The Effects of Information Technology and the Perceived Mood of the Feedback Giver on Feedback Seeking

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A major tenet in organizational behavior literature is that feedback improves performance. If feedback is thought to improve performance, then individuals should actively seek feedback in their work. Yet, surprisingly, individuals seldom seek feedback perhaps because of face-loss costs of obtaining feedback face-to-face. Furthermore, in cases where the giver is perceived to be in a bad mood, individuals may be even more reluctant to seek feedback if they believe seeking feedback risks the giver's wrath and a negative evaluation. In this paper, we explain how information technology can be designed to mediate feedback communication and deliver feedback that promotes feedback seeking. In a laboratory experiment, the effects of information technology and the perceived mood of the feedback giver on the behavior of feedback seekers are examined. The results showed that individuals in both the computer-mediated feedback environment and the computer-generated feedback environment sought feedback more frequently than individuals in the face-to-face feedback environment. In addition, individuals sought feedback more frequently from a giver who was perceived to be in a good mood than from a giver who was perceived to be in a bad mood.

Feedback seeking-Mood-Electronic communication-Feedback systems-Information technology

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1. Introduction

Generally, feedback has positive effects on performance (Chapanis 1964): it stimulates organizational learning, improves productivity (Locke et al. 1981, Locke and Latham 1990), and helps individuals develop interpersonal competence in social interactions (Argyris 1971). Furthermore, Ashford (1989) noted that feedback regulates individual behavior in organizations by providing information for self-assessment concerning an individual's past performance, skill, and potential in organizations.¹ Ashford and Cummings (1983) posited that if feedback is performance-enhancing, individuals will regard feedback as a valuable resource and proactively seek it out from the environment; yet paradoxically, individuals seldom seek feedback.

One major deterrent of seeking feedback may be the potentially high face-loss costs incurred by the seeker. Feedback seeking, especially when it involves asking others directly for feedback, is a public event. As argued by Goffman (1959) and attribution researchers (Jones and Nisbett 1971, Mitchell et al. 1981), once an event is public, it is vulnerable and open to the inference processes of others. The *act of inquiry* is then subjected to inferences and interpretations made by others. For example, by asking the boss for feedback, the individual is creating a public act about which the boss could potentially infer that the individual is weak and cannot work autonomously. To the extent that individuals perceive public inquiry as a sign of incompetence or insecurity (Schoeneman 1981), they will avoid seeking feedback.

Besides the act of inquiry itself which provides cues for the giver to infer about the seeker's confidence, self-esteem, and self-assurance, the manner in which the inquiry is made also can reveal aspects of the seeker that he or she may not want known. For example, when seeking evaluative information from the giver, seekers may convey to the giver additional information about their self-presentation abilities, both verbal and nonverbal skills, interpersonal skills, and political skills. These self-presentation cues may negatively affect the evaluator's perception of the seeker (DePaulo 1992). In fact, Williams (1975) and Ekman et al. (1980) found that speech, face, body, and other nonverbal behavior of a person in a two-way interaction affected the judgment of his or her communicating partner. Within the feedback context, feedback requested by a seeker may have a powerful impact on the person giving the feedback (Eden 1988). For example, Larson and Skolnick (1982) found that when a poorly performing subordinate requests feedback, negative feedback may create or reinforce an unfavorable image of the subordinate in the boss's mind. This is especially true of a seeker with poor self-presentation abilities, who will then refrain from seeking feedback face-to-face from the giver.

When givers are in a bad mood, seekers suffer even greater face-loss costs because of the increased likelihood of generating a negative inference on both the act and the manner of inquiry (Morrison and Bies 1991). If the giver is in a bad mood, he or she is more likely to view feedback seeking unfavorably, because individuals in bad moods tend to focus on the negative aspects of a situation, whereas people in better

¹ We wish to acknowledge the editorial suggestions offered by the anonymous associate editor for the abstract and introduction of the paper.

moods tend to focus on positive aspects (Bower 1981, Isen et al. 1978, Isen and Baron 1991). Thus, feedback elicited from someone in a bad mood will tend to be negative and, therefore, more ego-inflicting than eliciting feedback from someone in a good mood.

It is our contention that information technology can be designed to mitigate some of the face-loss costs present in face-to-face feedback seeking. In some cases, information technology can reduce social contextual cues by serving as a buffer between the seeker and the giver (Sproull and Kiesler 1986). In other situations, information technology can provide anonymity or absolute privacy in seeking feedback (Connolly et al. 1990). The motivation of this paper is to demonstrate the extent to which information technology is effective in promoting feedback-seeking behavior of individuals. Section 2 of this paper describes in greater detail how information technology can promote feedback seeking. Hypotheses relating the impact of information technology and perceived mood of giver on feedback seeking are also presented. In §3, we describe a laboratory experiment designed especially to test these hypotheses. Results of the experiment are presented in §4. The paper concludes with a discussion of the results and implications of the research for promoting feedback seeking in organizations.

2. Effects of Information Technology and Perceived Mood of Feedback Giver on Feedback Seeking

Information technology can promote feedback seeking in a variety of ways. Besides removing physical constraints such as the need to seek feedback face-to-face (Sproull and Kiesler 1991), the versatility of information technology can provide organizations with the flexibility to minimize social contextual cues otherwise present in face-to-face interactions as well as to preserve the feedback-seeker's anonymity.

Minimizing Social Contextual Cues

Individuals are thought to avoid feedback inquiry when they perceive that damage to their public image with the feedback giver overrides the potential diagnostic benefits of the feedback obtained. In face-to-face encounters, the major sources of "damaging information" are the social contextual cues perceived and exchanged during the interaction (Sproull and Kiesler 1986). People size each other up by assimilating static and dynamic social cues present in a face-to-face interaction. Static social cues emanate from a person's appearance and artifacts, for example, a clock, a private office, an oversized desk, and a personal secretary. Dynamic social cues emanate from a person's nonverbal behavior such as nodding with approval or frowning with displeasure, which changes over the course of an interaction. From a social psychological perspective, one of the most recurring properties of social contextual cues, particularly nonverbal cues in social interaction, is that they are irrepressively impactful (DePaulo 1992). Even if individuals do succeed in quieting their dynamic nonverbal cues in interpersonal interactions (for example, their facial expressions, body movements, and postures), static cues such as head size, shape, body build, physical attractiveness, and skin color can have an immediate influence on the impressions perceivers form (Sproull and Kiesler 1986).

Information technology can be designed to reduce the availability of such "damaging information" in an interpersonal encounter. In a computer-mediated feedback environment, such as an electronic mail facility, information technology can act as a

buffer between feedback seekers and givers. Computer-mediated feedback reduces these social contextual cues. Dynamic social cues are also eliminated (Kiesler et al. 1984, Sproull and Kiesler 1986) since computer-mediated feedback does not convey the kinesic gestures and facial expressions evident in face-to-face encounters (Rice and Williams 1984). Computer-mediated feedback also conceals the individuating details about the feedback-seeker that might be embodied in their dress, location, demeanor, or expressiveness (Ekman et al. 1980). Consequently, seekers may seek feedback more frequently in such an environment because computer-mediated feedback reduces social contextual cues from both the seeker (e.g., self-presentation abilities) and the giver (e.g., giver mood), and attenuates the potential stress a seeker experiences (Sproull and Kiesler 1986, Rice 1990). We would expect that:

H1a. The number of feedback requests in the computer-mediated feedback environment will be greater than the number of feedback requests in the face-to-face feedback environment.

Retaining the Feedback-seeker's Anonymity

Unlike computer-mediated feedback, feedback in a computer-generated feedback environment can be designed to originate not from another person, but from technology itself. An example of computer-generated feedback is the use of a computer performance monitoring device (Irving et al. 1986, Grant 1989, Fenner et al. 1993). Computer-generated feedback is designed in two possible ways. When feedback can be expressed in mathematical or boolean functions of performance outcomes, computational algorithms may be embedded in the program logic to generate feedback automatically. Otherwise, a database or a knowledgebase of past performance outcomes, decision rules and judgments can be accessed for appropriate feedback to an existing problem. For example, employees can be given access to a database of past performance evaluations that would allow them to compare their individual performances with that of their work group.

In computer-generated feedback, the feedback seeker will experience a change, not only in the feedback-seeking environment (from face-to-face to computer-delivered), but also in the origin or source of the feedback (from a person to computergenerated). In general, computer-generated feedback goes even further in providing employees with a neutral and less threatening feedback-seeking environment by retaining a feedback-seeker's anonymity (Connolly et al. 1990). Computer-generated feedback systems, such as performance monitoring systems, offer "absolute privacy" to the feedback seekers especially when the systems are exclusively under the control of the seekers (Northcraft and Earley 1989, Earley 1988). Privacy in feedback inquiry ensures that individuals do not risk damaging their public images with the feedback giver. Because individuals need not be concerned with loss of face and defensive impression management (Ashford and Northcraft 1992), they should seek feedback more frequently with computer-generated feedback systems. Computergenerated feedback is also "moodless." Unlike seeking feedback from a human source, seekers need not be wary of the "mood" of the system when contemplating feedback inquiry. We thus hypothesize that:

H1b. The number of feedback requests in the computer-generated feedback environment will be greater than those in the computer-mediated feedback and the face-to-face feedback environments.

In addition to minimizing social contextual cues and preserving the feedbackseeker's anonymity, information technology may facilitate greater feedback seeking for other reasons. In fact, individuals may perceive computers to provide more accurate and credible feedback than a person and thus seek feedback more frequently from computers than from a person (Northcraft and Earley 1989). Individuals may also feel more comfortable seeking feedback from an inanimate object such as a computer than from a person so as not to disturb, interrupt, or trouble the person. Furthermore, individuals who are more competent in interacting with computers than with people in interpersonal encounters may prefer to seek feedback from a computer than from a person (Igbaria and Parasuraman 1989). All these reasons suggest that individuals may view the computer, either in computer-mediated or computer-generated environments, as a more appropriate source of feedback than the face-to-face feedback environment, and seek feedback from the computer more frequently than from a person.

Feedback Giver Mood

As elaborated in the previous section, the mood of the feedback giver, especially when the giver is in a bad mood, may deter seekers from seeking feedback. Mood research, particularly those studies conducted by Isen and her colleagues (Isen et al. 1978, Isen and Baron 1991) found that people in a good mood tend to think more about positive events and experiences than people in a bad mood. From the point of view of the seeker, a giver in a good mood poses fewer social risks than a giver in a bad mood, since it is more likely for the seeker to receive affirmative feedback when the giver is in a good mood, holding the objective characteristics of feedback constant. Furthermore, people in bad moods are more likely to recall negative things (Bower 1981). Thus, the feedback elicited from someone in a good mood will tend to be more positive and, therefore, more image-enhancing than the feedback elicited from a giver in a bad mood. We thus hypothesize that:

H2a. Feedback seekers will request feedback more frequently when the giver is perceived to be in a good mood than in a bad mood.

In the above analysis, the feedback-seeking environment and mood of the giver are predicted to have independent effects on feedback-seeking behavior. However, feedback mode and mood of giver may also have interaction effects on feedback-seeking behavior. The interaction effect is critical because we expect information technology to attenuate social cues emanating not only from the seeker but also from the giver. Specifically, we expect information technology to adjust for the effects of giver mood on feedback seeking.

When the giver is in a bad mood, a seeker will be even more reluctant to approach the giver face-to-face. The reason is that the seeker may fear incurring any disparaging verbal and kinesic expressions from the bad mood giver, and, in turn, receiving a negative evaluation. In other words, persons seeking feedback face-to-face from givers in bad moods experience higher levels of social risks. A computer-mediated feedback acts as a buffer between the seeker and giver. The buffer attenuates undesirable social cues (dress, expressiveness, etc.) that are present in face-to-face interactions and mitigates the social risks incurred by the seeker. Given the buffering feature of the computer-mediated feedback, we would expect the difference in feedback

seeking between the perceived mood conditions to be smaller in the computer-mediated feedback environment than in the face-to-face environment. We thus hypothesize that:

H2b. When the giver is perceived to be in a bad mood, individuals will seek feedback proportionately more frequently via the computer-mediated feedback communication than face-to-face.

Link Between Frequency of Feedback Inquiry and Performance Outcome

Finally, raising issues about the impact of the information technology intervention on performance is important because it provides insight into the value of applying technological innovation to feedback seeking. Past research on feedback-seeking behavior has used frequency of feedback inquiry as the predominant dependent variable of interest (see Ashford 1986, Northcraft and Ashford 1990), but an assumption underlying this practice is that more frequent feedback inquiry will result in better performance. This assumption is based on cybernetics and control theory in which feedback has been shown to improve future performance by providing diagnostic information about present performance (Annett 1969, Bourne 1966, Larson 1984). We thus hypothesize that:

H3. Feedback seeking is positively associated with performance outcome.

3. Research Method

A laboratory experiment was designed to test the hypotheses. This method offered strong internal validity for manipulating the two independent variables of interest, feedback-seeking environment and perceived mood of the feedback giver. The main dependent variable was the number of feedback requests sought by each subject.

Subjects

Seventy-two students (39 males, 33 females) from the undergraduate management program at a midwestern, urban university participated in the experiments. They were recruited from an undergraduate course in organizational behavior and volunteered to participate as partial fulfillment of the course. The mean age of the subjects was 24 years and their mean previous work experience, including part-time work experience, was four years.

Procedure

The experimenter randomly assigned subjects in groups of four to one-hour experimental sessions. Subjects were given directions to the research site: office rooms with partitioned cubicles. Time slots were chosen to ensure that the site would be free from university administrative work activity during the experimental sessions.

Cover Story. On the day of the experiment, subjects were ushered to a conference room at the research site. The experimenter introduced the experiment as a mock-up personnel recruitment session with a large multinational company. Subjects were told that the company was an active recruiter of management graduates. To better screen candidates for management positions, the company had recently developed and adopted an innovative personnel screening tool described as an "in-basket" exercise. As part of the company's commitment to management education, the com-

pany had made this exercise available to management students who would be on the job market within the next two years.

Although the experimenter emphasized that the experimental session was merely a "mock-up" recruitment exercise, the experimenter nevertheless strongly encouraged subjects to treat the experiment as if it was a real recruitment episode with the company. After the introduction by the experimenter, subjects were asked to fill out a preprinted employment form which requested their personal demographics, educational background, and work experience. This was to simulate the procedures used in a typical recruitment session with the company. To boost the subjects' motivation to do well on the exercise, the experimenter informed the subjects that names of the top 25% of the performers on the "in-basket" exercise would be given to their course instructor and publicly displayed on the department's notice board. In addition, subjects were told that the company was concurrently making the tool available to other universities. Subjects were strongly encouraged to perform well and uphold the prestige of the management program of the universities would be made known to the company.

As another means to increase critical realism (Fromkin and Streufert 1976) of a personnel recruitment session, a videotape of a confederate representing the vice-president of human resource management of the company was shown to subjects. In the tape, the "vice-president" reemphasized the importance of the "in-basket" exercise in the personnel recruitment policy of the company and provided specific instructions for carrying out the exercise. In addition, another confederate, Mr. Johnston, representing the regional personnel recruiter of the company was present to provide feedback to subjects and to assess their performance on the exercise. In total, three videotapes of the confederate were made for the experiment, one for each of the three feedback-seeking environments—face-to-face, computer-mediated feedback, and computer-generated feedback. Appendix A shows the script of the computer-mediated feedback videotape as read by the "vice-president" of human resource management.

Experimental Task. The task consisted of an "in-basket" exercise originally developed by Sandelands and Calder (1987). The "in-basket" contained a pencil, a twopage scenario of an XYZ Corporation, feedback request forms, and a series of 11 memoranda (the first of which was designated as a practice memo). In the exercise, subjects were presented with a scenario describing the situation facing a particular manager in a fictitious organization. Subjects assumed the role of the manager who was required to respond to the office memoranda. The memoranda represented a variety of everyday problems found in a typical manager's in-basket. Examples of everyday problems included (1) whether or not to grant a valuable employee personal time off, (2) whether to order new office furniture in budget-cutting times, or (3) whether to fire a problem employee. A sample memorandum is included in Appendix B. Contents of some of the memoranda were related. A number of later memoranda contained issues that had been raised in earlier memoranda. As a result, feedback on earlier memoranda may have cumulative benefit.

A multiple choice question with four possible answers to the memo was printed at the bottom of each memo. Subjects were asked to respond to each memo by choosing

the most appropriate answer to the multiple-choice question. After choosing an answer, subjects either tackled the next memo, or requested feedback on the current memo. No limit was placed on the number of times subjects could seek feedback. The only restriction was that feedback on any one memo could only be requested once.

If subjects chose to seek feedback, they filled out a feedback-request form indicating the feedback options they preferred. For each feedback request, a subject was limited to a maximum of five out of eight feedback options. The feedback options were: (1) the answer judged best by experienced practicing managers, (2) the answer judged worst by experienced practicing managers, (3) the percentage of peer management students who chose the best answer, (4) the level of difficulty of the memorandum, (5) the percentage of experienced practicing managers who chose the subject's answer, (6) the chief strengths and weaknesses of subject's answer, (7) the percentage of peer management students who chose the subject's answer, and (8) the percentage of experienced practicing managers who chose the best answer.

To get feedback, subjects brought the feedback-request form to a feedback room located adjacent to their offices. How subjects sought feedback in the feedback room varied depending on the experimental condition to which they had been assigned. In the face-to-face feedback environment, subjects sought feedback face-to-face from Mr. Johnston who had been trained only to provide feedback as requested on the feedback form. In both the computer-mediated feedback and the computer-generated feedback environments, subjects requested feedback from the computer. The computer allowed subjects to key in the feedback options and printed the feedback as requested. In terms of information conveyed, subjects in all three environments received the same amount of information; that is, the confederate or the computer system provided only answers to the feedback options requested by the feedback seekers.

To acquaint subjects with the in-basket exercise and the feedback-seeking procedure, subjects were asked to practice on a sample memo and fill out a feedback request form for the sample memo. For face-to-face sessions, Mr. Johnston provided face-to-face feedback to each of the subjects on the practice memo. For the computermediated feedback and computer-generated feedback sessions, a research assistant taught the subjects how to interact with the computer for feedback. Subjects were given hands-on interaction with the technology to ensure that each individual was comfortable with the use of the electronic media.

Experimental Treatments. The feedback-seeking environment varied across subjects in different sessions. In the face-to-face environment, subjects interacted face-to-face with Mr. Johnston for feedback in a room specially designed as the "feedback room." In the computer-mediated feedback environment, subjects were made to believe that Mr. Johnston was providing feedback through an electronic mail facility set up in the "feedback room." In reality, the electronic communication was a mock-up. A program written in Turbo-Pascal simulated seekers' interaction with an invisible person. Elaborate care was taken during the pilot tests to ensure that the timing and the content of messages received by seekers were realistic and sensible. Finally, in the computer-generated feedback room." Subjects were told that the feedback was stored in a database provided by the company. The ultimate source of the database

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was not mentioned, only that the company had information stored in a database which would provide useful feedback on the task.

To test H2a and H2b a second independent variable, mood of the feedback giver, was manipulated in the face-to-face and computer-mediated feedback environments during both the preexperimental practice and instruction sessions as well as during the experiment sessions. For the preexperimental practice sessions, mood was manipulated in the following manner. In the bad mood condition, the confederate, Mr. Johnston, acted frustrated and impatient during the instruction phase of the experiment by pacing around and making impatient gestures such as tapping his feet and drumming his fingers in the conference room. In the middle of the instruction session, the confederate stormed out of the room on the pretext that he needed to make some important phone calls. In addition, the research assistant to the experiment explained to the subjects that Mr. Johnston was in a bad mood because he had just heard news that he had been passed over for a promotion in his company. In the good mood condition, the same confederate, Mr. Johnston, acted in a friendly manner throughout the instruction phase of the experiment. At the end of the instruction phase, he excused himself politely by mentioning that he needed to make a few phone calls in an adjacent office. In the confederate's absence, subjects were told that the giver, having just been promoted in his company² was in a good mood.

For the experimental sessions, mood was manipulated in the following manner. For the face-to-face/good mood conditions, the confederate continued to act congenially by being friendly and courteous in giving feedback at the actual experimental sessions. During the actual experimental sessions for the face-to-face/bad mood conditions, the confederate continued to act as if he was in a bad mood by expressing curt and abrupt feedback responses. However, the confederate did not insult or denigrate the subjects during the experimental sessions.

For the computer-mediated feedback conditions, mood was also manipulated by differences in the wordings of the computer messages received by subjects in the actual experimental sessions. The messages in the computer-mediated feedback/bad mood treatment were direct, short and curt. Examples include: "Get your feedback for memo 2 from the printer. Johnston"; "Feedback for memo 3 will be printed shortly. Johnston." On the other hand, messages in the computer-mediated feedback/good mood treatment were more cordial and conversational. Examples include: "I am glad you are asking for feedback. Please analyze the feedback at your desk. It will take a minute or so for the feedback printout. Good luck for the rest of the exercise. Johnston"; "Sorry to keep you waiting. I have looked at your feedback request and will be sending you the relevant information through to the printer. Good luck. Hope you find them useful for the rest of your exercise. Johnston."

After the feedback demonstration and hands-on practice in seeking feedback, subjects were assigned to separate private offices adjacent to the "feedback room." Placing subjects in separate, private offices not only increased experimental realism of an

² The confederate's supposed promotion was used to justify the good temperament of the giver to the subjects. Although the issue of promotion may induce a possible confound of giver mood with differences in hierarchical positions of the giver, we found during the debriefing sessions that hierarchical changes of the giver were not salient to the subjects. That is, they did not view changes in hierarchical position of the giver as indicative of his capabilities to influence their employment opportunities with the company.

office environment but also ensured that a subject's decision to seek feedback was made independent of the seeking behavior of peers (Northcraft and Ashford 1990). After completing the "in-basket" exercise, subjects filled out a questionnaire about feedback-seeking environment, the mood of the giver, and their perception of the value of feedback.

Subjects were then debriefed and thanked for their participation. During the debriefing session, the experimenter explained the purpose of the experiment and informed the subjects that the multinational company was a fictitious company and that both the "vice-president" they saw on the videotape and Mr. Johnston were confederates of the experiment. Once the results were tabulated and summarized, names of the top 25% performers in the "in-basket" exercise were given to the course instructor and the results publicly displayed on the department's notice board.

Dependent Variables

Feedback seeking was measured by the number of feedback requests sought by each subject. Since there were ten memoranda in each in-basket, the maximum number of feedback requests a subject could seek during the experiment was ten.

Task performance was measured by the number of correct solutions to the ten memoranda. A correct solution was defined as the answer judged best by a group of management experts. The group of management experts was drawn from a sample of 50 executive MBA alumni³ who provided answers to the memoranda in a survey conducted prior to this study.

4. Results

Manipulation Checks

To assess the feedback-seeking environment manipulation, subjects were asked, "Which of the following best represents how you sought and received feedback during the in-basket exercise? (1) from Mr. Johnston, the personnel director, in a faceto-face encounter; (2) from Mr. Johnston through a computer-mediated communication link; or (3) from a computer database." Of the 72 responses, only four were misclassified. The single sample chi-square demonstrated a good fit between experimental conditions (face-to-face, computer-mediated feedback, and computer-generated feedback) and the subjects' perception of the feedback-seeking environment (X^2 = 123.5 df = 4, p < 0.0001).

Next, mood manipulation was assessed using responses to three items: "(1) Mr. Johnston looked as if he had had a bad day, (2) Mr. Johnston seemed to be in a good mood today, or (3) Mr. Johnston looked as if he did not want to be disturbed. (1 = strongly agree, 5 = strongly disagree)." Item 2 was reverse-coded. A composite mood measure was then derived by adding the responses to the three items. The reliability of the composite mood measure estimated by the Cronbach's alpha formula was 0.85. A one-way ANOVA using the composite mood measure showed that subjects perceived the feedback giver to be in a significantly better mood in the good feedback giver mood condition than in the bad mood condition ($F_{1,46} = 39.8$, p < 0.01).

³ Executive MBA alumni are practicing managers or entrepreneurs who have graduated from an Executive MBA program. Only individuals with at least five years' work experience can be admitted to the executive MBA program.

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To further investigate if subjects in the "buffered" CMF conditions perceived giver mood differently, a simple effects one-way ANOVA which compared CMF/good giver mood with CMF/bad giver mood using the composite mood measure was conducted. The results showed that subjects in the CMF conditions perceived Mr. Johnston to be in a significantly better mood in the good giver mood condition than in the bad mood condition ($F_{1,22} = 23.57$, p < 0.001).

Experimental Hypotheses

Table 1A presents the means and standard deviations of feedback requests across the face-to-face, computer-mediated feedback, and computer-generated feedback environments.

H1a posited that subjects would seek feedback more frequently in a computer-mediated feedback environment than in a face-to-face environment, while H1b posited that computer-generated feedback environment will induce greater feedback seeking than in either a computer-mediated feedback environment or a face-to-face environment. An overall one-way ANOVA on the number of feedback requests (see Table 1B) revealed significant differences across the three feedback environments ($F_{2,69}$ = 19.5, p < 0.001).⁴

Post-hoc multiple comparison analyses (Kirk 1982) showed that subjects requested significantly more feedback in the computer-mediated feedback environment than in the face-to-face environment (Newman-Keuls, p < 0.05). On the average, seekers in the computer-mediated feedback environment sought feedback oneand-a-half times more frequently than those in the face-to-face environment. The number of feedback requests was also significantly higher in the computer-generated feedback environment than in either the computer-mediated feedback (Newman-Keuls, p < 0.05) or the face-to-face feedback environment (Newman-Keuls, p < 0.05). Seekers in the computer-generated feedback environment sought feedback one-and-a-half times more frequently than those in the computer-mediated feedback environment, and two-and-a-half times more frequently than those in the face-toface environment.

The effect sizes for the one-way ANOVA tests were computed using the etasquared statistic (Bohrnstedt and Knoke 1988). The eta-squared statistic measures

⁴ A separate ANOVA was conducted to determine if the results of the analysis changed when the four subjects who were misclassified were omitted. The results remained the same. There was a significant difference in the frequency of feedback requested across the three feedback seeking environments ($F_{2,65} = 20.46, p < .000$).

			Effects of Information	n Technology
	TABI One-way	LE 1B ANOVA	TABLE 28 Andrife of Variance	Turner
Dependent Variable	dſ	MS	ZNA F	
Feedback Request $p < 0.01$	2	118.00	$19.5^* (df = 69)$	oot (

the proportion of variance in the dependent variable which is explained by the independent variable, the feedback-seeking environment. Using the number of feedback requests as the dependent variable, the eta-squared was 36.17%. The effect size is relatively large and we conclude that the impact of the feedback-seeking environment on the number of feedback requests sought is relatively high.

Hypothesis 2a suggests that individuals will seek feedback more frequently when they perceive the giver to be in a good mood than when he or she is in a bad mood. Table 2A shows the means and standard deviations of feedback requests across feedback-seeking environments (face-to-face, computer-mediated feedback) and mood of giver (good, bad).

As shown in Table 2B, an ANOVA on the number of feedback requests revealed significant differences between good and bad mood conditions ($F_{1,44} = 5.08$, p < 0.05).

Hypothesis 2b posited an interaction effect between giver mood and feedbackseeking environment. Since the giver was not physically present in the computer-generated feedback environment, only data in the face-to-face and computer-mediated feedback-seeking environments were crossed with mood for any possible interaction effects. We hypothesized that individuals will seek feedback proportionately more frequently via the computer-mediated feedback communication than face-to-face when the giver is perceived to be in a bad mood because computer-mediated feedback attenuates bad mood of the giver better than face-to-face feedback. Figure 1A illustrates the hypothesized interaction effects of seeking environment and giver mood on feedback-seeking behavior. To test for a two-way interaction, Bobko's (1986) procedure for a priori contrasts was used.

According to Bobko (1986), if a hypothesized interaction takes the form of a single condition differing from the other three conditions, then an omnibus interaction test would be overly conservative. Since our hypothesized interaction takes the form of a

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Means, Standard Deviations of Number of Feedback Requests Across Mood of Giver and Feedbackseeking Environments (Face-to-Face and Computer-mediated Feedback)

	Feedback-seeking Environment			
	Face-t Mood o	o-Face of Giver	Computer-mediated feedback Mood of Giver	
	good	bad	good	bad
Feedback Request	3.42(2.27) n = 12	2.42(1.44) n = 12	5.42(2.35) n = 12	3.42(2.91) n = 12
() standard deviations				

TABLE : Two-way Analysis	2B of Variance	a) BRC+L to
	MS	F
Feedback Request		
Feedback-seeking Environment	27.00	5.08*(df = 44)
Mood of Giver	27.00	5.08*(df = 44)
Feedback Environment X Mood * p < 0.05	3.00	$0.56 \ (df = 44)$

single condition (face-to-face/bad mood) deviating from the other three conditions, Bobko's procedure is an appropriate statistical analysis for the interaction. To carry out Bobko's procedure, two contrasts must be derived. The first contrast compared the feedback requests of subjects in the face-to-face/good mood condition, computer-mediated feedback/good mood condition, and computer-mediated feedback/ bad mood condition. The second contrast compared these three conditions grouped against the face-to-face/bad mood condition. According to Bobko (1986), to support an interaction effect, the first contrast should *not* be significant while the second must be significant. Based on the experimental data, the first contrast which compared the feedback requests of subjects in the face-to-face/good mood condition, computer-mediated feedback/good mood condition, and computer-mediated feedback/bad mood condition, was significant ($F_{2,33} = 3.58$, p < 0.05) and thus fails Bobko's test for possible interaction effects.

A post-hoc analysis of the feedback requests for the four cells suggested a different interaction effect other than the hypothesized interaction. It seems that the computer-mediated feedback/good mood condition induced a more than proportionate increase in feedback seeking than in any of the other interaction combinations (Figure 1B). However, an omnibus 2×2 ANOVA test did not suggest significant interaction effects ($F_{1,47} = 0.565$, p > 0.10) for the number of feedback requests.

Finally, H3, which posited a positive association between feedback and perfor-





FIGURE 2. Relationship Between Feedback and Performance

mance, was not supported. As depicted in Figure 2, there was no association between feedback seeking and performance on the memoranda across the ten trials. Pearson correlations of task performance measured by correlating the number of correct memoranda with the number of feedback requests and the number of each of the eight different types of feedback options, showed correlations ranging from -0.11 to 0.18. A possible reason for the nonsignificant association is the low power of the test. The power of the test was 0.32 which suggests that there was approximately only a one in three chance of finding a significant association between the frequency of feedback requests and the number of correct responses. A one-way ANOVA of performance across the three feedback environments, i.e., face-to-face, computer-mediated feedback and computer-generated feedback, also showed no significant differences ($F_{2.69} = 0.66$, n.s.).

As further exploratory analysis, we conducted a profile analysis on the pattern of feedback requests across the ten memoranda. Overall, the profile analysis showed no statistically significant differences in seeking behavior across the memoranda (Hotelling's $T^2 = 0.117$, p = 0.63). This implies that differences in the contents of the memoranda had no differential impact on feedback seeking behavior; that is, one memo did not induce more or less feedback seeking than any other memo. Our analysis further showed no significant interaction effects between feedback-seeking environment and memoranda on seeking behavior (Hotelling's $T^2 = 0.189$, p

Means, Standard Deviations of Environments and Mo	f the Perceived Val bod of Giver (Note: .	LE 3A lue of Feedback Me l = Strongly Disag	easure Across Fee ree; 5 = Strongly A	dback-seeking Agree)	
	Face-to-Face	Feedback-seekin Computer-me	g Environments diated Com	puter-generated	
Perceived Value of Feedback	6.58 (2.30) n = 24	$\begin{array}{ll} 6.58 \ (2.30) & 7.29 \ (1.85) \\ n = 24 & n = 24 \end{array}$		8.00 (1.50) n = 24	
	Mood of Giver				
		good		bad	
Perceived Value of Feedback		7.13 (0.21) <i>n</i> = 24		6.75 (2.00) n = 24	
	Feedback-seeking Environments				
	Face-t Mood o	o-Face of Giver	Computer-mediated Mood of Giver		
	good	bad	good	bad	
Perceived Value of Feedback	6.58(2.71) n = 12	6.58(1.93) n = 12	7.67(1.50) n = 12	6.92(2.15) n = 12	
() standard deviations					

= 0.87). In other words, the contents in the memoranda did not moderate the effects of feedback-seeking environment on the pattern of seeking behavior.

The above overall results suggest that the frequency with which subjects sought feedback was negatively related to potential face-loss costs experienced by subjects under various feedback-seeking environments. Particularly, seekers were found to seek feedback less frequently in higher social-risk environments such as face-to-face seeking than lower social-risk environments such as computer-mediated and computer-generated feedback environments.

An alternative explanation for the differences in feedback seeking across the feedback-seeking environments is that subjects may *perceive* the value of feedback differently across the seeking environments, thereby inducing differences in the frequency of feedback seeking. We would then expect seekers to seek feedback more frequently when they perceived the value of feedback to performance to be high, and less frequently when they perceived the value of feedback to performance to be low.

To test this alternative explanation, subjects were asked to respond to two items: "(1) It was important for me to get feedback on my performance during the exercise, (2) I found feedback on my performance useful in the exercise (1 =strongly disagree, 5 =strongly agree)." A composite value of the feedback measure was derived by adding the responses to the two items. The interitem reliability of the composite measure estimated by Cronbach's alpha formula was 0.75.

The means and standard deviations of the composite value of feedback measure across the two main effects, feedback-seeking environments (face-to-face, computermediated feedback, computer-generated feedback) and giver mood (good, bad), as well as the interaction effect of feedback-seeking environment (face-to-face, computer-mediated feedback) and giver mood (good, bad) are presented in Table 3A.

The perceived value of feedback in the face-to-face, computer-mediated feedback,

TABLI Two-way /	E 3B 4 <i>NOVA</i>	h as long as the giver is
Perceived Value of Feedback	MS	tavis boorg bad air lo a
Feedback-seeking Environment	12.05	3.29*(df = 69)
Mood of Giver	1.69	$0.38 \ (df = 46)$
Feedback Environment X Mood * p < 0.05	1.69	0.38 (df = 44)

and computer-generated feedback environments was 6.58, 7.29, and 8.00 respectively. As presented in Table 3B, a one-way ANOVA showed the perceived value of feedback to be significantly different across the three-feedback environments ($F_{2,69} = 3.29, p = 0.04$). Post-hoc multiple comparison analyses showed that subjects in the computer-generated feedback environment perceived the value of feedback to performance to be *greater* than those in either of the face-to-face (Newman-Keuls, p < 0.05) or computer-mediated feedback environments (Newman-Keuls, p < 0.05).

However, there was no difference in the composite value of feedback to performance measure across giver mood ($F_{1,46} = 0.38, p = 0.54$). There was also no interaction effect in the composite value of feedback to performance measure between the feedback-seeking environment and the giver mood ($F_{1,44} = 0.38, p = 0.54$). We conclude that, while the perceived value of feedback may be an alternative explanation for seeking behavior across the three feedback-seeking environments, it does not explain feedback-seeking behavior across giver mood or the interactions between giver mood and feedback-seeking environment.

5. Discussion

The primary finding of this study is that information technology is an important factor in promoting proactive feedback-seeking. Particularly, our study demonstrated that subjects were more likely to seek feedback in a computer-mediated communication condition over a face-to-face condition and more likely to seek feedback in a computer-generated condition than a computer-mediated condition. On the average, each subject in the face-to-face, computer-mediated, and computer-generated feedback environment sought 3, 4.5, and 7 out of 10 feedback opportunities respectively. The difference between computer conditions and the face-to-face but may also be due to the fact that subjects perceived greater value in feedback from a computer than from a person.⁵

Subjects also sought feedback more often when the giver was perceived to be in a good mood than when the giver was perceived to be in a bad mood whether the feedback was computer mediated or face-to-face. On the average, subjects in the perceived good-giver mood condition sought one-and-a-half times more feedback than subjects in the perceived bad-giver mood condition.

The hypothesis which posited an interaction effect between giver mood and feedback-seeking environment was not supported. Computer-mediated feedback systems may attenuate potentially uncomfortable and awkward social interactions that feedback seekers experience with a bad-mood giver. However, since the risk of receiving a

⁵ We acknowledge the editorial suggestions of the anonymous Associate Editor in this regard.

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negative evaluation remains high as long as the giver is in a bad mood, feedback seekers will refrain from seeking feedback even when a buffer exists to filter disparaging verbal and kinesic expressions of the bad-mood giver.

The relationship between feedback seeking and task performance was not supported in our study. Although this finding seems counterintuitive given the substantive evidence of past research on the utility of feedback (Annett 1969, Chapanis 1964), this result concurs with recent studies on the nature of feedback and its relationship to goal setting, task strategy, and task characteristics (Campbell 1988, Earley et al. 1990). These studies demonstrate that feedback is valuable *only* to the extent that its nature and content fit the task at hand. Particularly, Earley et al. (1990) found that although outcome feedback, which was used in this experiment, can identify the need to adjust action, it does not provide enough specific information on *how* to make the adjustment. In other words, a person may not be able to infer appropriate future actions from outcome feedback about past actions alone. Adjusting information or process feedback is necessary for relatively unstructured and complex tasks such as in-basket exercises where the relationship between action and outcome is uncertain.

The major practical implication of this study is that information technology can be designed to promote feedback seeking in organizations. Specifically, computer monitoring systems which retain seeker's anonymity may provide performance feedback in the form of tracking, recording, and computing summary performance statistics (Griffith 1988, Griffith 1993, Fenner et al. 1993). But, a caveat is that computer-generated feedback systems must be properly implemented in organizations so as to avoid alienation of employees from management. Indeed, studies have shown that if such systems are perceived as "invisible supervisors" monitoring their work behavior, individuals may experience greater job stress (Nebeker and Tatum 1993, Kulik and Ambrose 1993), psychological reactance (Brehm 1966), and resist implementation of such systems altogether (Grant 1989, Grant and Higgins 1991, Griffith 1988, 1993, Irving et al. 1986). Thus, emphasis should be placed on inculcating positive attitudes among users toward the benefits of computer monitoring devices as sources of feedback.

In addition to systems which preserve seekers' anonymity, a network of electronic mail linkages may be appropriate for minimizing disparaging contextual cues in social interactions and thereby inducing more open feedback-seeking behavior. Computer-mediated systems may also be designed to promote greater upward communication and feedback within organizations which depend heavily on distributed work structures for coordination (Vitalari 1990).

The study also showed that the perceived bad mood of the giver deterred individuals from seeking feedback. One practical implication is that, in addition to designing a computer feedback system to buffer the feedback interaction between the giver and the seeker, organizations may also train or counsel managers to hide their bad moods and actively encourage employees to seek feedback from them. Organizations should also educate managers to avoid interpreting feedback seeking as an act of ignorance on the employee's part, and educate employees that asking for feedback need not be interpreted as damaging information.⁶

⁶ We appreciate the suggestions from the anonymous Associate Editor on the additional practical implications of the effects of bad mood of the feedback giver on feedback seeking.

The study did not show a significant relationship between feedback-seeking behavior and performance. A practical implication from this finding is that not all feedback automatically translates into positive performance effects. In the event that seeking really does not lead to improved performance, given the costs and effort of asking for feedback, one may hypothesize that the whole experience would be negative and, in turn, deter individuals from further seeking. To induce differential performance from feedback, the nature and level of specificity of feedback must be aligned with task planning and the specific task at hand.

Despite the theoretical contributions of this study, a limitation should be noted. Laboratory studies, despite the advantages they afford in terms of experimental control, fail to model much of the complexity inherent in organizational settings. For example, subjects were involved in a discrete experiment rather than in a daily, on-going activity. Consequently, subjects lacked an on-going relationship with the feedback giver and did not have other feedback sources, such as peers, available.

Although these differences are important, there is no reason to expect that the lack of contextual complexity altered the relationships that were being investigated. Efforts were made to include all components of organizational feedback situations that were deemed to be theoretically relevant. In particular, subjects were placed in three different feedback seeking environments: face-to-face, computer-mediated feedback, and computer-generated feedback.

At the same time, it is important that future research expand upon this study and try to capture other contextual variations of actual organizations. For example, future research may investigate the feedback-seeking process when multiple-feedback sources and multiple-delivery mechanisms are available. Future research may also investigate feedback-seeking patterns in the context of individuals working on daily, on-going tasks. Additional research might also investigate the consequences of feedback which does not improve performance, and whether the costs of feedback seeking with no performance differential can dampen one's enthusiasm for seeking feedback.*

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* Barbara Gutek, Associate Editor. This paper was received on March 9, 1992, and has been with the authors 10 months for 3 revisions.

Appendix A

Script of the Videotape for the Computer-mediated Feedback Environment as was Read by the Confederate Representing the Vice-president of Human Resource Management

This is a mock-up personnel recruitment session with a large multinational company. Each year, our company employs more than 200 recently graduated management students. To screen candidates better for our management positions, we have developed an "in-basket" exercise to assess a person's management potential. As part of our company's commitment to excellence in education, we are currently making this exercise available to major management universities in the States. The University of ______ has been

selected as one of the premier schools where we are offering this exercise to management students on a limited basis.

In this session, you are provided with a unique opportunity to know how well you perform in an interview which uses the "in-basket" exercise as a screening tool. To put you in a realistic recruitment situation, we have requested that our Regional Personnel Director in Minnesota, Mr. Johnston, be present to supervise and assess your performance on this exercise. The "in-basket" exercise was originally developed during World War 2 to screen candidates for administrative positions in the Army. Since then, businesses have adopted this exercise to assess management candidates based on their ability to deal appropriately with a variety of everyday problems found in their in-baskets.

You will find in your in-baskets:

- A #2 Pencil
- A 2-page write-up on the scenario of Gordon Consolidated Industries
- Feedback Request Forms
- A SAMPLE envelope containing a SAMPLE memo
- 10 envelopes marked 1 to 10 containing a memo each.

Take the 2-page scenario of Gordon Consolidated Industries from your in-baskets and turn to the organization chart of Gordon Consolidated Industries.

In this exercise, you play the role of LEE BAXTER, Manager of the FERIT DEPARTMENT at Gordon Consolidated Industries. As you can see on the organization chart, Lee Baxter reports directly to Morrill Pean, Vice President of the Electronics Division.

Now, follow the written scenario with me.

SCENARIO FOR GORDON CONSOLIDATED INDUSTRIES

Let's look at the SAMPLE memo now. Open the envelope marked SAMPLE.

SAMPLE MEMO

After making your choice, you have two options:

1. you can go on to tackle the next memo, or

2. you can get feedback from Mr. Johnston on how well you perform in the memo.

In general, feedback is useful since it tells you and Mr. Johnston how well you are performing. The feedback will also provide clues on how you should respond on subsequent memos. NOTE: You can get feedback on the memo you have just worked on. If you choose to tackle the next memo without getting feedback on the current memo, you cannot subsequently ask for feedback on the current memo.

To get feedback, use one of the feedback request forms in your in-basket. On the form, fill out the memo #, your answer to the memo, and choose up to a maximum of 5 feedback options listed on the form. After filling out the form, bring both the completed memo and the feedback form with you to an electronic mail facility set up in an adjacent room. Mr. Johnston will give you the feedback through the electronic mail facility. Since Mr. Johnston can only give feedback to one person at a time, you will have to wait till he is available before you go and get feedback. The university administrative assistant officer will demonstrate the use of the electronic mail facility in a short while.

Performance Evaluation

Mr. Johnston will be the sole judge of your performance. To qualify for a second-round interview, you will be assessed on the following criteria:

- 1. how effective you use the information available to you,
- 2. the number of memos you are correct on,
- 3. how well you do in comparison to others, and
- 4. the time taken to complete the exercise.

Normally, one out of four students will qualify for a second-round interview. A final word before you begin the in-basket exercise. In order to gain maximum benefit from this exercise, you must treat this mock-up as a real interview session with Mr. Johnston. As part of the Human Subjects Committee requirement of the University of ______, you are asked to sign a consent form before you can participate in this exercise. Please read the consent form and sign it if you agree to the conditions laid out. If, by any chance, you decide not to participate in such an exercise, you may wish to inform the University Administrative Assistant now.

Good luck with the exercise. I hope you find this experience useful and rewarding for your future endeavors.

Appendix B

Sample Memo

DALE CARNEGIE INSTITUTE

September 12

Mr/Ms L. C. Baxter Gordon Consolidated Industries Rustwick, Illinois 60117

Dear Lee

You asked me to advise you when our next Dale Carnegie Training program would be held so that others from GCI could benefit from our instruction. We will be starting the twelve-week program on Monday, Oct. 1. As always, we will limit the class to 15 persons. The cost per person will be the same as last year. \$250 in all. Needless to say, the course will emphasize the same things that were covered in your course—increasing managerial effectiveness through positive persuasion techniques. By the way, we occasionally like to have successful graduates of the program come back and talk to a current class. We would appreciate it if you could drop by sometime and share your experience with our new students.

Sincerely

Steve Hoch Program Director Dale Carnegie Institute

Your possible actions are:

- A. Discard the letter and give it no further attention.
- B. Put letter back in in-basket, and reconsider it when you return.
- C. Pass the letter on to your subordinates (Abts, Whipker, Rice and Russon). Tell them you found the Dale Carnegie course useful and that you believe they would too. Tell them they will have to pay their own way.
- D. Pass the letter on to your subordinates (Abts, Whipker, Rice and Russon). Tell them you found the Dale Carnegie course useful and that you believe they would too. Tell them GCI will pay.

Most appropriate action: _____

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