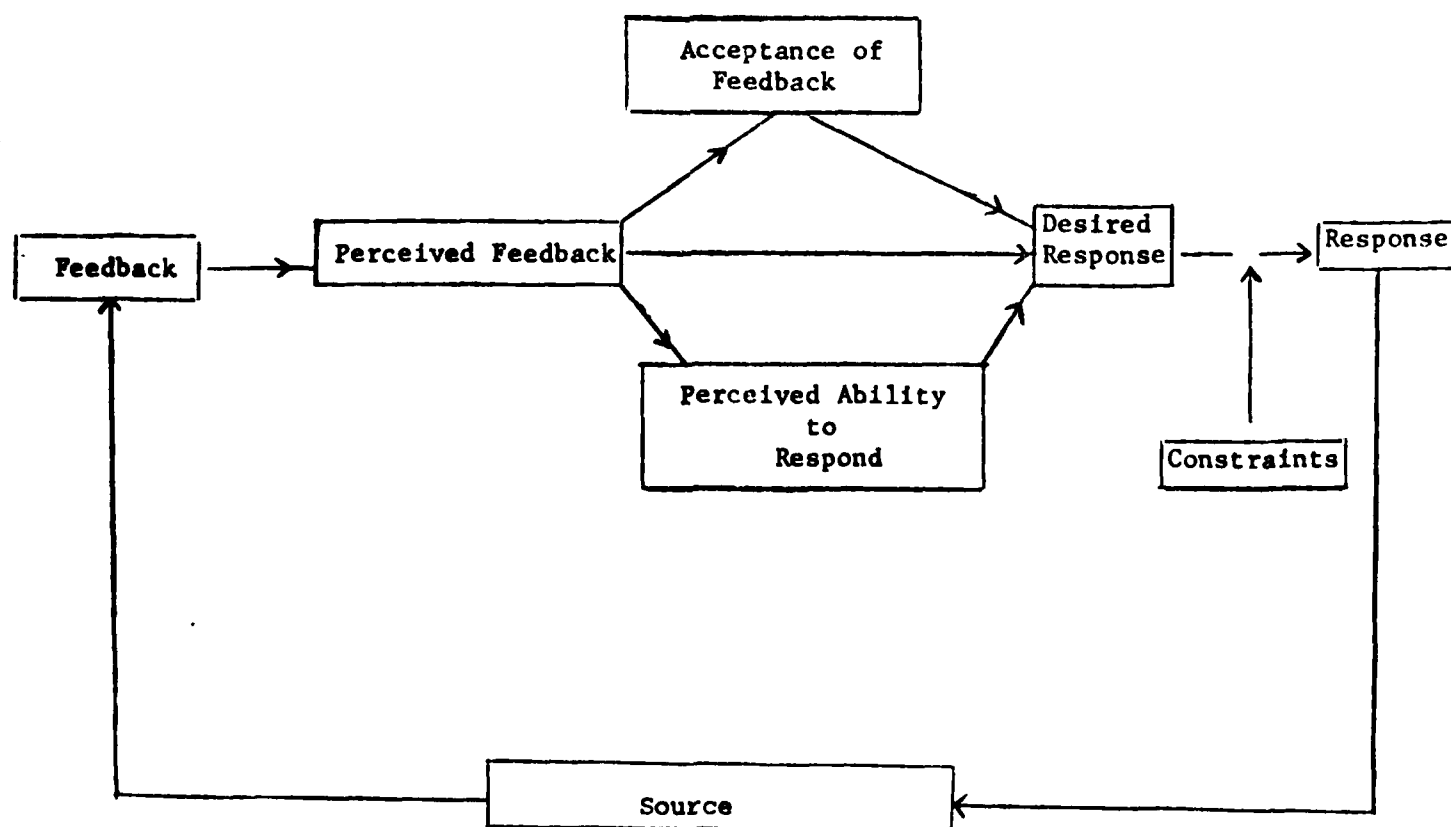
assumption is especially true in the case of research on knowledge-of-results. Typically, an individual is told his or her performance is at a given level and it is assumed that this information is received by him or her (Baller, 1970; Chapanis, 1964; Cummings, Schwab, & Rosen, 1971; Gibbs & Brown, 1955; Locke, 1967; Locke, Cartledge, & Koeppel, 1968). Although such an assumption is quite reasonable in the types of laboratory research typically employed to test knowledge of results effects (e.g., Locke, 1967), in performance settings with employees or students in on-going organizations, the assumption is much less acceptable. In the latter settings, feedback is often vague, l ving con- siderable room for individual interpretation. Therefore, the a racy with which the feedback information is received is a major concern i ' ld settings (McCall & DeVries, 1976).

According to Figure 1, once the feedback is perceived two cognitions are formed based upon the perceived feedback. The first of these, acceptance of feedback, is based upon a variety of perceptions about the feedback received. It is hypothesized that, in most cases, a prerequisite for any response to feedback is a belief on the part of the recipient that the feedback is reason- able. If he or she does not accept it due to lack of credibility of the source or any other reason, he or she is unlikely to desire to respond to it unless the source possesses sufficient power to make compliance necessary, even in the face of rejection of the feedback information.

Perceived ability to respond depends upon an interaction between percep- tions of what should be done and a perception of one's own ability to respond. Ability perceptions are affected by constructs typically classified as person- ality variables such as self-esteem (Korman, 1970) and locus of control (Rotter, 1966). Past experience and cognitions resulting from it (e.g., performance ex- pectations) also are important determinants of perceived ability (Feather, 1968).

The two sets of cognitions, together with the perceived power of the source,

lead to a _desired_ _response_ to the feedback. This latter concept includes the motivational elements of feedback and is conceptualized as an intended behavior similar to Locke's (1969) or Fishbein's (1967) behavioral intention.

Finally, a distinction is made between the desired response and the actual response to emphasize the fact that one often cannot perform as desired due to external constraints beyond the control of the individual. Many of these constraints occur in the job setting. For example, the lack of support personnel may greatly limit a manager's range of responses to some performance feedback given in the last appraisal interview. Regardless of how much he or she may intend to accomplish, if the support personnel are not available, the actual response in terms of performance will be less than he or she desired.

Constraints may also be within the individual (internal constraints). The most commonly mentioned one is ability (Jones & Davis, 1965). If the individual does not possess the capability to respond, regardless of desire to respond, the response will not be forthcoming.

The following review will elaborate on each of the elements outlined in the model.

Perceived Feedback

Feedback perception is concerned with how accurately one perceives the performance feedback which is available from another person or the task. As is the case with any perception, the perceived feedback is a function of both stimulus properties of the environment and characteristics of the individual. Let us now consider the dimensions of each of these.

Timing

If the feedback is to be perceived as related to behavior, the individual at the very least must associate the feedback with the behavior in question.

That is, he or she must somehow pair the feedback with a past behavior in order for the feedback to be meaningful. The most frequently investigated variable along these lines has been the length of the time interval between the response and the feedback. Ammons (1956) pointed out that in general, the longer the delay in the receipt of knowledge about performance, the less the effect on performance. Similarly, the data Buchwals and Meager (1974) gathered to investigate the effect of delayed feedback on performance suggest that delayed feedback improves performance only if the subject remembers the original response. This suggests that the delay, per se, acts to decrease the probability that the individual will associate the behavior with the feedback; yet if the activities between the behavior in question and the feedback about it do not interfere with the individual's ability to accurately recall the behavior and associate the feedback with it, the length of the time delayed should have a minimal effect on the feedback perceptions. Thus, the effect of the delay is moderated by the nature of the intervening activities between the behavior and the receipt of knowledge about performance.

In the area of concept formation there is some indication that the delay in feedback may affect learning differently for errors versus correct responses. Anderson's Interference-Perserverance Theory (Kulhavy & Anderson, 1972; Surber & Anderson, 1975) states that in the absence of immediate feedback, incorrect responses are forgotten more rapidly than correct responses. If delayed feedback is given, it reinforces the correct responses more than incorrect ones since they are the ones remembered and associated with the feedback. In support of this theory, Sassenrath (1975) found delayed feedback improved the retention of verbal material more than immediate feedback.

Although at first glance, the concept formation data seem incompatible with earlier material presented, the difference may be more of a moderator effect than a contradiction. We have already stated that for accurate perception of the feedback, the individual must associate his or her behavior with

the feedback and that, if the fee back is delayed, the detrimental effect of this delay depends upon the intervening activities. The concept formation literature suggests that a second moderator depends upon the nature of the task. If the task requires a complex set of behaviors, some of which may be judged as correct and others incorrect, and if the recipient receives general feedback about the set of behaviors, then immediate feedback would lead to the perception that all behaviors in the set were correct. Since some of these behaviors are errors or incorrect ones, these erroneous behaviors would be associated with the positive feedback and would tend to be retained. Anderson's (Anderson et al, 1971) and Sassenrath's (1975) research suggest that not only is the negative effect of a delay in feedback affected by the intervening activities, it is also affected (in fact, reversed) if the task is a complex set of behaviors for which errors tend to be forgotten more rapidly than correct responses.

The discussion of feedback perception to this point has assumed that the target of the feedback has "received" or somehow acknowledged some feedback addressed to him and is faced with the task of pairing the feedback with the proper set of responses. Yet, the problem with what feedback is perceived may occur at an even earlier juncture -- at the point where the feedback source administers the feedback. The link between giving the feedback and it's reception by the intended target often breaks down. This may occur for several reasons.

Sign

First, properties of the feedback stimulus itself may enhance or detract from its accurate perception by the intended recipient. The most compelling qualitative dimension of feedback which affects its perception is the sign of the feedback. Clearly, positive feedback is perceived and recalled more than is negative feedback (Feather, 1968; Ilgen, 1971; Ilgen & Hamstra, 1971; Schrauger & Rosenberg, 1970). The most reasonable explanation for this relies

upon a defense mechanism interpretation in which the positive feedback is more pleasant and may enhance one's self-image. As a result, when it is given, it is acknowledged by the recipient in the sense that he or she does hear it. Negative feedback may be denied by the recipient as he or she is unwilling to accept such knowledge about himself or herself. Exceptions to the greater impact of positive feedback tend to be primarily related to individual differences in self-concept (these will be discussed later on in this section); yet, in spite of these possible moderating effects, the general conclusion that positive feedback is more readily and accurately perceived than negative feedback is justified.

Source

A second characteristic of the stimulus influencing the perceived feedback is the source of the feedback. Research by Greller and Herold (1975) indicates that people rely more upon sources close to themselves for perceptions of feedback. These researchers surveyed workers from a number of organizations, asking the extent to which they relied upon five sources of information for feedback. These were: (1) formal performance appraisals, (2) the supervisor, (3) co-workers, (4) the task, and (5) their own feelings and ideas. Ratings showed that the last, the self, provided the greatest amount of performance feedback. The next most attended to source was the task, followed by the supervisor, the co-workers, and the organization. This result is substantiated by the work of Kanfer, Karoly, & Newman (1974), who found that when feedback from various sources was administered, then recalled at a later time, recall of feedback from self was greater than from any other agent. Both these studies imply that sources closest to the recipient in a psychological sense are the ones to which the individual is most closely attuned and that the recipient's perception of feedback from closer sources should more nearly match the objective feedback actually administered by that source.

Individual Differences

All perceptions are a function of an interaction between properties of the stimulus and properties of the perceiver. Thus far we have limited our discussion to dimensions of the feedback stimulus. Turning to the perceiver, there are several factors that have been demonstrated to systematically affect feedback perceptions. All are related to the perceptual set with which the recipient addresses the performance setting. Ammons (1956) considered the set as a collection of hypotheses held by the performer about his or her performance. Through past experience with the task, the performer has some idea about how he or she should perform, and he or she expects to hear feedback which is consistent with these expectations. Given such a set or expectation, the recipient should tend not to perceive feedback that is inconsistent with his or her expectations and also should tend to seek out feedback which is consistent with what is expected.

Research relating feedback to personality variables in general supports the notion that the feedback perceived is related to the individual recipient's frame-of-reference. Baron and his associates (Baron, Cowan & Ganz, 1974; Baron, Cowan, Ganz, & McDonald, 1974; Baron & Ganz, 1972) looked at the effects of locus of control on responses to feedback. Internal locus of control subjects performed better than externals when self-discovery (task-supplied) feedback was the only type of feedback available. On the other hand, externals outperformed internals when feedback was available only from a superior or an experimenter. These results were replicated on lower class black and white children as well as college students, indicating the effect is a very stable one. Although Baron and his colleagues interpreted the data from a motivational point of view, arguing that internals were motivated by performance feedback which provided the opportunity for feelings of accomplishment while externals were more motivated by feedback indicating support from a powerful

other (an external agent), the results are equally supportive of a set or frame-of-reference interpretation. That is, internals may have cued more on task feedback than externals and therefore been more aware of the feedback received while external may have tended to ignore the task feedback. The reverse may have occurred for supervisory feedback.

Additional indirect support for the set idea is available from research on self-esteem. Weiss (1977) reported that high self-esteem subordinates relied less on their job environments and more upon their own self-perceptions to guide their task-related behavior. Presumably their high self-esteem led them to be more confident of their ability to do well in the job setting, in this case as lower-level managers. Consequently, they felt less of a need to explore their environment for cues about how to perform. In Weiss' research, high self-esteems modeled the behavior of their supervisors less. Extrapolating from this, we suggest that they may also pay less attention to feedback from sources of feedback other than themselves.

Shrauger & Rosenberg (1970) found that differences in responses to positive and negative feedback were related to self-esteem. When a sample was split on self-esteem, it was found that high self-esteem subjects raised their self-competence evaluations more after success and lowered them less after failure than did low self-esteem subjects.

Smith & Sarason (1975) looked at social anxiety as a personality orientation and administered the same social feedback to all subjects. They found that highly socially anxious subjects expected to be evaluated more negatively than those low on social anxiousness, but more importantly, high and moderately high socially anxious subjects perceived the feedback as more negative than those low on the variable. Since all received the same feedback, the differences in perceptions of the actual level of the feedback were influenced by the perceptual set of the individuals.

We are left with the conclusion that perceptual sets or frames-of-reference do influence the receipt of performance feedback. Direct support with social anxiety as well as indirect support with personality variables typically explored in performance settings -- those of locus of control and self-esteem -- clearly suggest that the recipient selectively perceives and alters the feedback stimulus in a fashion consistent with his or her self-orientation.

Summary

In summary, the link between the feedback stimulus and the perceived feedback depends upon characteristics of the feedback stimulus, the recipient, and the interaction of the two. First, assuming that the feedback was accurately perceived, the recipient must pair the feedback with the behavior for which it was intended. The amount of delay, the nature of the task, and the nature of the intervening activity between the behaviors and the feedback all interact to influence the perceived feedback-to-behavior link.

For the case in which the feedback is not taken as a given, properties of both the person and the stimulus influence the nature of the perceived feedback. On the stimulus side, the sign of the feedback and the source which administers it are of primary importance. In general, the more positive the stimulus and the closer, psychologically, the agent is to the recipient the more the agreement between perceived feedback and the actual feedback sent by the agent. As far as the recipient is concerned, the set or frame-of-reference with which he or she addresses the performance setting is the major variable affecting perception. This set has been indexed by past experience and by personality variables generally evoked to explain behavior in performance settings.

Acceptance of Feedback

At this point assume that the recipient of the feedback has formed some perception of the feedback and is aware of the source from whom the feedback was received. Obviously, to know that the feedback was perceived by no means indicates that one will respond in line with the feedback. The model in Figure 1 illustrates that there are several intermediate steps between perception of the feedback and the response to it. One of the first considerations in the process is the individual's acceptance of the feedback.

Acceptance refers to the recipient's belief that the feedback is an accurate portrayal of his or her performance. Since feedback can always be attributed to some source, the credibility attributed to the feedback depends in part upon the source that administers the feedback.

Trust, Closeness, or Expertise

Source characteristics considered to affect judgments about feedback credibility are trust (Huse, 1967), psychological closeness to the recipient (Greller & Herold, 1975), and expertise (Huse, 1967; Klein, Kraut, & Wolfson, 1971; Tuckman & Oliver, 1968). Huse (1967) and others who have discussed performance appraisals and performance appraisal systems, such as Management-by-Objectives, advocate their use because they encourage frequent contact of a non-threatening but task-oriented nature between supervisors and their subordinates. This helps to establish a climate of mutual trust between the subordinate and his or her superior in which the superior can act as a helper rather than as a judge (Huse, 1967). Performance feedback given by supervisors who are trusted should be more readily accepted than feedback from those who are not.

Acceptance of the source was investigated indirectly by Greller and Herold (1975) in the survey mentioned earlier. They found that agents closer

to the person in a psychological sense were relied upon more than more
distant ones. The authors speculated that one of the reasons for relying
more on closer sources was the higher degree of confidence placed on feed-
back from these sources.

Most work with feedback implies that the acceptance of the source is
strongly affected by the recipient's judgment of the expertise of the feed-
back source. By expertise we mean the qualifications of the source for
providing the feedback. The more that the source (including the self) is
perceived as qualified to give feedback, the greater should be the tendency
to accept the feedback. Support for this position is evident in many settings.
Tuckman & Oliver (1968) found that feedback from students improved teacher
performance but feedback from supervisors actually decreased performance. Since
the setting was one in which the supervisors had little or no opportunity to
observe the teachers' classroom performance, the authors attributed the in-
effectiveness of supervisory feedback to the tendency on the part of the
teachers not to see the supervisors' feedback as valid. On the other hand,
they suggested that teachers saw student feedback as very relevant for student
evaluations and consequently responded in line with the students. In a similar
vein, Klein, Kraut, and Wolfson (1971) found employees tended to be satisfied
with various forms of feedback from a company-wide attitude survey if they felt
the person giving the feedback was very familiar with the job or unit re-
ceiving the feedback. If the individual was quite far removed from the receiving
unit (such as a member of the regional personnel office), the recipients were much
less satisfied with the feedback process. Satisfaction, in this case, should
have reflected their acceptance of the feedback and the individual giving it.

Halperin, Snyder, Shenkel, and Houston (1976) found that the expertise of
the source had a strong effect on feedback credibility and acceptance. Their
subjects were given personality feedback supposedly based on a projective test
by a high status individual (Ph.D. clinician), a medium status individual

(experienced graduate student), and a low status individual (undergraduate
with mental health technician degree from a junior college). High and medium
status sources of feedback were much more credible than the low status source.

The legitimacy or expertise of a source may be affected by the extent to
which the feedback given appears to be consistent with the role held. Hogan,
Fisher, & Morrison (1974) found that feedback from opponents in a Prisoner's
Dilemna game was only effective if it was consistent with the opponent's role
to give feedback. Confederates trained as opponents were instructed to be
either competitive or cooperative. Regardless of their orientation toward the
game, these same confederates provided feedback to the subject, as to his or her
performance. The recipients of the feedback responded only if their opponent
was employing a cooperative strategy. Apparently, the competitive behavior of
the opponent was not consistent with the giving of feedback as far as the way
the recipient defined an opponent's role. As a result, feedback given in such
a situation was not accepted.

Feedback Characteristics

Turning to characteristics of the feedback stimulus itself which appear
to influence its acceptability, three major feedback dimensions emerge. First
positive feedback is more credible than is negative. Jacobs, Jacobs, Feldham
& Cavoir (1973) found this to be even more pronounced when the feedback was
emotionally oriented. In the Halperin et al (1976) study mentioned above, there
was also an effect for sign of feedback, such that positive feedback was more
readily accepted from any source, but negative feedback was only credible if
it came from a high status source. Most likely, positive feedback tends to be
accepted more readily because it fits with the person's self-image; thus, the
individual is less likely to question it than negative. Stagner's (1958) ex-
perience with personnel managers vividly illustrates this. When personnel
managers were asked to evaluate the appropriateness of a new test which assessed

personal characteristics based upon the test's assessment of their own quali-
fications, the test received very high ratings even though the same profile
of feedback was given to all personnel managers as allegedly their own. The
feedback was all positive on desirable personality characteristics and thus
was readily accepted by the personnel managers as an accurate reflection of them.

The second major characteristic of feedback influencing its credibility is
its consistency. In an interesting study with fourth grade children, Nichols
(1957) found that performance attributions for consistent feedback over several
trials were to ability, whereas inconsistent feedback on a task led to attribu-
tions of performance to luck. Apparently the subjects assumed that if they
were in control of performance, then the performance and feedback from it should
be consistent. Such an interpretation is quite consistent with attribution
theory predictions (Jones & Davis, 1965; Kelley, 1973). In the absence of
observed consistency, the individual attributes performance to factors outside
him- or herself. As a result the feedback is no longer seen as a valid reflec-
tion of one's own ability. Presumably, under such conditions, the person is less
likely to respond to the feedback due to the lack of a belief that he or she can
do anything about the erratic performance.

It has long been accepted that feedback credibility is strengthened by
specific support for the feedback (Leskovec, 1967). Thus, it has been re-
commended that feedback should not contain only vague and general statements
about the effectiveness of performance; specific critical incidents should be
included in a performance appraisal to allow the recipient to understand the
basis for the evaluation. In fact, the general widespread acceptance of the
need for such documentation is rarely questioned and, to our knowledge, has not
been researched. Although documentation is commonly recommended for the purpose
of providing the recipient with more specific knowledge to which he or she can
more adequately respond (i.e., giving directional information for responses),
it seems very likely that the same information would make it harder for the

recipient to deny of reject the feedback. With general feedback, one could more easily conclude that the agent really knows little about one's performance. Well-documented feedback should be less easily ignored, assuming, of course, that the recipient agrees with the documentation.

Individual Differences

Finally, there is indirect evidence for an effect of individual differences on the perceived credibility of feedback. Feather (1968), for example, reported that internal locus of control subjects made more typical changes in performance expectations than externals. Typical changes were defined as increases in expectations after success feedback and decreases after failure. Apparently internals, who, according to the general description (Rotter, 1966) hold beliefs that events that happen to them tend to be due to their own behavior, see the feedback as more applicable to their own behavior and respond more to it than do externals. This suggests that they are more likely to accept or believe feedback given to them than externals.

Age of the recipient also appears to influence the degree to which feedback is accepted. Meyer & Walker (1961) looked at the extent to which people used feedback made available to them and found that older persons used feedback less than younger ones. However, age is positively correlated with experience in most job settings. The greater the experience, the more the individual should tend to use his or her own experience as a source of feedback and the more likely he or she should be to reject the feedback from others. As a result, in job settings with considerable range in age of employees, age should be inversely correlated with willingness to accept feedback.

Belief in Response Capability

Expectancies

Although the model presented in Figure 1 postulates the existence of a belief on the part of the recipient that he or she is capable of responding to the feedback, to our knowledge no research has investigated beliefs in response capability as they relate to feedback. Yet several motivational theories rely heavily upon beliefs about response capabilities as prerequisites of responses in performance situations. Expectancy Theory (see Campbell & Pritchard, 1976, and Mitchell, 1974, for reviews of the theory) labels the perception of response capability as an expectancy. An expectancy is the individual's subjective probability that if one puts forth effort, one will be able to perform at a given level (Vroom, 1964). In a feedback setting the expectancy represents the effect of feedback on the recipient's belief that he or she can respond in a manner that will lead to the desired level of performance. According to expectancy theory, if people do not believe that they can influence their performance, then they are unlikely to put forth effort in an attempt to do so. Likewise, we would predict that a requisite condition for a response to feedback would be a belief on the part of the recipient that he or she can make a response that will either increase the probability of receiving positive feedback or decrease the probability of receiving negative feedback at some time in the future.

The feedback may serve as a reward (or sanction) in-and-of itself or it may serve as a sign of other performance-related outcomes to follow. If such a belief (expectancy) does not exist, it is unlikely that one would attempt to alter one's performance as a result of the feedback. If, on the other hand, such a belief does exist, it provides only a necessary condition for a response. It indicates to the recipient of the feedback that the response is possible; whether or not the response is carried out is a different matter.

Task Difficulty

Task difficulty information in the feedback should directly affect perceptions of ability to respond. Difficulty information has been found to alter expectations (Feather, 1968), levels of goals set (Locke, Cartledge, & Knerr, 1970), and performance in achievement settings (Atkinson, 1964). Often feedback conveys difficulty information either directly or indirectly. Information about how others did on the task would be an example of indirect information on task difficulty. This type of information should aid one in determining the likelihood of responding successfully to feedback on one's own performance. Therefore, we would suggest that those qualitative dimensions of feedback which convey information about task difficulty are the ones most likely to influence the individual's perception of ability to respond to the feedback.

Individual Differences

Looking at individual differences, those most likely to affect perceived ability to respond are associated with the general notion of self-esteem. The first, chronic self-esteem is a generalized expectation held by the individual about his or her ability to respond in a performance setting (Korman, 1971). This concept develops over the individual's life as a composite of experiences in many different performance settings. By adulthood, it is a relatively permanent characteristic of the individual. The second form, situational self-esteem, is highly dependent upon the nature of the specific task in question. Here the individual forms a performance expectation based upon experience on the same or very similar tasks. Both of these types of self-esteem should influence an individual's perception of his or her ability to respond.

Potter's (1966) Locus of Control also has been found to relate to perceptions of performance capabilities. Leid & Pritchard (1976) found that internals perceived a greater degree of association between their effort and their

performance than did externals. This finding is consistent with the general interpretation of locus of control. Thus, it appears that individuals do differ on their generalized beliefs about their ability to perform and that performance feedback interacts with those beliefs to affect the individual's assessment of his or her ability to respond to performance feedback.

Desired Response

Feedback serves both a directive and an incentive function (Payne and Hauty, 1955). Conditions leading to a desire to respond to the feedback are more closely aligned with the incentive function and are commonly considered the motivational aspects of performance feedback (Locke, Cartledge, & Koeppel, 1968). Locke and his colleagues point out that feedback serves to motivate when it influences the recipient to try harder and to persist longer at the task.

Feedback is primarily motivational when no more learning takes place and changes in performance are only due to effort. It is also primarily motivational when the feedback is of a summary nature over trials making it difficult or impossible to tie the feedback to particular responses (Locke, Cartledge, Koeppel, 1968). Furthermore, when feedback which serves primarily to point the recipient's responses in the appropriate direction manifests itself in some behavior, then it must be assumed that there was some motivational basis for that behavior. In such cases, both the directive and the incentive functions coexist. This is especially true in field settings. Therefore, since most feedback serves both a directing and an incentive function, the discussion that follows will not exclude the directive nature of the feedback as it deals with the motivational features of feedback.

Reinforcer

From a motivational standpoint, feedback often serves as a reinforcer (Anderson et al, 1971; Chapanis, 1964; Gibbs & Brown, 1955; Hundal, 1969). At the

purest level, reinforcing properties are attributed to feedback per se. It
is hypothesized that the frequency of f edback should be positively correlated
with the frequency of correct responses on a performance task. Some support has
been claimed for this position (Anderson et al, 1971; Cook, 1968; Hundal, 1969;
Ivanecevich, Donnelly, & Lyon, 1970). For example, Hundal (1969) provided various
levels of feedback to workers grinding metallic pieces. Feedback was provided by
the task, and varied across groups from low or none to almost continuous feed-
back. He found that performance was directly related to the amount of feedback
received.

In spite of the general support for the positive effects of frequent feedback,
both theoretical and empirical reasons exist for exploring this conclusion a bit
further. First of all, to assume that feedback per se is a positive reinforcer
ignores the fact that feedback varies along some positive-to-negative continuum.
It is well established in the operant conditioning literature that positive rein-
forcers have different effects on responses than punishment (Reynolds, 1968).
Yet, much of the research on the frequency of feedback fails to deal with the sign
and leaves it up to the individual to evaluate the feedback (e.g., Cook, 1968).
In the latter case, the feedback could portray some positive or negative informa-
tion with regard to performance to the recipient, but, without any knowledge of
the recipient's frame-of-reference, one cannot say a priori whether the feedback
is positive or negative.

The fact that the frequency per se does tend to increase performance may be
due to confounding the opportunity to change performance with feedback as well
as a tendency to favor positive feedback. In the former case, the individual,
after receiving the feedback often has the opportunity to react to it. As a
result, over time, he or she should tend to receive more positive feedback than
negative assuming that he or she takes some corrective action after the negative
feedback or maintains similar behaviors after positive.

Meyer (1976) pointed out that the presentation of negative feedback to a

subordinate by a superior is often an unpleasant task and one that the supervisor tends to avoid. As a result, frequent feedback would tend to be more positive than negative, both in systems requiring a given number of feedback sessions and in those in which the frequency of the feedback is left up to the supervisor. If the supervisor were required to provide feedback to subordinates at some pre-scribed time, then Meyer's observation suggests that, with each subordinate, there would be a tendency to avoid negative feedback. We would surmise that this tendency would be more pronounced with subordinates for whom there is a high probability that they will remain in the work unit -- those who have per-formed most of their job duties adequately although not excellently and those who, for some reason, cannot be dropped from the work unit even though their performance has been marginal.

When periodic performance reviews are not required, the tendency to avoid giving negative feedback should increase the delay between the supervisor's observation of poor subordinate behavior and the administration of negative feedback. The result would be that poor performers would tend to receive less feedback than high performers. A corollary of this is that more observations would be required before negative feedback was administered as compared to positive feedback. Although we are unaware of any research supporting this correlation between frequency and sign under conditions of either required or not required feedback, such a process would explain the observed correlation between feedback frequency and performance without the necessary conclusion from those studies that frequent negative feedback should increase motivation.

When the sign of the feedback has been considered, in general, positive feedback leads to higher performance motivation than negative (French, Kay, & Meyer, 1966; Harari, 1969). Yet, there are some notable and intriguing excep-tions. Wade (1974) administered five types of feedback on a task allowing sub-jects to monitor their own performance. The five types of feedback were: accumulative positive feedback which involved a running total of the number of

correct responses, accumulative negative, positive feedback after correct trials but no accumulation, negative without accumulation, and no feedback. He found greater motivation under both accumulative positive and accumulative negative feedback than under any of the other conditions. However, over time, motivation dropped off more with the accumulative positive than accumulative negative feedback. This suggests that subjects on this rather mundane task became complacent in the presence of only positive feedback.

In the area of performance appraisal, French, Kay, and Meyer (1966) stress the detrimental effects of the use of criticism and suggest that positive feedback is superior when it is paired with the setting of specific goals. However, they caution that non-specific positive feedback is of little value. Presumedly the positive feedback should be detailed enough to allow for setting specific goals, as specific goals consistently have been found superior to general goals (Steers & Porter, 1974).

Ammons (1956) showed that positive feedback followed by the removal of the feedback does not necessarily lead to performance decrement as would be predicted if the response were being maintained only on the basis of the re-inforcing properties of the stimulus. He suggests that under such conditions, subjects may have learned how to provide feedback to themselves. As a result, the removal of feedback from an external agent would not mean that feedback was absent.

Chapanis (1964) raised another issue, although unrelated to the sign of the feedback, which questioned the conclusion that feedback itself is always motivating. By placing subjects on an extremely boring papertape punching task and having the experimenter convey a mood that she really cared little about performance on the task, he found no performance differences among groups varying in the amount of feedback they received.

It seems clear that a blanket generalization that feedback has a posi-tive effect on the recipient's motivation is much too simplistic. An expanded

consideration of its motivational properties must be considered. Such an expanded view must consider the information conveyed to the recipient about his or her performance. Second, for the feedback to impact on future performance, it must have some effect on the way in which he or she intends to perform at some time in the future (Locke, Cartledge, & Koeppel, 1968). The remainder of our discussion of feedback's motivational impact will consider these factors.

Level of Aspiration

As has already been pointed out, the sign of the feedback provides the recipient with information about how the source (which may be himself) viewed his or her performance. In general, positive feedback should act as a positive reinforcer and negative as punishment. Yet the same feedback often conveys to the individual information about the level of performance necessary to experience positive affect on subsequent encounters with the task. The latter refers to the level of aspiration for future performance. It frequently has been demonstrated that the level of aspiration tends to increase with positive feedback and decrease with negative although the latter effect is generally smaller than the former (Zajonc & Brickman, 1969; Feather, 1968; Ilgen, 1971). With respect to positive feedback, an interesting problem develops to the extent that the level of aspiration is changed. Over time, the same level of feedback on an absolute scale should be perceived as less and less positive by the recipient unless the agent administering the feedback somehow adjusts or rescales the feedback to take into account the recipient's changing level of aspiration.

Control

Feedback from a source other than the recipient him- or herself may connote control over the recipient. Feedback, either positive or negative, to be effective must be contingent upon the individual's performance (Meyer, Kay, & French, 1965). However, in order for the agent to provide contingent feedback, that

agent must monitor, observe, or in some fashion gather data on the individual's performance. As the frequency of feedback increases, the amount or frequency of the monitoring and controlling behavior also must increase. Thus, although feedback may not in itself be controlling, the conditions necessary for contingent feedback mean that the agent may have to observe the individual more closely.

House's (1971) interpretation of the path-goal theory of leadership may offer implied support for this position. He found that subordinates were satisfied with leaders high on Initiation of Structure behavior when the task was complex and unstructured but were dissatisfied with such behavior in structured settings. House argued that in the former setting the leader's structuring behavior aided the subordinates' ability to accomplish the task and gain desired rewards; in the latter setting such behaviors were redundant and controlling. It is reasonable to assume that performance feedback would increase with an increase in structuring behaviors.

The controlling feature necessary for contingent feedback also holds for an impersonal source - the task. It seems reasonable to suggest that, in general, as a task increases in the frequency with which the individual receives feedback about performance, the task becomes more and more structured with less and less freedom or acceptance of alternative methods for task completion. At the extreme is the very repetitive task with a short time-cycle on which it is immediately obvious whether or not the task is completed correctly.

Competence vs. Control

The controlling aspects of feedback place in competition two motivational processes assumed to be related to feedback. On the one hand is the notion of competence and the generally accepted notion that feelings of competence are rewarding (White, 1959). Competence motivation is central to what has been termed intrinsic motivation (Deci, 1975). The theory and associated research

(Deci, 1972a) concludes that individuals seek a sense of competence on a task and that tasks which provide this sense of competence are intrinsically motivating. Furthermore, in order to feel a sense of competence, some means must be provided for the individual to judge his or her performance. Feedback usually is necessary in order to make this judgment. Cues, both from the task itself (internal cues) and from others (external cues), provide the information needed to make a competence judgment. Therefore, it is suggested that the greater the amount of feedback provided on a job, the greater will be the motivating potential of the job because of the contribution of the feedback to the judgment of competence and intrinsic motivation (Hackman & Oldham, 1974).

The second major contribution to intrinsic motivation is a sense of personal control over one's actions (DeCharms, 1968; Deci, 1975). As tasks or jobs increase in the amount of control allowed the performer, they also increase in intrinsic motivating potential (Fisher & Pritchard, 1976; Hackman & Oldham, 1976). Yet we have already stated that increasing the frequency of feedback may increase the amount of control the recipient perceives the agent has over him or her. Thus, we have, on the one hand, the well-accepted position that the amount of feedback is positively correlated with the motivational potential of the task -- specifically its capability to provide conditions for intrinsic motivation -- and, on the other hand, the conclusion that feedback may at times decrease the amount of personal control one feels over the task. Since recent research by Fisher and Pritchard (1976) indicated that feelings of personal control and feelings of competence must be high in order to have intrinsic motivation on the job, it appears that the feedback must be designed so as to make possible feelings of accomplishment and yet not imply control.

To reconcile these incompatabilities it seems necessary to qualify the nature of the feedback necessary to enhance motivation. First of all, the frequency of feedback should enhance motivation on the task to the extent

that it increases the recipient's perceptions of competence. To do this, the feedback in general needs to be positive. Rarely, if ever, should negative feedback enhance feelings of competence. It may be that negative feedback in a series of generally positive feedback or early in a sequence followed by positive feedback may make the later positive feedback appear more closely related to competence if the individual felt his or her performance improved and that he or she was responsible for the improvement. Nevertheless, at the moment when the negative feedback was received, it seems inconceivable that it would lead to a feeling that one had mastered the task.

To increase feelings of competency, the feedback should add an increment of information to the recipient over-and-above the information he or she already has. If the information about performance is redundant with that which is already possessed, no increase in motivation due to competency should occur. It is hypothesized that the motivating capacity of feedback due to competency is directly related to the incremental gain in competency information. As the information drops to a very low level, the feedback should tend to decrease intrinsic motivation, assuming that under such conditions the detrimental effects of loss of feelings of personal control should outweigh the positive effects of feelings of competency.

With regard to control over the recipient by others or by the task, it is hypothesized that as feedback increases perceived control by others, motivation for performance decreases. In many settings this would mean that, as feedback frequency increases, motivation decreases. However, this conclusion should be qualified immediately. It assumes that the increasing feedback does not influence feelings of competence sufficiently to override the control features. Where is the point at which such conditions occur? How much is too much? These are obviously empirical questions that cannot be answered in the abstract without consideration of the performance setting and the individuals in it. However, a consideration of these two interacting and competing feedback components

(competence and control) stresses the need to question the simple conclusion that increased feedback leads to increased motivation.

Anticipation of Rewards

Feedback may also convey information about rewards which are contingent on performance. For example, feedback from the task about the number of units produced may have motivating properties to an individual working on a piece-rate system. Although the individual may not receive pay after producing each piece, feedback in the form of a tally of the number of units produced tells one how much will be earned and allows one to make adjustments to affect future earnings.

In the case of information about rewards, the motivating characteristics of feedback could occur independent of the feedback's effect on perceived control or competency mentioned earlier. The individual may or may not feel controlled, but the value of the rewards under the source's control are motivating in themselves. With regard to competency, it is quite possible that feedback could convey no competency information and still have high reward information. For example, supervisors may provide highly valued rewards contingent on their evaluations of subordinates (e.g., salary increases, promotions, or assignment to desirable tasks); yet the subordinates may know the supervisors have little basis on which to judge their performance. Therefore, the subordinates would gain little or no information about competency from positive feedback from the supervisors but still be motivated to continue to behave in a similar manner in order to receive the supervisors' rewards. Finally, the link to rewards may override the detrimental effects of negative feedback if the negative feedback connotes to the recipient that the source has the power to deliver negative sanctions for unacceptable performance. Depending upon the power of the source and the desire of the recipient to avoid the negative sanctions, the loss of a feeling of competence and the increased feelings of control are often over-ridden by the threat of punishment. Under such conditions negative feedback can

be very motivating.

The rewards notion of the feedback information also is predicted from expectancy theory (Porter & Lawler, 1968; Vroom, 1964). In this case, it is assumed that the individual values a given set of outcomes and is aware of the association between levels of performance as perceived by the agent and the receipt of the rewards. Feedback would serve to provide an estimate of the level of performance as perceived by the agent. With this information, the recipient could anticipate receiving rewards from the agent.

Goals

Feedback, by its very nature, is past oriented. The individual learns about reactions to behaviors already committed. Motivation, on the other hand, is future oriented. The motivational effect of feedback is likewise future oriented for it refers to behavior following the receipt of feedback. While the discussion of the motivational features of feedback has emphasized affective or cognitive effects of feedback, the implicit assumption of all of this research is that, based upon these internal changes, the recipient's performance following the feedback is affected.

Yet the past versus future orientation is difficult to isolate in most feedback settings because feedback usually is not an isolated singular event but rather is a cyclical process (McCall, 1977). Closed loop feedback systems such as Miller, Gallanter & Pribram's (1960) TOTE (Test-Operate-Test-Exit) emphasize that the recipient continues to test his or her responses against a reference mechanism until he or she is satisfied that the standard of reference has been met (Adams, 1968). At this point the response sequence is ended. Our reference earlier to levels of aspiration suggests a more open system in which the standard of reference itself changes over time and as such, the sequence often does not reach a state at which the person exits from the system due to the fact that the same feedback which provides for a test of the effectiveness

of the response may change the standard by which effectiveness is determined. In spite of the fact that the past and future orientations are often blurred, for the moment, let us consider them separately.

The most widely accepted process by which feedback on past performance is assumed to affect future performance is through the setting of goals. Extensive laboratory research by Locke and his colleagues (Locke, 1967; Locke, Cartledge, & Koeppel, 1968; Locke & Bryan, 1969a & b), field simulations (Umstot, Bell, & Mitchell, 1975) and field research by Latham and his colleagues (Latham & Bales, 1975; Latham & Kinne, 1974; Latham & Yukl, 1975), have clearly demonstrated that goals do affect performance and that feedback is an integral part of the goal-setting process.

Locke takes the position that goal-setting mediates the relationship between feedback and performance. Relying heavily upon Ryan's (1970) notion of intentional behavior as a central concept in motivation, he concludes that feedback influences performance only if the feedback leads the recipient to set performance goals (intended levels of performance). While accepting the fact that feedback serves both directing and motivating functions through its provision of performance-related information to the recipient, Locke points out that this information by itself does not have the power to initiate action. Action follows only when the recipient intends to do something with the information received, and this action is preceded by the formation of some belief about the level of performance one intends to reach. This intended performance represents a performance goal. Locke, Cartledge, & Koeppel (1968) reviewed the knowledge-of-results literature and found strong support for the mediating effects of goal-setting between knowledge of results and performance.

Recent reviews of the goal-setting literature by Locke (1974) and Steers and Porter (1974) clearly document the positive effect of goals on performance. The effectiveness of goals for influencing performance depends upon three major factors. First, the specificity of the goal affects its effectiveness. In

general, specific goals are better than general ones (Locke, 1968). Second, difficult goals lead to higher levels of performance than easy ones (Locke, 1968) and thirdly, in general, the greater the degree of control the individual has over the goals set, the better will be the performance (Steers & Porter, 1974). Most frequently, the control issue is construed as participation in setting one's own goals.

Since goal specificity and difficulty, along with control over set goals, appear to be the major dimensions of goals affecting performance, the impact of feedback on each of these three should be explored.

The directional function of feedback should be most relevant for influencing the specificity of the goals. The data are quite clear that specific goals are more effective than general ones (Locke, 1967; Steers & Porter, 1974). Therefore, the more specific the performance feedback, the more information it should provide for being able to set specific goals. However, feedback specificity should be a necessary but not sufficient condition for the setting of specific goals and their effective functioning. For, even with specific feedback, a non-specific goal may be set. Specific feedback should only increase the probability of setting specific goals. Furthermore, once specific goals are set, for feedback to be useful for guiding performance it also must be specific enough for the recipient to be able to relate it to his specific goals and the behaviors required to accomplish them.

The effect of feedback specificity on established goals, to our knowledge, has not been investigated. Most likely the specificity of the feedback interacts with the specificity of the goal held by the performer. Figure 2 suggests that the best condition combines specific goals with specific feedback. In this case, the recipient receives information which allows for a clear evaluation of his or her performance with respect to the goal.

When goals are general and feedback is specific, the performer should have some difficulty evaluating performance. He or she will know what was

Figure 2:   Hypothesized Effects of Specific or General Feedback
             Under Conditions of Specific or General Goal Held by
             the Performer

GOALS

	Specific	General
Specific	High quality feedback	Performance evaluation is difficult
General	Feedback interpreted in terms of performer's frame-of-reference	Feedback difficult to interpret and apply

FEEDBACK

done on the task, but the general goal provides an obtuse standard against which to compare the specific feedback. The result should be some degree of ambiguity on the part of the recipient in his or her judgment of whether or not the goal was met. It seems likely that this ambiguous state would lead the recipient, over time, to redefine his or her goals in more specific terms. The specificity of the feedback would allow for such a change.

At first glance it would appear the individuals holding specific goals who receive general feedback may have difficulty interpreting the feedback. However, this may not be the case given the nature of general feedback. General feedback, for the most part, represents a point along an evaluation continuum. The source communicates to the performer that the source believes the performer is doing well or poorly. Given the fact that the performer holds some specific goal, it seems likely that, in most cases, the recipient of the feedback will interpret the source's general feedback in terms of how well he or she is meeting the specific goal. In a sense, the recipient should be able to convert the general feedback into specific goal units. As a result, the general feedback may provide useful information although its usefulness will not be as great as if it had been specific feedback.

Finally, general feedback administered to one who holds general goals should be of little value to the recipient. Presumedly, the recipient would continue to perform in the same manner if the general feedback were positive and would attempt to change his or her behavior if it were negative. Unfortunately, in the latter case, few guides would be present for directing the change.

The relationship between goal difficulty and feedback is most closely aligned with the incentive value of feedback and feedback's effect on perceptions of competency. Locke, Bryan, & Kendall (1968) noted that the setting of difficult goals could be facilitated by making valued incentives contingent upon the achievement of high goals or by providing feedback in terms of the extent to which high standards of performance were met. In the latter case,

the source establishes high performance expectations for the recipient and provides feedback with respect to these expectations. This process is straightforward.

Earlier we mentioned that feedback may serve to make salient the impending receipt of extrinsic rewards or sanctions associated with goal achievement (or lack of accomplishment) by the feedback agent. For example, when incentive systems are made explicit, performance feedback will tell the recipient about the extent to which he or she is or is not reaching the level of performance which will lead to known rewards. Therefore, based upon his or her desire for the rewards (or to avoid the sanctions), effort can be adjusted in response to the feedback in order to improve the probability of reward. The addition of the goal-setting phenomenon simply implies that the recipient applies the reward information by setting performance goals at a high enough level to achieve the rewards. Furthermore, if high goals are to result, the performance-reward contingency must require high levels of performance in order to obtain the rewards and the performer must be aware of the level of performance necessary to receive the rewards.

Locke, Bryan, & Kendall's (1968) second recommendation to influence the setting of high goals (provide feedback with respect to a high performance standard) applies directly to feedback. Here the source must hold high performance expectations for the performer and give feedback with respect to the high standard.

In addition, the issue of felt competency on the part of the recipient may enter into this process. Feedback along with a given performance goal should allow for feelings of competence which, in turn, may increase task motivation.. To our knowledge, no one has investigated feelings of competence as a psychological state related to goal accomplishment and resulting from feedback. However, indirect support does exist for such a conclusion in the need-achievement model of Atkinson (Atkinson, 1964; Atkinson & Feather, 1966).

Feelings of competence are most closely associated with what is termed the incentive value of success (I_S). In the model, I_S is directly related to the difficulty of the task such that the more difficult the task, the higher the I_S because, it is reasoned, success on a difficult task is valued more than success on an easy task. One of the major reasons for the increased value is that one can attribute to him- or herself a greater degree of skill and competence when he or she is successful on a difficult than on an easy task. As a result, feedback indicating that the recipient had accomplished the goal should be more rewarding for difficult than for easy goals. Satisfaction with performance ratings indicate this is indeed the case (Locke, 1976).

More direct support for the competence interpretation comes from the intriguing findings of Hamner and Harnette (1974) and later replicated by London and Oldham (1976). They found that satisfaction with performance after receiving feedback was correlated with performance on the task only when performance was lower than the goal set by the experimenter. On those trials for which performance on a card-sorting task exceeded the goal, there was no correlation between satisfaction and performance although the mean level of satisfaction was higher when performance was above the goal, as would be expected. These results are interesting because, for half of the subjects, London and Oldham used a piece-rate incentive system so that exceeding the goal by a large number led to higher pay than only exceeding by a small amount, yet performance and satisfaction were uncorrelated. A competence interpretation would suggest that feelings of competence would increase as one performed closer and closer to the goal, therefore satisfaction should be correlated with performance. However, once the goal was met, little gain in a sense of accomplishment or competence should occur for higher levels of performance. To the extent that satisfaction with performance reflects the feelings of doing well on the job, performance above the goal should not correlate with satisfaction. The data of Hamner and Harnette (1974) and London and Oldham

(1976) are consistent with the interpretation, but certainly are not sufficient for its acceptance. Further research needs to measure more directly feelings of competence to assess its role in the effect of feedback on performance.

The third characteristic of goals most frequently found to affect performance is the performer's perceived control over the goal set. We have already mentioned that the manner in which feedback is administered can affect the degree to which the individual perceives that performance is under his or her own control. Goal setting simply adds an intermediate step whereby the feedback leads to a goal and then to performance. Under either condition, it is suggested that as the feedback connotes a loss of control on the part of the recipient over his or her own actions, motivation to perform should decrease, all other things being equal.

Individual Differences

Our discussion of the motivational effects of feedback up to this point has ignored possible individual differences. This omission does not reflect our lack of concern for individual differences as much as the failure of most research on feedback to consider individual differences. There are, however, some notable exceptions.

Four studies investigated the effects of feedback on individuals described by various personality measures. The most complete work in this area was conducted by Baron and his associates (Baron & Cowan, 1972; Baron, Cowan, & Ganz, 1974). They found that internals as defined by Rotter's (1966) Internal-External Locus of Control scale responded more to feedback from the task itself while externals reacted more strongly to feedback from others. These results were consistent with the theoretical assumptions about the motivational orientations of internals and externals. Specifically, internals should be motivated by a need for a sense of accomplishment and self-discovery (Baron, 1974). Feedback from the task should be better able to meet

such needs than feedback from others. Externals, on the other hand, should be more concerned about approval from others (Baron, 1974). The results supported this interpretation.

Steers (1975) found a positive correlation between the amount of feedback received and performance for those individuals high on need for achievement. In this case, feedback was administered by an individual rather than through the task itself. The external agent provided information about competency which met the subject's achievement needs.

Shrauger and Rosenberg (1970) found that the consistency of shifts in performance following feedback depended upon the self-esteem of the individual. High self-esteems improved their performance more than low self-esteems following positive feedback and low self-esteems dropped their performance more following negative feedback. These results are consistent with the self-esteem construct (Korman, 1970). We suggest that the competency information portrayed by the feedback may be perceived differently depending upon the level of self-esteem. High self-esteems accept and respond to positive feedback since it is consistent with their own self-image. On the other hand, they may tend to reject negative feedback as it is not consistent with their self-image. For low self-esteems the reverse would be true. Positive feedback may not really be accepted and they would be less likely to respond to it, than to negative feedback. This interpretation assumes a possible attribution phenomenon in which positive feedback is attributed to self for high self-esteems and negative is attributed to self for low self-esteems.

Considering the personality variable research as a whole, a rather consistent pattern emerges. Recall that we have stressed that the incentive value of feedback is influenced by the extent to which it conveys to the individual a sense of (1) competency, (2) control over the task, and the (3) degree to which extrinsic rewards will follow. The personality research sheds some light on which of these functions will influence which people. In

general, it was found that those high on personal needs fulfilled through performance of the task itself (e.g., internals, high n-achs, high needs for independence, high self-esteems) need feedback which conveys the first two types of information. Those oriented toward needs best satisfied by factors external to the task (externals, and those high on need for affiliation) will focus on the feedback's information about extrinsic rewards. In other words, there are measurable individual differences which index the need states of the individuals and which provide some cues to the nature of the feedback required to meet these needs.

Cummings (1976) added an interesting twist to the influence of individual differences on feedback effectiveness. He suggested that individuals be classified on the basis of their past performance in an organization along with an estimate of the individual's future potential. Once classified on these two dimensions, performance goals and performance feedback should be tailored to fit the person-types identified. Three person-types were labeled: high performers with potential for growth, adequate performers who had settled into the job and would probably go no further, and low performers who should be removed from the work group if their performance did not improve. Appraisal strategies were described to deal with each type of the three types of employees. The first, Developmental Action Program (D.A.P.), according to Cummings, should be administered to high performers and should emphasize setting goals, measuring one's own performance, developing new skills, and growing in one's job. Feedback should be frequent enough to provide corrective action on the part of the employee but not enough to be controlling and detract from initiative.

The second system, Maintenance Action Program (M.A.P.) is geared to the average performer. The supervisor should set goals for the subordinate and provide feedback in line with these goals. Cummings hypothesizes that the supervisor probably would not need to monitor this individual very closely

because this average performer has displayed reliable and steady behavior in the past, knows the task, and knows what is needed.

Finally, poor performers should be monitored closely and given very specific feedback. Also, it should be made clear to them that failure to meet specific performance goals will lead to their termination. Cummings calls this a Remedial Action Program (R.A.P.).

Although Cummings (1976) provided no empirical data testing his assumptions, the modes of feedback he suggests are quite consistent with the view we have suggested here, if it is assumed that the high performers are those with growth-oriented needs. Our model would suggest that high performers need feedback which emphasizes competency and personal control, whereas average and low performers need the emphasis to be placed on extrinsic rewards resulting from performance. The extrinsic rewards are further divided by Cummings to suggest that a M.A.P. system should emphasize the attainment of positive rewards and a R.A.P. the avoidance of negative sanctions. Earlier discussions of feedback dimensions give more specific cues as to how to attain these states which compliment Cummings' presentation.

One caveat should be thrown in before we leave the system suggested by Cummings. His model is a very static one. Although he does suggest that persons under R.A.P. can advance to M.A.P. and M.A.P. to D.A.P., there is the potential for a self-fulfilling prophecy effect of which Argyris (1973) warned. To what extent would the treatment of the individual in a very controlling fashion lead to a continuation of a lack of initiative? The jury is still out on this issue.

Summary

To sum up the motivational effects of feedback, we conclude that feedback portrays four types of information to the individual. These are: (1) a sense of competency, (2) a sense of personal control, (3) the distribution of

extrinsic rewards, and (4) the direction in which the behaviors should be
oriented. The first three influence the desire the individual has to respond
to the feedback. Individuals will differ on the extent to which they respond
to these three. Although the feedback may provide information which meets
the individual's needs, this is still not sufficient to lead to performance.
The literature is quite clear that the latter necessitates some formation of
an intention or a goal for future performance. The extent to which such goals
are formed and the extent to which the individual responds to goals depends
upon the first three feedback features plus the directional nature of the
feedback. The latter makes it possible for the individual to bring behavior
in line with the goal and to set specific goals.

Discussion

Given the central role of feedback in theories of motivation and learning,
it is essential that we understand the nature of feedback as it influences in-
dividual behavior. Yet, despite its central role, very little systematic work
has been done to understand the nature of feedback.

Feedback can be viewed as a complex stimulus which varies along a number
of dimensions. Greller and Herold (1975) stressed the need to identify and
explore these dimensions. Two general strategies can be used to identify di-
mensions of feedback. Both are defensible. Herold and Greller (1977) chose
the empirical approach. Large number of items were administered to individuals
familiar with feedback settings. Factor analyses were applied to their responses
and the dimensions of feedback "emerged" from the data. A second strategy is to
take a theoretical perspective. We have chosen the latter. This strategy was
chosen because it was obvious that the effects of feedback varied considerably
over settings and over people. Feedback obviously was affecting several psy-
chological variables other than the behavioral response and these variables
influenced the nature of the response. Therefore, we began by addressing the

effects frequently observed from feedback and worked back to the nature of the feedback stimulus. Figure 3 elaborates upon the feedback process that emerged from the review. Several facets of feedback and its effects deserve comment.

From the recipient's point of view, we can consider the feedback process as composed of three phases. These are: perception of the feedback, information processing, and behavior. The behavior then acts as an input to the source who measures the behavior according to his or her measurement system, then evaluates it. This evaluation may or may not be communicated to the focal person in the form of additional feedback to begin another cycle in the feedback system. Figure 3 illustrates Phase 1 with the perceptual box at the left, Phase 2 with the Acceptance, Information, and Perceived Response Capability boxes as well as the Desired Response box, and Phase 3 is the Response. Note that Figure 3 represents an expansion of Figure 1 so as to incorporate those variables identified in the review as significant for feedback effects.

Phase 1, the perception phase, is a crucial and obviously necessary link in the feedback process but one that has received little attention. The tendency has been to focus upon the nature of the feedback stimulus and assume that the individual's perception of the feedback is isomorphic with the stimulus characteristics. However, work in the area of job enrichment casts doubt upon the isomorphism. Hackman and Lawler (1971) and Hackman and Oldham (1975) found very low agreement between supervisors, external observers of the work setting, and subordinates on the extent to which the subordinates' job provides performance feedback.

Distortion of the feedback is particularly problematic due to its evaluative nature. The common thread running through all feedback is evaluation. It is not surprising that Herold and Greller (1977) found the first three of five dimensions in their factor analysis to reflect primarily the nature of the evaluation. Yet, it is this evaluative component that may lead to problems in the perception of feedback. Psychological defense mechanisms may

Figure 3: Expanded Feedback Model
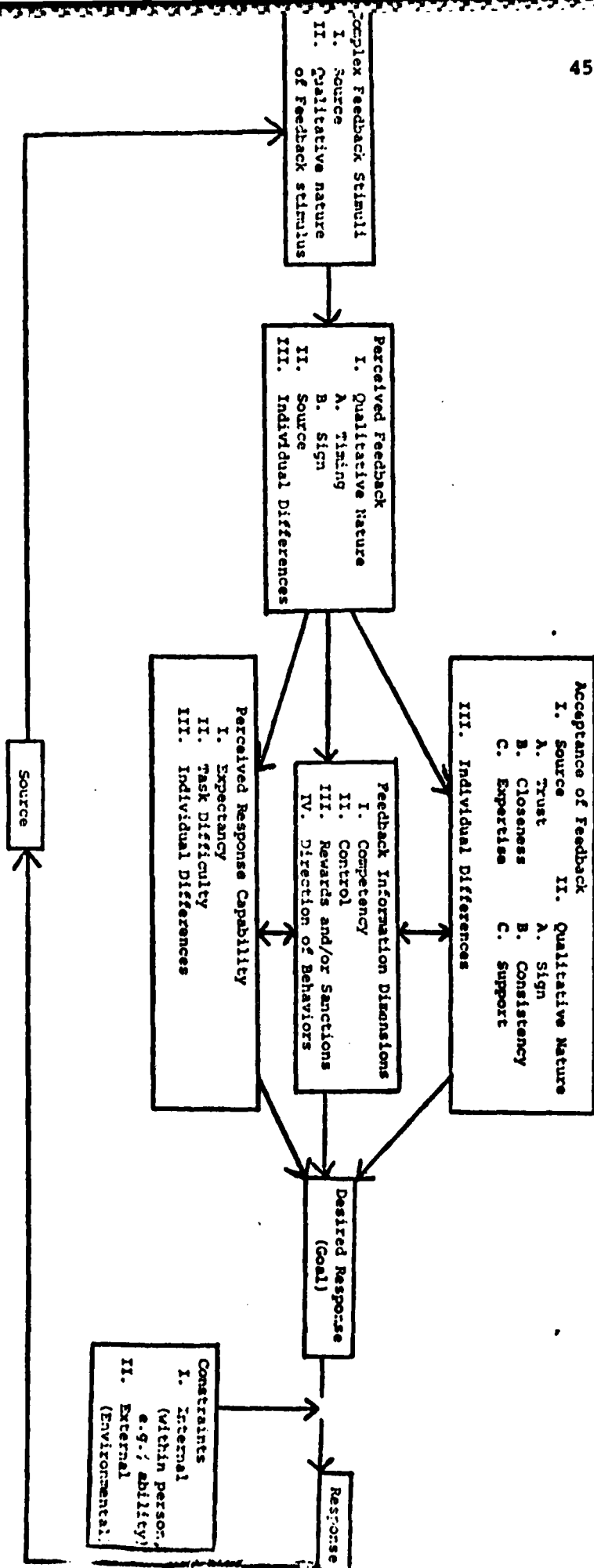
distort the feedback to make it appear more positive through selective perception and denial or repression. The end result is a tendency for the recipient to perceive the feedback as more positive than the source intended it to be. Although individual differences (especially for those with low self-concepts) provide occasional exceptions to this, there is a definite tendency to misperceive performance feedback more in the positive than the negative direction (Feather, 1968).

A second obstacle to accurate performance feedback perception is habit. Weiss (1977; personal communication) has discussed the fact that individuals differ in their receptivity to environmental stimuli. In Weiss' study (1977) bank managers with high self-esteem relied upon their own concept of how to do the job while low self-esteem managers searched their environment and were more influenced by what others were doing. Decreased reliance upon external cues is also quite likely to occur in performance settings in which, after the early experience with the task, performance becomes routine. This suggests that, over time, there should be a tendency for the recipient to be less sensitive to performance feedback. The effect should be most pronounced in settings in which performers must rely upon subtle, indirect feedback from sources outside themselves. McCall and DeVries (1976) suggest that, in many jobs, vague and indirect feedback is the rule rather than the exception. We suggest that, in such settings, experience with the task leads to a sense of confidence in one's performance judgments and decreases in a perceived need to seek others' evaluations of one's performance.

The perceptual problems with feedback suggest that effective use of feedback requires that the source occasionally checks with the recipient to assess what feedback is being perceived. This information would alert the source to discrepancies between intended feedback and perceived feedback. Although assessing feedback perceptions is most relevant when the source is some other person and least relevant for the self as a source, an analogous

case does exist for the task as source. The performer (and therefore the recipient) may rely upon inappropriate cues from the task for his or her performance feedback. Assessment of the perceived feedback would be valuable for training people on the task to appropriately monitor and adjust their own behavior.

Phase two of the feedback accepts as inputs the individual's perception of the feedback stimulus in all of its complexity. The information is then processed and leads to an intended behavior. In this phase the feedback serves both a directive and a motivating function (Payne & Hauty, 1956). While we agree with Payne and Hauty's functional categories as conceptually distinct functions served by feedback, the review clearly indicated that any given feedback stimulus conveys a complex set of information that usually is difficult to classify exclusively into either one of these two categories. Furthermore, both functions overlap as the performer processes information about his or her past performance and forms goals for future performance. Therefore, the simplified dual function view of feedback was expanded.

The expanded view concentrated upon the information conveyed by feedback to be used to form a desired level of response or a goal. From this point of view, feedback conveys information about competency, personal control, future rewards and sanctions, as well as the specific behaviors required for task accomplishment (see Figure 3). All four of these types of information influence some combination of the three major features of goals - specificity, difficulty, and degree of participation in the setting of the goal. In addition, feedback provides cues about the credibility of the source who administers the feedback and allows the recipient to form a perception about his or her ability to respond to the feedback.

Although feelings of competency, personal control, anticipated rewards, and direction of behavior information all contribute to goal setting and performance, there is reason to believe that the four cues are not independent

and additive in their effect on the desired response. The issue is particularly intriguing when the personal control dimension is considered. It was suggested that increasing the frequency of feedback may increase the extent to which the recipient feels controlled by the source - either some other individual or the task. To the extent that this is true, increases in feedback may decrease the level of the desired response even if the feedback is positive. This conclusion is counter to the generally accepted view that increases in the amount of feedback leads to increased task motivation (Hackman & Oldham, 1975). Our review suggests that this generalization should be qualified to recognize that there is a point beyond which increases in feedback may decrease task motivation because of the controlling nature of the feedback. Research is needed to explore this possibility.

The inclusion of information about rewards and/or sanctions to follow from the source for given behaviors incorporates the notion of the power relationship between the source and the recipient. Although feedback deals with the task itself, compliance with it may be influenced by the power the source holds over the recipient. Other things being equal, the recipient should be more motivated to respond to the feedback when the feedback implies that the source will provide valued rewards for compliance. The more the feedback conveys reward contingencies to the recipient and the more he or she values the rewards, the greater the source's power over the performer.

Feedback may serve the same function by acting as a secondary reinforcer. In this case, it could be argued that feedback itself takes on reinforcing properties. Regardless of whether the feedback is a secondary reinforcer or symbolizes anticipated reinforcements, the effect contributed by feedback under many conditions should be to influence the desired levels of behavior on subsequent encounters with the task due to the rewarding characteristics of the feedback.

In conclusion, it should be emphasized that our concentration upon the feedback process should not cause one to lose sight of the fact that the final phase - that of behavior - is the criterion against which feedback effectiveness is evaluated. At some point one must look at the effects of feedback on behaviors. It is our intention to emphasize that to relate feedback directly to behavior usually is very confusing. Results are contradictory and seldom straightforward. Through a systematic analysis of what goes on between the administration of the feedback and the subject's selection of a response, the effects of feedback can be better understood and predicted.

References

Adams, J.A. Response feedback and learning. Psychological Bulletin, 1968, 70, 486-504.

Ammons, R.B. Effects of knowledge of performance: A survey and tentative theoretical formulation. Journal of General Psychology, 1956, 54, 279-299.

Anderson, R., Kulhavy, R., & Andre, T. Feedback procedures in programmed instruction. Journal of Educational Psychology, 1971, 62(2), 148-156.

Argyris, C. Personality and organization theory revisited. Administrative Science Quarterly, 1973, 18, 141-167.

Atkinson, J.W. An introduction to motivation. Princeton, NJ: Van Nostrand, 1964.

Atkinson, J.W., & Feather, N.T. (Eds.) A theory of achievement motivation. New York: Wiley, 1966.

Baller, W. Note on difficulty of material and delay of knowledge of results. Psychological Reports, 1970, 26, 377-378.

Baron, R.M., Cowan, G., & Ganz, R.L. Interaction of locus of control and type of performance feedback. Journal of Personality & Social Psychology, 1974, 30, 285-292.

Baron, R.M., Cowan, G., Ganz, R.L., & McDonald, M. Interaction of locus of control and type of performance feedback: Considerations of exter. validity. Journal of Personality and Social Psychology, 1974, 30, 285-292.

Baron, R.M., & Ganz, R.L. Effects of locus of control and type of feedback on performance of lower class black children. Journal of Personality and Social Psychology, 1972, 21, 124-130.

Buchwals, A.M., & Meager, R.B. Immediate and delayed outcomes: Learning and the recall of responses. Journal of Experimental Psychology, 1974, 103, 758-767.

Burke, R.J., & Wilcox, D.S. Characteristics of effective employee performance review and development interviews. Personnel Psychology, 1969, 22, 291-305.

Campbell, J.P., Dunnette, M.D., Lawler, E.E., III, & Weick, K.E., Jr. Managerial Behavior, Performance, and Effectiveness. New York: McGraw-Hill, 1970.

Campbell, J.P., Pritchard, R.D. Motivation theory in industrial and organizational psychology., in M.D. Dunnette (Ed.) Handbook of Industrial and Organizational Psychology. Chicago: Rand McNally, 1976.

Chapanis, A. Knowledge of performance as an incentive in repetitive monotonous tasks, Journal of Applied Psychology, 1964, 48, 263-267.

Cook, D.M. The impact on managers of frequency of feedback. Academy of Management Journal, 1968, 11, 263-277.

Cummings, L.L. Appraisal purpose and the nature, amount, and frequency of feedback. Presented at the 84th Annual Convention of the American Psychological Association, Washington, D.C., September, 1976.

Cummings, L.L., Schwab, D.P., & Rosen, N. Performance and knowledge of results as determinants of goal setting. Journal of Applied Psychology, 1971, 55, 526-530.

DeCharms, R. Personal Causation: The Internal Affective Determinants of Behavior. New York: Academic Press, 1968.

Deci, E.L. The effects of contingent and non-contingent rewards and controls on intrinsic motivation. Organizational Behavior and Human Performance, 1972, 8, 217-229 (a).

Deci, E.L. Intrinsic motivation, extrinsic reinforcement, and inequity. Journal of Personality and Social Psychology, 1972, 22, 113-120 (b).

Deci, E.L. Intrinsic Motivation. New York: Plenum Press, 1975.

Feather, N.T. Change in confidence following success or failure as a predictor of subsequent performance. *Journal of Personality & Social Psychology*, 1968, 9, 38-46.

Fishbein, M. Attitude and the prediction of behavior. In M. Fishbein (ed) *Readings in Attitude Theory and Measurement*. New York: John Wiley and Sons, 1967.

Fisher, C.D., & Pritchard, R.D. The effects of personal control, extrinsic rewards, and competence on intrinsic motivation. *AFOSR Technical Report*, November, 1976.

French, J.P.R., Jr., Kay, E., & Meyer, H.H. Participation and the appraisal system. *Human Relations*, 1966, 19, 3-19.

Gagne, R.M. *The Conditions for Learning*. New York: Holt, Rinehart & Winston, 1965.

Gibbs, C.B., & Brown, I.D. *Increased production from the information incentive in a repetitive task. Medical Research Council, Applied Psychological Research Unit*, Great Britain, 1955 (March), No. 230.

Goldstein, I.L. *Training: Program Development and Evaluation*. Belmont, California: Brooks Cole, 1974.

Greller, M.M., & Herold, P.M. Sources of feedback: A preliminary investigation. *Organizational Behavior and Human Performance*, 1975 (April), 13(2), 244-256.

Hackman, J.R., & Lawler, E.E., III. Employee reactions to job characteristics. *Journal of Applied Psychology*, 1971, 55, 259-286.

Hackman, J.R., & Oldham, G.R. Development of the job diagnostic survey. *Journal of Applied Psychology*, 1975, 60, 159-170.

Hackman, J.R., & Oldham, G.R. Motivation through the design of work: Test of a theory. *Organizational Behavior and Human Performance*, 1976, 16, 250-279.

Hackman, J.R., & Oldham, G.R. Motivation through the design of work: Test
of a theory. Technical Report No. 6, Department of Administrative
Science, Yale University, 1974.

Halperin, K., Snyder, C.R., Shenkel, R.J., & Houston, B.K. Effect of source
status and message favorability on acceptance of personality feedback.
Journal of Applied Psychology, 1976, 61, 85-88.

Hamner, W.C., & Harnette, D.L. Goal setting, performance, and satisfaction
in an interdependent task. Organizational Behavior and Human Perfor-
mance, 1974, 12, 217-230.

Harari, H. Level of aspiration and athletic performance. Perceptual &
Motor Skills, 1969, 28, 519-524.

Herold, D.M., & Greller, M.M. Feedback: The definition of a construct.
Academy of Management Journal, 1977, 20, 142-147.

Hogan, J.L., Fisher, R.H., & Morrison, B.J. Social feedback and coopera-
tive game behavior. Psychological Reports, June, 1974, 1075-1082.

House, R.J. A path-goal theory of leader effectiveness. Administrative
Science Quarterly, 1971, 16, 321-338.

Hundal, P.S. Knowledge of performance as an incentive in repetive indus-
trial work. Journal of Applied Psychology, 1969, 53, 224-226.

Huse, E.F. Performance appraisal - A new look. Personnel Administration,
1967, Mar-Apr, 3-5, 16-18.

Ilgen, D.R. Satisfaction with performance as a function of the initial
level of expected performance and the deviation from expectations.
Organizational Behavior and Human Performance, 1971, 6, 345-361.

Ilgen, D.R., & Hamstra, B.W. Performance satisfaction as a function of the
difference between expected and reported performance at five levels of
reported performance. Organizational Behavior and Human Performance,
1972, 7, 359-370.

Ivanecevich, J.M., Donnelly, J.H., & Lyon, H.L. A study of the impact of
management by objectives on perceived need satisfaction. Personnel
Psychology, 1970, 23, 139-151.

Jacobs, M., Jacobs, A., Feldman, G., & Cavior, N. The credibility gap:
Delivery of positive and negative and emotional and behavioral feed-
back in groups. Journal of Consulting & Clinical Psychology, 1973,
4(2), 215-223.

Jones, E.E., & Davis, K.E. From Acts to Dispositions: The Attribution Process
in Person Perception. In L. Berkowitz (ed.) Advances in Experimental
Social Psychology, (Vol. 2), New York: Academic Press, 1965.

Kanfer, F.H., Karoly, P., & Newman, A. Source of feedback, observational
learning and attitude change. Journal of Personality and Social Psychology,
1974, 29(1), 30-38.

Kelley, H.H. The processes of causal attribution. American Psychologist,
1973, 28, 107-128.

Klein, S.M., Kraut, A.I., & Wolfson, A. Employee reactions to attitude sur-
vey feedback: A study of the impact of structure and process. Adminis-
trative Science Quarterly, 1971, 16, 497-514.

Korman, A.K. Industrial and Organizational Psychology. Englewood Cliffs, NJ:
Prentice-Hall, 1971.

Korman, A.K. Toward a hypothesis of work behavior. Journal of Applied Psy-
chology, 1970, 54, 31-41.

Kulhavy, R.W., & Anderson, R.C. Delay-retention effect with multiple choice
tests. Journal of Educational Psychology, 1972, 63, 505-512.

Lair, C.V., & Smith, R.K. Utilization of verbal and non-verbal feedback
among college subjects. Psychological Reports, 1970, 27, 807-810.

Latham, G.P., & Baldes, J.J. The "practical significance" of Locke's theory
of goal setting. Journal of Applied Psychology, 1975, 60, 122-124.

Latham, G.P., & Kinne, S.B., III. Improving job performance through training in goal setting. Journal of Applied Psychology, 1974, 59, 187-191.

Latham, G.P., & Yukl, G.A. Assigned versus participative goal setting with educated and uneducated wood workers. Journal of Applied Psychology, 1975, 60, 299-302.

Lawler, E.E., III. Motivation in Work Organizations. Belmont, California: Brooks Cole, 1973.

Leskovec, E.W. A guide for discussing the performance appraisal. Personnel Journal, 1967, 46, 150-152.

Lied, T.R., & Pritchard, R.D. Relationships between personality variables and components of the expectancy-valence model. Journal of Applied Psychology, 1976, 61, 463-467.

Locke, E.A. Motivation effects of knowledge of results on goal setting. Journal of Applied Psychology, 1967, 51, 324-329.

Locke, E.A. The nature and causes of job satisfaction. In M.D. Dunnette (ed.) The Handbook of Industrial and Organizational Psychology, Chicago: Rand McNally, 1976.

Locke, E.A. Personnel attitudes and motivation. Annual Review of Psychology, 1975, 26, 457-480.

Locke, E.A. Toward a theory of task motivation and incentives. Organizational Behavior and Human Performance, 1968, 3, 157-189.

Locke, E.A., & Bryan, J.F. The directing function of goals in task performance. Organizational Behavior and Human Performance, 1969, 4, 35-42(b).

Locke, E.A., & Bryan, J.F. Knowledge of score and goal level as determinants of work rate. Journal of Applied Psychology, 1969, 53, 50-65(a).

Locke, E.A., Bryan, J.F., & Kendall, L.M. Goals and intentions as mediators of the effects of monetary incentives on behavior. Journal of Applied Psychology, 1968, 52, 104-121.

Locke, E.A., Cartledge, N., & Knerr, C.S. Studies of the relationship between satisfaction, goal setting, and performance. Organizational Behavior and Human Performance, 1970, 5, 135-158.

Locke, E.A., Cartledge, N., & Koeppel, J. Motivatio l effects of knowledge of results: A goal-setting phenomenon. Psychological Bulletin, 1968, 70, 474-485.

London, M., & Oldham, G.R. Effects of varying goal types and incentive systems on performance and satisfaction. Academy of Management Journal, 1976, 19, 537-546.

McCall, M.W., Jr. From subways to feedback: Inching toward a conceptual framework. Unpublished paper. Center for Creative Leadership: Greensboro, N.C., 1977.

McCall, M.W., Jr., & DeVries, D.L. When nuts and bolts are not enough: An examination of the contextual factors surrounding performance appraisal. Paper Presented at the 84th Annual Convention of American Psychological Association, Washington, D.C., September, 1976.

McCormick, E.J. Human Factors Engineering. New York: McGraw-Hill, 1970.

McGrath, J.E. Stress and behavior in organizations. In M.D. Dunnette (ed.) The Handbook of Industrial and Organizational Psychology, Chicago: Rand McNally, 1976.

Meyer, H.H. Performance review discussion: Making it constructive. Paper Presented at the 84th Annual Convention of American Psychological Association, Washington, D.C., September, 1976.

Meyer, H.H., Kay, E., & French, J.R.P. Split roles in performance appraisal. Harvard Business Review, 1965, 43, 123-129.

Meyer, H.H., & Walker, W.B. A study of factors relating to the effectiveness of a performance appraisal program. Personnel Psychology, 1961, 14, 291-298.

Miller, G.A., Gallenter, E., & Pribram, K.H. Plans and the Structure of Behavior. New York, Holt, 1960.

Miner, J.B. Management appraisal: A capsule review and current references. Business Horizons, 1968, October, 83-96.

Mitchell, T.R. Expectancy models of job satisfaction, occupational preference, and effort: A theoretical, methodological, and empirical appraisal. Psychological Bulletin, 1974, 81, 1053-1077.

Nichols, J.G. Causal attributions and other achievement related cognitions: Effects of task outcome, attainment value and sex. Journal of Personality and Social Psychology, 1975, 31(3), 379-389.

Payne, R.B., & Hauty, G.T. The effect of psychological feedback upon work decrement. Journal of Experimental Psychology, 1955, 50, 343-351.

Porter, L.W., & Lawler, E.E., III. Managerial Attitudes and Performance. Homewood, IL: Dorsey Press, 1968.

Reynolds, G.S. A Primer of Operant Conditioning. New York: Appleton-Century-Crofts, 1968.

Rotter, J.B. Generalized expectancies for internal versus external control of reinforcement. Psychological Monographs, 1966, 80, 1-28.

Ryan, T.A. Intentional Behavior: An Approach to Human Motivation. New York: Ronald Press, 1970.

Ryback, D. Confidence and accuracy as a function of experience in judgement-making in the absence of systematic feedback. Perceptual and Motor Skills, 1967, 24, 331-334.

Sassenrath, J.M. Theory and results on feedback and retention. Journal of Educational Psychology, 1975, 67(6), 894-899.

Shrauger, J.S., & Rosenberg, S.E. Self-esteem and the effects of success and failure feedback on performance. Journal of Personality, 1970, 38, 404-417.

Smith, R.E., & Sarason, I.G. Social anxiety and evaluation of negative inter-personal feedback. Journal of Consulting and Clinical Psychology, 1975, 43, 429.

Stagner, R. The gullibility of personnel managers. Personnel Psychology, 1958, 11, 347-352.

Steers, R.M. Task-goal attributes, n-achievement, and supervisory performance. Organizational Behavior and Human Performance, 1975, 13, 392-403.

Steers, R.M., & Porter, L.W. The role of task-goal attributes in employee performance. Psychological Bulletin, 1974, 81(7), 434-452.

Surber, J.R., & Anderson, R.C. Delay-retention effect in natural classroom settings. Journal of Educational Psychology, 1975, 67, 170-173.

Tuckman, B.W., & Oliver, W.F. Effectiveness of feedback to teachers as a function of source. Journal of Educational Psychology, 1968, 59, 297-301.

Umstot, D.D., Bell, C.H., Jr., Mitchell, T.R. Effects of job enrichment and task goals on satisfaction and productivity: Implications for job design. Journal of Applied Psychology, 1976, 61, 379-394.

Vroom, V.H. Work and Motivation. New York: John Wiley and Sons, 1964.

Wade, T.C. Relative effects on performance and motivation for self-monitoring correct and incorrect responses. Journal of Experimental Psychology, 1974, 103(2), 245-248.

Weiss, H.M. Subordinate imitation of supervisor behavior: The role of modeling in organizational socialization. Organizational Behavior and Human Performance, in press.

White, R.W. Motivation reconsidered: The concept of competence. Psychological Review, 1959, 66, 297-333.

Zajonc, R.B., & Brickman, P. Expectancy and feedback as independent factors in task performance. Journal of Personality and Social Psychology, 1969, 11, 148-156.