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ABSTRACT

The paper presents a synthesis and review of the literature in education, psychology, and organizational behavior relevant to the effects of feedback used with postsecondary teachers to improve their teaching. It is concluded that most people will change their behavior if: the feedback recipients are volunteers; a consultant mediates the feedback; the consultant is perceived by the client to be empathic, supportive, nonjudgmental, knowledgeable, and trustworthy; a variety of sources of feedback are available; the sources of feedback are nonthreatening and either equal or lower in status than the recipient; a variety of modes of feedback are available; the recipient identifies his/her own problems and goals; the feedback contains information that is concrete, irrefutable, accurate, specific, and focused toward a few specific goals; the feedback creates only a moderate amount of cognitive dissonance; the feedback reduces the recipient's uncertainty; the feedback is presented in a manner sensitive to the recipient's learning style and amount of teaching experience; the recipient is able to respond to the feedback; and positive feedback is given soon after performance and negative feedback immediately preceding the next performance. An ideal process for instructional improvement based on these findings is described. Contains 68 references. (DB)

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Optimal Conditions for Effective Feedback

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OPTIMAL CONDITIONS FOR EFFECTIVE FEEDBACK

Literature in education, psychology, and organizational behavior was reviewed in order to study the effects of feedback to post-secondary teachers to improve their teaching. From these three fields, pertinent theoretical pieces, empirical studies, and prior reviews of the literature were analyzed in order to determine the state of the art in the field of feedback. The purpose of the present paper is to synthesize the variables found to be critical to effective feedback and to apply these variables to instructional consultation at postsecondary institutions.

Organizing the Literature

When analyzing any event, one attempts to determine the salient features of that event, most often by asking the essential *W* questions: *who*, *what*, *when*, *where*, *why*, and *how*. Within this framework, an instance of feedback as an event can be analyzed.

Ilgén, Fisher, and Taylor (1979) conceptualize feedback as "a special case of the general communication process in which some sender (hereafter referred to as a *source*) conveys a *message* to a *recipient*" (p. 350, italics in original). Ilgén, Fisher, and Taylor further state that this message may be conveyed via a number of ways, or modes, at different points in time during or after the completion of the task.

Therefore, a convenient typology may be applied to the components of feedback: *Who* denotes the source of the feedback and the recipient of the feedback. *What* denotes the content of the feedback message. *When* denotes the occasion upon which an instance feedback occurs. *Where* denotes the location in which the instances of feedback occurred. *Why* denotes the reason for the occurrence of feedback. *How* denotes in what manner the feedback is given and received.

The issue of *why* feedback is being given and received is not answered within this paper. The majority of the studies reviewed do not explicitly or implicitly discuss why the feedback was given. Some studies involve naturalistic settings, such as providing feedback to teachers to improve their teaching, and some studies involve artificial settings, such as classroom or laboratory experiments. In neither case is it possible to determine the motivation of the subjects.

Where feedback occurs was an issue not addressed in any of the literature reviewed. It would be safe to assume that feedback sources and recipients are affected by variables such as color, lighting, temperature, noise, psychological safety, etc. However, none of the literature found

addressed this issue; the impact of this variable is an avenue yet to be explored.

The elimination of the question *why* and the question *where* leaves the other four questions: *who*, *what*, *when*, and *how*. Analysis of these variables has revealed that the answers to the questions of *what* (content of message), *when* (occasion of feedback), and *how* (mode of feedback) often vary with the *who* in question: Sources and recipients of feedback have very different and distinct roles and attitudes toward the feedback process. Therefore, two separate discussions are warranted: one dealing with the *what*, *when*, and *how* as it relates to the source of the feedback, and one discussion concerning the *what*, *when*, and *how* as it relates to the recipient of feedback. Both discussions will consider the variables which influence the effectiveness of feedback to postsecondary teachers in instructional consultation.

The Source of Feedback

Figure 1 provides an overview of variables related to the source that enhance the effectiveness of feedback. Each variable and the rationale for each variable are reviewed below.

Source of Feedback: *Who*

The most widely researched variable concerning feedback is the source of the feedback – *who*. Feedback may be conveyed by a variety of sources: oneself, colleagues, supervisors, administrators, students, external consultants, alumni, and statistical data. Depending upon one's questions, effective feedback may be received from any of these sources. In general, the following conditions tend to make feedback more effective.

Feedback should be conveyed by multiple sources including self. Early studies in the educational literature on the effects of feedback generally examined one type of feedback from one source. More recently, several researchers reviewed the literature on these single-source methods: Batista (1976) on peer consultation; Fuller and Manning (1973) and Perlberg (1983) on video self-confrontation; and Newfield (1980) and Seldin (1982) on self-assessment. While each reviewer advocated the theoretical usefulness of feedback via his respective source, none could conclude that feedback from that source alone was valid, reliable or effective. Other researchers (Greenwood & Ramagli, 1980; Goldschmid, 1978; O'Hanlon & Mortensen, 1980) who reviewed the literature on several different sources of feedback concur with the single-source reviewers; they suggest that multiple sources ought to be employed in any feedback event. Several researchers who have constructed feedback programs that integrate feedback information from several sources have reported successful results (Cooper, 1982; Erickson & Erickson, 1979; Howard, 1977;

Orban, 1981; Perlberg & O'Bryant, 1968; Perlberg, Peri, Weintraub, Nitzan, and Shimron, 1972; Sweeney & Grasha, 1979).

In their review of the feedback literature in the field of organizational behavior, Ilgen, Fisher, and Taylor (1979) present evidence that feedback from the self is more valued and better recalled than is feedback from any other source, such as co-worker or supervisor. Similarly, Northcraft and Earley (1989) found that self-generated feedback was more credible than feedback from the organization or supervisor, and significantly increased performance. In addition, DeGregorio and Fisher (1988) found that subjects perceived the feedback process as more positive when they were involved in the assessment.

In the educational literature, Tuckman (1973) found feedback from self to be useful in producing cognitive dissonance. In their review of the literature on methods to improve college teaching, Levinson-Rose and Menges (1981) concluded that these discrepancies between instructors' self-ratings and student ratings facilitate change in teacher behavior.

The sources of feedback should be lower or equal in status to the recipient of feedback. As presented above, self is the source of feedback upon which people rely most heavily. However, uncertainty regarding performance coerces faculty to actively seek feedback from other sources (Ashford & Cummings, 1983).

Problems may arise when the source of feedback is higher in status than the recipient. Greller (1980) found that supervisors possess great misconceptions about the value that workers attach to different types of feedback. Tuckman and Oliver (1968) found that feedback from supervisors produces changes in teacher behavior opposite to that advocated in the feedback session. Ilgen, Fisher, and Taylor (1979) purport that the power of the source greatly affects the perception of, acceptance of, and desire to respond to feedback.

Feedback should be mediated by a consultant. In their review of the literature on improving teaching, O'Hanlon and Mortensen (1980) advocated the use of consultation. In his meta-analysis on the effectiveness of student ratings as a method of feedback, Cohen (1980) found student rating feedback augmented by consultation to be much more effective than feedback from student ratings alone. When they replicated and updated Cohen's work, Menges and Brinko (1986) found that consultation quadrupled the effect of feedback from student ratings.

A number of educators have examined the role of the consultant and conclude that the feedback process must be a client-centered and democratic process if it is to be useful to the

feedback recipient and if it is to be effective in producing behavior change (Carroll & Goldberg, 1985; Cooper, 1982; Dalgaard, Simpson & Carrier, 1982; Urban, 1981; Sweeney & Grasha, 1979). Rather than assuming the role of expert or problem solver, the consultant acts as facilitator, helping the client identify problem areas, set priorities, set goals, brainstorm for alternative behaviors and strategies, and so forth. This shift in role – from expert/problem-solver to collaborator/facilitator – ensures that all authority, as well as responsibility, lies with the client rather than the consultant.

However, there is some evidence that a collaborative consultant may not be effective for all clients all of the time. Consultants in Brinko's (1989, 1990) study said they were likely to be collaborative with clients experienced in their fields but more likely to be prescriptive with novices. The actual behavior of these consultants ran along a continuum from prescriptive to collaborative, both with clients new in their fields and with clients experienced in their fields. Wergin, Mason, and Munson (1976) found that relationships were most often professional in nature with new clients, changing to one personal in nature after trust and credibility were established. Concurrently, the role of the consultant shifted from expert to collaborator as the relationship matured and as the expertise of the subject grew.

Another group of researchers have examined the traits that a consultant must possess if instructors are to accept feedback. Like Wergin, Mason, and Munson (1976), Ilgen, Fisher, and Taylor (1979) and Bannister (1986) found that a source of feedback must be credible. This implies two qualities: first, the source must be perceived by the recipient as being knowledgeable enough to make an accurate judgment on performance; second, the recipient must trust the motives and intentions of the source. Tuckman (1973) posits that the "feedback source must be reputable and believable and intentions accepted" (p. 123). Podsakoff and Farh (1989) found that subjects who received more credible negative feedback set higher goals and performed tasks at higher levels than those who received less credible negative feedback. Carroll and Goldberg (1985), Dalgaard, Simpson, and Carrier (1982), and Howard (1977) contend that a consultant should be empathic supportive, non-judgmental, and able to keep consultations confidential. From two summaries of the literature on interpersonal skills, Fuller and Manning (1973) concluded that consultants should have CARE: Communicated Authenticity, positive Regard, and Empathy.

Mode of Feedback: How

Another variable to be considered in the feedback process is the mode of feedback, or *how*

feedback is communicated to the recipient. Feedback may be verbal, written, statistical, graphical, or behavioral in the manner in which it is conveyed; it may be unstructured or structured (such as in a systematic observation) in nature; and it may be solicited or unsolicited by the recipient. In general, the following behaviors tend to make feedback more effective.

Feedback should be conveyed in variety of modes. Little systematic research has been conducted comparing different modes of feedback dissemination. Kotula (1975) found no difference between groups that had feedback structured around the Tuckman Teacher Feedback Form (TTFF) and groups that received feedback that was unstructured. Cohen and Herr (1982) found that consultative feedback from student ratings which was conveyed in a written format was almost as effective as feedback conveyed verbally, via a consultant.

The question "Which mode is most effective?" is inextricably bound to the question "Which source is most effective?" Because each instructional improvement program is implemented differently, it is impossible to determine from current research which mode, if any, is most effective -- just as it is impossible to determine which source, if any, is most effective.

Content of Feedback: What

Probably the most critical component of the feedback process is the content of the message. Several theoretical and empirical researchers in education, psychology, and organizational behavior have explored what people say to each other in a feedback episode. In general, the following kinds of information tend to make feedback more effective.

Feedback should contain concrete information. In their review of the feedback literature in organizational behavior, Ilgen, Fisher, and Taylor (1979) purport that the usefulness of feedback is dependent upon the kind and amount of information contained in the feedback message. "Thus an observed nod of the head or pat on the back from a supervisor has little or no informational value in and of itself" (p. 351). In the instructional development literature, Carroll and Goldberg (1985) similarly posit that feedback must be unambiguous and informative. Likewise, in his research with elementary and secondary teachers, Tuckman (1973) posited that feedback must involve concrete behaviors or characteristics.

Feedback should contain accurate data and irrefutable evidence. Tuckman (1973) also purported that feedback must provide clear, incontrovertible evidence of behavior. Proponents of video self-confrontation (Fuller & Manning, 1973; Perlberg & O'Bryant, 1968; Star, 1979) argue that one of the inherent strengths of videotape feedback is its irrefutable portrayal of events.

However, videotape – or a structured interview or a systematic observation (Lewis, 1988; Roland, 1983) – can be biased if only a portion of the reality is recorded. Hence, irrefutable evidence is useful only if it is complete.

Feedback should contain specific data. In his review of the literature in education, Goldschmid (1978) asserted that specificity was of utmost importance in providing feedback to teachers. Reviewing the literature in organizational behavior, Ilgen, Fisher, and Taylor (1979) concurred; they concluded that specific critical incidents help feedback recipients to understand their evaluation. More recently in the fields of education and organizational development, Murray (1987) and Liden and Mitchell (1985) found that feedback recipients preferred specific feedback over nonspecific feedback. In the medical field, Wigton, Patil, and Hoellerich (1986) found the same results; in their study, medical students learned to diagnose illnesses more accurately when specific performance feedback was provided.

Feedback should be focused. Rezler and Anderson (1971) found that feedback from videotape had to be directed at specific behaviors in order to produce behavioral change. In the literature on video self-confrontation, Fuller and Manning (1973) and Star (1979) stress that the key to effective video feedback is reviewing performance with specific goals in mind. Using stimulated recall as a video feedback technique with instructors, Taylor-Way (1988) concurs that helping faculty focus on specific issues helps avoid shallow analysis of teaching. In their research on the technique of microteaching, Perlberg and O'Bryant (1968) and Perlberg, Peri, Weinreb, Nitzan, and Shimron (1972) required teachers to focus only on one skill (such as lecture, questions, discussions) at a time. Likewise, faculty in the peer consultation program with Carroll and Goldberg (1985) concentrated on a limited number of goals; after mastery of these, new goals were set and behaviors corresponding to the new goals were focused upon.

Feedback should create cognitive dissonance. Several researchers based their works on dissonance theory. Tuckman (1973) postulated that to be effective feedback must point out discrepancies between one's self-perceptions and one's ideals. Fuller and Manning (1973) advocated the use of video self-confrontation because it "identifies for the viewer some previously suspected discrepancy between the actual and desired performance" (p.485). Similarly, Perlberg, Bar-On, Levin, Bar-Yam, Lewy, and Etrog (1974) posited that cognitive dissonance creates a psychological climate that prepares people for change.

Feedback should contain models for appropriate behavior. Tuckman (1973) stated that the

feedback recipient must have a clear model of expected behaviors or characteristics. Fuller and Manning (1973) advocated *in vivo* experiences; these not only provide a clear model of the desired behavior, but also provides practice in the desired behavior. Star (1979) purported that either live or filmed models that demonstrate proper skill execution are acceptable, and that they are necessary for behavior change. In Farrell's (1973) empirical study, teachers who viewed models were perceived by students to be more effective than teachers who did not view models.

Occasion of Feedback: *When*

Compared with the other variables of *Who*, *How* and *What*, the issue of *when* feedback should be given has received relatively little attention. Feedback can be given during or after the performance. And if after the performance, there remains the question of *how long* after the performance. In this regard, there are two principles that tend to make feedback more effective.

Feedback should be given as soon as possible after performance. In their review of the educational literature, Fuller and Manning (1973) argue that video feedback should be reviewed soon after taping so as to reduce feelings of detachment to the videotaped image and to avoid perceptions of the videotaped image as an "older, no-longer-me" self. In the organizational literature, Ilgen, Fisher, and Taylor (1979) found a complex relationship of three factors that influence the effectiveness of feedback: (1) the length of post feedback interval, (2) the frequency of feedback itself, and (3) the nature of the intervening activity between the behaviors and the feedback. In general, however, they concluded that "the longer the delay in the receipt of feedback, the less the effect of feedback on performance" (p. 354).

Sources of feedback should provide more than one instance of feedback; feedback should be considered as a process, not product. In their empirical study of teachers, Rezler and Anderson (1971) found that repeated focused videotape reviews were necessary to change teacher self-perceptions and behavior. In their review of the organizational literature, Ilgen, Fisher, and Taylor (1979) found that more frequent feedback was more effective. Similarly, the trend in educational research is toward feedback delivery systems that provide several instances of feedback (Blumenthal, 1978; Carroll & Goldberg, 1985; Cooper, 1982; Howard, 1977; Nelson, 1981; Perlberg & O'Bryant, 1968; Perlberg et al., 1972; Sorge, 1971; Sweeney & Grasha, 1979).

The Recipient of Feedback: *Who*, *How*, *What*, and *When*

Figure 2 provides an overview of variables related to the recipient of the feedback that enhance the effectiveness of feedback. Each variable and the rationale for each variable are

developed below.

Recipient of Feedback: *Who*

Researchers in education, psychology, and organization had initially focused their attention on the source of the feedback. However, as the process of feedback became better understood, researchers began to view feedback as an episode of two-way communication. Thus, it became necessary to study the characteristics of both persons in the interaction. In general, the following characteristics of recipients tend to make feedback more effective.

The recipients of feedback should be volunteers or at least receptive to the feedback process.

In the educational literature, Goldschmid (1978) posited that feedback will be effective only if instructors receiving feedback care about the feedback and are motivated to improve their teaching. Several others who have implemented instructional improvement research programs concur in their use of volunteers (Blumenthal, 1978; Carroll & Goldberg, 1985; Clark & Bergstrom, 1983; Erickson & Erickson, 1979; Erickson & Sheehan, 1976; Farrell, 1973; Ferren & Geller, 1983; Kotula, 1975; Nelson, 1981; Orban, 1981; Sweeney & Grasha, 1979). In the organizational literature, Ilgen and Moore (1987) found that performance improved when feedback recipients were free to access or not access the feedback. [See Ashford & Cummings (1983) for an extensive explication of feedback seeking behavior.]

Before attempting to provide feedback, the source of feedback should attempt to determine the locus of control of the recipient. This issue will be treated within the variable *What*.

Before attempting to provide feedback, the source of feedback should attempt to determine the level of self-esteem of the recipient. This issue also will be treated within the variable *What*.

Before attempting to provide feedback, the source of feedback should determine the amount of experience and the developmental stage of the recipient. In the educational literature, Cytrynbaum, Lee, and Wadner (1982) and Baldwin and Blackburn (1981) examined the nexus between academic career stages and adult developmental stages. Cytrynbaum, Lee, and Wadner contended that periods of transition are particularly stressful and may result in a burst of creative productivity or in stagnation. Baldwin and Blackburn found that two periods were especially difficult for faculty members: the first three years of teaching, and periods in which new professional responsibilities were shouldered. In the organizational literature, Dalton, Thompson, and Price (1977) proposed that there are four stages in professional careers: apprentice, colleague, mentor, and sponsor. As the central activities and major psychological issues differ between

stages in one's career, feedback needs differ also.

Mode of Feedback: How

Because feedback may take a variety of forms – verbal, written, statistical, graphical, or behavioral; unstructured or structured – some forms may be more amenable than others to feedback recipients. Thus, the manner in which feedback is conveyed can affect its effectiveness. In general, the following principle tends to make feedback more effective.

The recipient should be able to select the mode of feedback. Proponents of video self-confrontation (Fuller & Manning, 1973; Perlberg, 1978, 1983; Star, 1979) argue that video feedback is not for everyone. In many cases it can be a useful tool; in other cases it can be a threatening and stressful experience, actually inhibiting performance or even increasing those behaviors which are desired to be extinguished. This same reasoning can be applied to all methods of feedback: the literature on individual differences makes clear the point that a wide range of perceptions and preferences exist among people in their reactions to feedback (Ilgen, Fisher & Taylor, 1979).

In addition, people exhibit a wide range of learning styles, from concrete experience to abstract conceptualization to active experimentation to reflective observation (Kolb, 1976). Thus, different modes of feedback will be more informative, meaningful and relevant than other modes to different individuals.

Content of Feedback: What

Like the manner in which feedback is conveyed, the content of the feedback can be perceived differently by different people. In general, attention to the following variables tends to make feedback more effective.

The content of the feedback should be sensitive to the recipient's locus of control. Ilgen, Fisher, and Taylor (1979) found that people with an internal locus of control responded better than those with an external locus of control to feedback that was derived from the task and/or self-discovery. On the other hand, those with an external locus of control respond better to feedback that is derived from others, such as cues, opinions, and advice from students, peers, or external consultants.

The content of the feedback should be sensitive to the recipient's self-esteem. In the educational literature, Fuller and Manning (1973) contend that those already high in self-esteem will benefit most from video feedback; those low in self-esteem will benefit less. In the

organizational behavior literature, Ilgen, Fisher, and Taylor (1979) found that high-esteem individuals relied more on their own self-perceptions; low-esteem individuals relied more on feedback from external sources. Thus discussions with persons of high self-esteem should focus primarily on self-generated feedback, and discussions with persons of low self-esteem should emphasize feedback from other sources.

The content of feedback should contain a liberal amount of positive feedback with a selected and limited amount of negative feedback. In general, positive feedback is more accurately perceived and more accurately recalled than negative feedback; however, individuals given only positive feedback tend to become complacent (Podsakoff and Farh, 1989).

There is some evidence that individuals with high self-esteem do not perceive negative feedback as clearly as they perceive positive feedback; therefore, those high in self-esteem respond less to negative feedback than those low in self-esteem. Conversely, individuals low in self-esteem respond more to negative feedback (Ilgen, Fisher, & Taylor, 1979; Brockner, Derr, and Laing, 1987). Thus, in order to make the feedback message more accessible, a good rule of thumb for both those high and low in self-esteem is to provide a generous amount of positive feedback with limited and carefully selected negative feedback.

Negative feedback should be "sandwiched" between positive feedback. Davies and Jacobs (1985) found that feedback was most effective when feedback conversations began and ended with complimentary information. This principle can be implemented well with the principle above.

Negative feedback should be self-referenced or attributed to external causes. McCloskey and Leary (1985) found that norm-referenced negative feedback – that is, negative feedback that compares one's performance to other's performance – produced low self-esteem, low expectations, and decreased motivation. Conversely, self-referenced negative feedback – that is, negative feedback that compares one's performance to other measures of one's ability – increased subjects' attributions of performance to effort and heightened their expectations about their performance.

In his three studies of "destructive criticism" (feedback that was not specific nor considerate and attributed poor performance to internal causes), Baron (1988) found that destructive criticism produced lower levels of self-efficacy and higher levels of anger, tension, and conflict among subjects. Similarly, Bannister (1986), Liden and Mitchell (1985), and Liden, Ferris, and Dienesch (1988) found that feedback recipients responded more favorably toward feedback when explanations of poor performance were attributed to external causes (such as the environment) and

when successful performance was attributed to internal causes (such as skill and effort).

Feedback should create only a moderate amount of cognitive dissonance. Several researchers posited that cognitive dissonance creates a psychological climate that prepares people for change. However, there is some evidence that feedback is most effective when the discrepancies between feedback givers' and feedback recipients' perceptions are moderate, rather than large or small (Carroll & Goldberg, 1985; Fuller & Manning, 1973; Pambookian, 1974). Additionally, it appears that instructors who rate themselves more favorably than their source tend to exhibit the most behavior change (Levinson-Rose & Menges, 1981).

The content of the feedback should reduce uncertainty for the recipient. In their review of organizational literature, Ilgen, Fisher, & Taylor (1979) found that feedback is most valuable and most efficient when "it increases knowledge through a reduction in uncertainty by eliminating half of the alternative or competing explanations for behavior" (p. 35!). Ashford and Cummings (1983) concurred, and further posited that the perceived value of feedback is directly proportional to the uncertainty experienced.

The content of the feedback must be relevant and meaningful to the recipient. Relevancy has three aspects. First, as previously discussed, feedback must be delivered in a timely fashion (O'Hanlon & Mortensen, 1980), preferably shortly after observation of the performance. Second, feedback must relate specifically to the behaviors of that particular recipient (O'Hanlon & Mortensen, 1980). Finally, feedback must be conveyed in a language understandable to the recipient (Tuckman, 1973).

The content of the feedback must allow for response and interaction. The success of an interactive feedback system is exemplified by the work of Collins and Stevens (1983). As distinguished from the cybernetic approach to feedback – in which one element (such as a thermostat) responds to changing conditions (such as fluctuations in temperature) – Collins and Stevens' feedback cycle is bidirectional. In other words, the recipient responds to the source who in turn responds to the recipient, who responds to the source, and so on. Increasingly, educators are advocating feedback systems in which the recipient plays an active role (Cooper, 1982; Dalgaard, Simpson, & Carrier, 1982; Orban, 1981). This trend complements and directly relates to the literature on self as a source of feedback reviewed above.

The content of the feedback must relate to goals which are defined by the recipient or to rewards that result from positive performance. Problem-identification and goal-formulation by the

feedback recipient is one of the significant steps in the feedback process according to many educational researchers (Carroll & Goldberg, 1985; Cooper, 1982; Dalgard, Simpson, & Carrier, 1982; Howard, 1977; Orban, 1981; Perlberg & O'Bryant, 1968; Perlberg, et al., 1972; Sweeney & Grasha, 1979). In the organizational behavior literature, Balcazar, Hopkins, and Suarez (1985-86) found that the effects of feedback are more consistent when rewards or goal-setting is part of the feedback process.

It should be noted that this issue relates to the role of consultant. When the consultant acts as expert – that is, in systems where the feedback source takes primary responsibility for problem-identification and goal-formulation – the consultant must set well-specified and well-defined goals and rewards. When the consultant acts as collaborator/facilitator – that is, in systems where the feedback recipient takes primary responsibility for problem-identification and goal-formulation – the consultant must assist the client in defining rewards and goals.

Occasion of Feedback: *When*

Perceptions of feedback recipients vary also with regard to *when* feedback should be given. Considering their perceptions, there are two principles that tend to make feedback more effective.

Positive feedback should be delivered immediately after the performance; negative feedback immediately before the next performance. As previously mentioned, positive feedback in general is more readily and more accurately perceived and recalled than negative feedback. Therefore, positive feedback should be given immediately to reinforce desired behaviors. Negative feedback, on the other hand, is less readily and less accurately perceived and recalled. Therefore, negative feedback should be conveyed immediately before the next performance so that the feedback recipient, with fresh information, may exhibit behavior change immediately after the receipt of information (Ilgen, Fisher, & Taylor, 1979).

Feedback should not be conveyed too frequently. In general, most researchers agree that the more frequent the feedback, the better. However, in instances where the recipient perceives that feedback is too frequent, a loss of personal control may be felt, and/or the recipient may come to depend primarily on external cues rather than relying primarily on self for feedback (Chhokar and Wallin, 1984; Fedor and Buckley, 1987). In this case "increasing feedback frequency may not only fail to improve performance but actually may be detrimental to it" (Ilgen, Fisher, and Taylor, 1979, p.369). In her study of feedback intervals, Haemmerlie (1985) found that feedback provided after each item more negatively affected performance than feedback provided after the

entire exam was completed.

Summary

When dealing with organisms so diverse as humans, it is impossible and impractical to formulate precise prescriptions for behavior change. However, in general it appears that most people will change their behavior if: the feedback recipients are volunteers; a consultant mediates the feedback; the consultant assumes the role of collaborator or facilitator rather than expert or problem-solver; the consultant is perceived by the client to be empathic, supportive, non-judgmental, knowledgeable, and trustworthy; a variety of sources of feedback are available to the client, who may choose any one or any combination for feedback; the sources of feedback are non-threatening and either equal or lower in status than the feedback recipient; a variety of modes of feedback are available to the recipient, who may choose any one or any combination for feedback; the feedback recipient identifies his/her own problems and formulates his/her own goals; the feedback contains information that is concrete, irrefutable, accurate, specific, and focused toward a limited number of the goals; the feedback creates a moderate amount of cognitive dissonance; the feedback reduces the recipient's uncertainty; the feedback is meaningful and relevant to the recipient; the feedback is presented in a manner sensitive to the recipient's learning style, locus of control, self-esteem, amount of teaching experience, and developmental stage of his/her career; the recipient is able to interact with and respond to the feedback; the feedback is given soon after performance, with positive feedback given immediately after the performance and negative feedback given immediately preceding the following performance; the feedback is given frequently but not too frequently; and the feedback is considered to be part of a process for change, rather than an inoculation.

Implications for Instructional Improvement

Combining evidence from the research literature in the fields of education, psychology, and organizational behavior it appears that the most effective feedback program for instructional improvement will follow the following process.

A faculty member will voluntarily contact an instructional consultant. At their initial meeting, the consultant will explore the instructor's teaching history, professional history, learning style, locus of control, and self-esteem. The consultant will assist the instructor in identifying those areas in his/her teaching that are rewarding and troublesome, in formulating a limited number of appropriate goals, in selecting the sources and modes of feedback that are particularly interesting,

and in setting up a comfortable work/feedback schedule.

With the background data collected, the consultant then becomes resource and proceeds to arrange for the types of feedback requested by the faculty member – videotape recordings, peer teams for classroom visits, peer groups for discussion of class materials, student ratings, student interviews, alumni surveys, systematic observation, interaction analysis, and so forth. While data are being collected from the other sources, the instructor with an internal locus of control and/or high self-esteem records his/her self-perceptions either through a structured instrument (for example, the instructor fills out the same rating form used by the students) or through an unstructured interview (for example, "What do you think was the weakest part of your lecture?"). An alternative procedure for instructors with an external locus of control and/or low esteem would be to collect the instructor's perceptions of how he/she thinks others are going to evaluate him/her. In this case, for example, the instructor would fill out the student rating form indicating expected student response, rather than self perceptions; in an unstructured interview, for example, the question would be "What do you think your colleague thought was the weakest part of your lecture?" After the data are collected, the consultant synthesizes the information.

As soon as possible after the data collection, the consultant and faculty member meet to discuss the results. The consultant presents the synthesized information which is supported by specific raw data. The information is accurate, concrete, specific, relevant, and focused toward the problems and goals identified earlier. The consultant points out areas where the instructor's perceptions are moderately discrepant from the perceptions of other sources. The consultant provides live or filmed models if the instructor wishes. If the instructor has an internal locus of control and/or high self-esteem, the consultant will focus on intrinsic feedback and internal cues; if the instructor has an external locus of control and/or low self-esteem, the consultant will focus on extrinsic feedback and external cues. In either case, the instructor should feel free to respond to and interact with the feedback. If the next teaching episode is soon, both positive feedback (a liberal amount) and negative feedback (a limited amount directed toward previously identified goals) will be provided. If the next teaching episode is not soon, only positive feedback will be given now; negative feedback will be given prior to the next teaching episode.

Problems, strategies, and goals are now renegotiated; the feedback cycle begins again, and continues until the instructor wishes to discontinue the feedback process.

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OPTIMAL CONDITIONS FOR EFFECTIVE FEEDBACK RELATIVE TO THE SOURCE OF FEEDBACK

WHO	HOW	WHAT	WHEN
<u>Source</u> 1. Multiple, including self 2. Status: lower or peer 3. Augmented with consultant-- a. status: lower or peer b. traits: empathic, supportive, non-judgmental, credible, knowledgeable, trustworthy, confidential c. relationship: professional/expert with new clients personal/collaborative with well-acquainted clients	<u>Mode</u> 1. Multiple	<u>Content</u> 1. Concrete information 2. Inrefutable evidence 3. Accurate data 4. Specific data 5. Focused 6. Cognitive dissonance 7. Models for specific skills	<u>Occasion</u> 1. As soon as possible 2. More than one instance (process)

OPTIMAL CONDITIONS FOR EFFECTIVE FEEDBACK RELATIVE TO THE RECIPIENT OF FEEDBACK

WHO	HOW	WHAT	WHEN
<u>Recipient</u> 1. Volunteer or receptive 2. Locus of control 3. Level of self-esteem 4. Amount of professional experience 5. Stage of career development 6. Stage of adult development	<u>Mode</u> 1. Selected by recipient	<u>Content</u> 1. Locus of control— a. intrinsic: internal cues b. extrinsic: external cues 2. Self-esteem— a. high: perform better with positive feedback b. low: perform worse with negative feedback 3. Lots of positive feedback; limited and selected negative feedback 4. Sandwich negative between positive 5. Negative: self-referenced or attributed to external sources 6. Moderate cognitive dissonance 7. Reduce uncertainty 8. Relevant 9. Meaningful 10. Responsive/interactive 11. Goals or rewards self-defined	<u>Occasion</u> 1. Timing— a. positive: just after task b. negative: just before next task 2. Not too frequently

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