BENEFITS OF THE TASK FOR THE DELIVERY OF
NEGATIVE FEEDBACK

by

CHERYL LEJEWELL COMER

B.S., Sam Houston State University, 2002
M.S., Kansas State University 2005

AN ABSTRACT OF A DISSERTATION

Submitted in partial fulfillment of the

requirements for the degree

DOCTOR OF PHILOSOPHY

Department of Psychology
College of Arts and Sciences

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ABSTRACT

Over 50 years of research has supported the positive relationship between feedback and performance improvement. A recent meta-analysis suggests that feedback may not be beneficial for performance, and that it may actually be harmful for performance (Kluger & DeNisi, 1996). This study suggests that these inconsistencies exist because positive and negative feedback are treated like opposite sides of the same scale. In reality, positive and negative feedback are two very different types of information and should be treated differently.

Current research examines feedback delivered interpersonally. When delivering feedback this way, positive feedback is often accepted while negative feedback is rejected. The current study states that alternate delivery methods may be better for the acceptance and use of negative feedback. It is suggested that negative feedback received directly from the task itself may be more accepted, more intrinsically motivating, and result in less negative emotion for receivers than negative feedback from interpersonal sources. Two hundred and two university students participated in a simple computer simulation task. They received feedback regarding their performance and then participated in the task a second time.

Results revealed no differences between conditions in acceptance, possibly a result of task. When receiving negative feedback from the task, participants experienced greater intrinsic motivation than when receiving negative feedback from interpersonal sources. Finally, negative feedback from the task resulted in less negative emotion than negative feedback from interpersonal sources. By removing the interpersonal interaction, the task removes a great deal of negative emotion associated with the supervisor.

This study revealed great potential for the task as a source of negative feedback. Although the workforce may not be ready for a full task-feedback system, it may serve as a good supplement for interpersonal feedback and worthy of future research in the field setting.

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ACKNOWLEDGMENTS

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DEDICATION

This piece of work is dedicated to my brother, Jon Clayton Sanders. Throughout the

duration of this project, he was constantly on my mind. Stationed in Iraq for a year, he

challenged himself to step away from what was comfortable and safe. For a while, his life

was taking him in a direction he did not want to go. Rather than follow that path, he

stepped away and did something that he knew he had to do. It would have been much

easier to stand still. His strength and courage was an incredible source of inspiration and

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to take a year off and forget about finishing school, I thought about him in Iraq,

challenging himself to be something better, something more. Just like Jon, it would have

been easier to stop working and relax for a while, but this would not have moved me

closer to my goals; it would have taken me back. Jon taught me to keep moving forward,

no matter how hard and scary it may be. Never get comfortable where you are and

continue to look at the future that is ahead. I love you Jon! I know your future is bright

and I can't wait to see what you will become. Just like you taught me, never forget your

potential and never stop reaching for something better, something more.

Background

For centuries, researchers and practitioners alike have been trying to understand how to increase performance in the workforce. The earliest documented attempts to understand influences on performance involved the effect of mental fatigue on physical and cognitive performance (e.g., Franz, 1897; Griffing & Franz, 1986). These early efforts focused on characteristics of the individual (e.g., amount of rest), characteristics of the task (e.g., such as the font of the reading material and the color of the paper), and environmental influences (e.g., amount and intensity of the light).

The significant findings of these early researchers sparked greater interest in the somewhat-controllable characteristics of the environment. Later efforts to understand influences of the environment on performance focused on factors including noise (Cohen, Evans, Krantz, Stokols, & Kelly, 1981), heat (Bell, 1978; Fine & Kobrick, 1978), air pollution (Evans & Jacobs, 1981), and even chemicals in the water (Rotton, Tikofsky, & Feldman, 1982). These environmental factors were found to be related to a number of behaviors including aggression (e.g., Anderson & Anderson, 1984; Baron, 1978; Rotton, Frey, Barry, Milligan, & Fitzpatrick, 1979) and helping others (Matthews & Cannon, 1975).

The Beginning of Feedback

The study of feedback dates back over 100 years. Early research revolved around the senses, particularly touch (Kohn, 1893; Solomons, Singer, & James, 1887). Researchers used touch to understand the connection between the mind and body by examining the threshold for sensation. Despite this early work, the term feedback was not used until the mid-nineteen hundreds (Lewin, 1947).

The first usage of the construct of feedback in relation to performance arrived shortly after (Jenkins, 1948). In this work, feedback was used to provide a workgroup with information regarding whether or not they stayed on the designated task. A non-participating observer took notes during the discussion and provided that information to the group upon completion of the task. Results indicated that feedback indeed improved the performance of those groups that received it.

This early work on feedback showed great promise for the relationship between feedback and work behavior (Landy & Farr, 1983). General consensus supported the notion that feedback was one of the most potent and common elements of behavior modification (Prue & Fairbanks, 1981). Due to these findings, and the notion that it is generally simple and inexpensive to implement (Pinder, 1998), the study of feedback has flourished (e.g., practitioners eagerly await the latest findings and feverishly jump to implement new practices with hopes of improving employee performance and overall organizational productivity). Although the most basic definition of feedback, that it refers to information provided to a 'system' regarding its 'output' (Pinder, 1998) remains the same, what constitutes feedback has evolved over the decades since its development.

Statement of the Problem

At one time, the positive influence of knowledge of results on both learning and subsequent performance was one of the more robust findings within the psychological literature (Chapanis, 1964; e.g., Adams, 1968; Ammons, 1956; Bilodeau & Ryan, 1961; Locke, Cartledge, & Koeppel, 1968; Locke, Shaw, Saari, & Latham, 1981). So dependable was this relationship that it was thought to hold true for men and women, adults and children, groups and individuals, and on a variety of learning, psychomotor,

and other general performance tasks. This principle of feedback improving performance has even been shown true for animals (Chapanis, 1964). Despite these early findings, a comprehensive analysis of feedback literature revealed that in one third of the studies, feedback had a negative effect on performance (Kluger & DeNisi, 1996). Researchers have since been attempting to understand the discrepancies between past research, showing strong support for feedback's positive effect on performance, and this new finding that feedback may actually negatively affect performance.

In the behaviorist view, feedback is simply defined as 'knowledge of results' (Thorndike, 1927). Although it sounds simple, this small phrase holds many more questions than answers (Landy & Farr, 1980). Researchers and practitioners are beginning to understand the complexities of this process. Depending on how one views the receiver, for example, the study of feedback is very different. Reflecting this complexity is the issue that there has yet to be a consistently agreed upon definition of feedback. This lack of definitional consistency has contributed to the discrepancies in research findings. Researchers use a different definition and view of feedback depending on the theory to which they subscribe.

Not only do inconsistencies exist between feedback components used in the literature itself, but there are also inconsistencies between those used in the literature and those used in practice. Much research on feedback, for example, tends to be normative, while in the applied setting, feedback tends to be more criterion-referenced (Vancouver & Tischner, 2004). Further, laboratory experiments often utilize manipulated, or bogus, feedback rather than participants' actual performance (e.g., Podsakoff & Farh, 1989). This is largely due to the controllability of bogus feedback. By giving bogus feedback,

though, many of the relationships between actual performance and feedback are lost. It is difficult, if not impossible, to examine these relationships when true performance feedback is withheld. Researchers are seeing greater benefits of using actual performance information in the feedback provided to participants (e.g., Donovan & Williams, 2003; Williams, Donovan, & Dodge, 2000).

Feedback sign, positive versus negative feedback, has also been closely examined regarding its relationship with performance. Information regarding a success is generally considered positive feedback while information regarding a failure is termed negative feedback (Kluger & DeNisi, 1996). Several lines of research have suggested that positive feedback is typically positively related to performance and motivation while negative feedback is negatively related to the criteria (e.g., Geddes & Konrad, 2003; Ilgen, Fisher, & Taylor, 1979). Such research is based primarily on the findings of differential acceptance and rejection rates given the sign of the feedback. Despite these consistent findings, Kluger and DeNisi's (1996) meta-analysis revealed no evidence that feedback sign differentially affects performance. Research has generally given an adequate amount of attention to negative feedback, but it has failed to provide organizations with processes to successfully deliver negative feedback. This is captured in findings that people generally prefer to use positive than negative feedback (Smither & Walker, 2004).

These discrepancies highlight the fact that, despite the vast amount of literature that currently exists on feedback, how such processes operate remains a mystery. Some research clearly displays differential effects of sign on performance while other studies indicate no differences. Why do these discrepancies exist and why do psychologists still not understand the conditions under which feedback has a positive, negative, or no effect

on performance (Kluger & DeNisi, 1998)? One reason progress is so slow is that

negative feedback is not receiving the appropriate amount and type of attention in

research. Reactions to negative feedback are often compared directly to reactions to

positive feedback, given the same set of circumstances. The responses to negative

feedback are subsequently disregarded, based on the assumption that all receivers

respond similarly and that the negative information is immediately rejected. Rather than

treating positive and negative feedback as opposite end of the same scale, researchers

must examine them individually. Negative feedback must be examined as completely

different from positive to fully understand its unique components and how positive and

negative feedback can result in different responses from the receiver.

Summary

Even though there are discrepancies in research and practice, organizations

continue to use research to guide practice. Researchers must redefine how they approach

the study of feedback if it is to be successful in transferring to the organizational setting.

Different types of feedback, for example, may be more or less appropriate for different

purposes (Jelley & Goffin, 2001). Jelley and Goffin separated a performance appraisal

into its components (broken up in terms of method and content) and examined their

individual effects on performance. It was revealed that the individual components indeed

had differential effects on performance, suggesting that, in practice, it may not be wise to

use a single appraisal system for all purposes (Cleveland et al., 1989; Jelley & Goffin,

2001; Murphy & Cleveland, 1995). Individuals may respond distinctly to different types

of performance evaluations based on their personal characteristics or the characteristics

of the task. More research is needed to fully understand the implications of these

findings. Such studies do, though, take research in the right direction, helping researchers to start thinking in different ways and breaking these larger constructs into their individual components when examining feedback.

Due in part to its complexity, a comprehensive theory of the influences and effects of feedback intervention is lacking (Kluger & DeNisi, 1996). Early studies were based on hypotheses derived from the Law of Effect (Thorndike, 1913; 1927) and are therefore firmly anchored in the behavioristic perspective (Kluger & DeNisi, 1996). This approach is derived from reinforcement theory that proposes that positive feedback is equivalent to reinforcement and negative feedback is identical to punishment. The same principles exist stating that, in both positive and negative feedback conditions, performance should improve. Thus, in the positive feedback state, one is reinforcing correct behavior; while in the negative feedback state, one is motivated to avoid the punished behaviors.

Although incomplete, this theory helped to maintain the now-questioned assumptions regarding feedback's positive effect on performance. Early studies examining feedback intervention also had major methodological flaws (Kluger & DeNisi, 1996). Inconsistencies in the definition of feedback led to inaccurate operationalizations. Poor methodology was another problematic flaw that resulted from both lack of resources and neglect. The lack of inclusion of studies reporting results that were inconsistent with hypotheses identified by the Law of Effect may have been one of the most significant flaws. Although studies rejecting feedback's positive effect on performance existed, many researchers were unaware or chose to ignore the results (Kluger & DeNisi, 1996). These studies provide the opportunity to address the feedback-performance relationship.

The time has come to take a step back and reexamine the individual components of feedback and their effects on the receiver. This study will attempt to reconcile some of the discrepancies regarding the effects of feedback sign and source on performance. This study begins with an in-depth discussion of feedback and its various components. Then, it identifies and discusses a number of feedback's relationships with other variables and theories. Finally, an empirical examination is described that attempts to resolve some of these issues regarding feedback sign and source.

Literature Review

Feedback

People use feedback to evaluate products and the performance of others (e.g., Herold & Greller, 1977), but they also use it to gather information about appropriateness, quality, and acceptability in the evaluation of their own performance. Such information is then used to reaffirm one's belief that his/her actions are correct or to make adjustments if needed.

Ilgen et al. (1979) conceptualize feedback as "a special case of the general communications process" (p. 350) in which the messages are specifically targeted to the recipient and entail some level of critique. How the recipient receives this information is dependent upon characteristics of the source, the nature of the message, and one's personal characteristics.

Dimensions of Feedback

Feedback is a complex process. The path between a feedback intervention strategy and behavioral change is lined with interactions between characteristics of the sender, the many components of the feedback message itself, and the varying individual

differences between receivers (Ilgen et al., 1979). If, and when, the message is perceived

by the receiver, these interactions have a great influence on the interpretation of the

message. It is no surprise that the receipt of feedback doesn't always lead to desired

behavior (Ilgen et al., 1979). This model illustrates that, to understand feedback fully,

each construct must be dimensionalized to allow more meaningful factors (Herold &

Greller, 1977).

　　　　Source. Throughout research, the most prevalent distinctions in feedback exist

among the variety of feedback sources. Although the source is not technically part of the

feedback message itself, it is difficult, if not impossible, to separate the individual effects

of each on the receiver (Ilgen et al., 1979). To advance understanding of the role of the

source, researchers have created taxonomies to serve as models for discussion. One such

taxonomy distinguishes between three sources. These sources include: feedback from

others (peers, co-workers, supervisors, clients, or any other person), the self (provided to

the self through the process or completion of a task), and the task (Ilgen et al., 1979).

Feedback from the task can include feedback inherent in the work itself, or augmented

feedback provided through the task. Different from that inherent in the work itself,

augmented feedback is provided through the task, compiled by an impersonal source

through computer technology, and delivered back to the individual via the task,

computer, or other impersonal source. The key to augmented feedback is that it is

objectively and impersonally created and delivered.

　　　　A second taxonomy distinguishes between five sources ranging along a

continuum (Greller & Herold, 1975). The sources include the self (psychologically

closest to the individual), the task, co-workers, supervisors, and the organization (most

distant). The taxonomy regards information received from the self to be internal feedback while the remaining sources are termed external. Research suggests that these sources each offer very different information to the individual and are more or less valuable based on the information they are providing. For example, when determining if one is meeting specific requirements, one relies more on feedback from the self. When determining what the requirements of the job are, one relies more on external, or more psychologically distant, sources (Greller & Herold, 1975). This research suggests that the source of a feedback message may indeed have differential effects on the receiver depending on the type of information it possesses.

Although the internal/external distinction has been found to be important (Greller, 1975; Greller & Herold, 1975), it is not the only way to categorize feedback. Within this distinction, the question often arises of where task feedback belongs. Although it comes from external sources, individuals often make internal comparisons when evaluating their level of performance. The terms internal and external, and the subsequent research using this taxonomy, do not clearly define the criteria for sources within each category. For this reason, the distinction between task and interpersonal sources may be a more appropriate way to discuss feedback.

The distinction between task and interpersonal feedback is sometimes used to refer to the content of the feedback. In these cases, task feedback refers to any information about work or one's task-related behaviors while interpersonal refers to information about a person's character (Geddes & Konrad, 2003). In the following discussion, though, the distinction will refer to the source of feedback. Task feedback generally comes from one's direct observation of results (Leonard, Beauvais, & Scholl,

1999). For this reason, task feedback may be conceptualized as impersonal feedback. Examples often include seeing a completed construction project, hearing one's time in a race, and scores on an exam. Such examples, though, often cross the line between direct observation and augmented feedback. Test scores, for example, are provided to the individual by the task, resulting in the evaluation of one's performance. For this reason, research involving feedback from the task is often difficult to interpret and compile. Some researchers use task to refer to the content while others use it to refer to the source. Because augmented task feedback is easier to capture mentally and physically, in this study the term 'task feedback' will refer to augmented feedback and will be operationalized as feedback derived from the task and delivered impersonally.

The term 'interpersonal feedback' refers to feedback from another person. This type of feedback often contains a strong subjective component and can come in two forms: direct, which involves statements by others regarding one's performance, competencies, traits, or values, and indirect, which is derived by the receiver from observation of the behavior of others toward him or her (Leonard et al., 1999). This study will focus on the direct feedback from others. Unlike feedback from the self or indirect feedback, the distinction between task and interpersonal better captures controllable feedback, which is most often used in the workplace.

Sign. A feedback message is comprised of many different characteristics including sign, frequency, timeliness, consistency, and specificity. Although each plays a role in the response of the receiver, little evidence has been found to support the notion that all of the individual dimensions exist as distinct features of a message (Larson, Glynn, Fleenor, & Scrontino, 1986). Researchers have, though, identified sign and source

as the two dimensions that distinguish between responses to feedback (Herold & Greller, 1977).

The sign of a feedback message is created when it is compared to a goal or standard (Kluger & DeNisi, 1996). There is great agreement as to what constitutes a negative and positive feedback message. The disagreement arises when researchers discuss individuals' reactions to the different feedback signs. Several theories have attempted to explain what takes place within the receiver to cause a given reaction. Although many of these theories result in the same behavioral conclusions, the components they claim to influence those reactions often vary substantially. It is within these links that feedback theory has failed to gain consistency and agreement.

Although positive and negative feedback are both forms of evaluative messages, they have different components and act quite distinctly on the receiver. This notion is supported in brain research that has identified shorter reaction times for negative feedback than for positive (Gauggel, Wietasch, Bayer, & Rolko, 2000). Although reaction time, here, was used to operationalize motivation, it nonetheless represents differential responses to the two types of feedback.

Based on the prior definition, negative feedback is information that reveals a discrepancy between the outcome and the goal. Research indicates that this discrepancy results in anger, retaliatory behaviors, strain, ego-defensiveness, and lower self-esteem (Ilgen et al., 1979). Negative feedback is most often conceptualized and discussed in this way. What researchers often fail to consider is that there are two forms of negative feedback: constructive and destructive (Baron, 1988). Constructive feedback provides the recipient with information that is specific in nature and remains focused on the behaviors

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rather than attributing performance to an internal cause. Such feedback is delivered in a considerate manner. Destructive feedback, on the other hand, is negative feedback that goes against the guidelines of constructive feedback, including personal attack and vague, harsh delivery.

Destructive feedback has been shown to have a negative impact on the receiver in many cases, and this is where the majority of the negative responses come into play. In comparison to those receiving constructive or no feedback, responses to destructive feedback include having more tension, being less flexible, setting lower goals, having lower self-efficacy, and being more likely to resist or have disagreements with the source rather than handling them through cooperation (Baron, 1988). These responses are in addition to those, such as aggression, mentioned previously. It is not surprising then that destructive criticism has been shown to be a greater contributor to organizational conflict than both competition over resources and power (Baron, 1988).

Many managers do not realize the impact of destructive criticism. Compared to employees, managers consider its influence to be less destructive to employee motivation and co-worker relationships (Baron, 1990), demonstrating that managers still do not realize, or are unwilling to accept, the amount of damage criticism can do.

When examining the influences of, and responses to, negative feedback, many researchers do not differentiate between these two forms: constructive and destructive. Conclusions are drawn with little or no regard for the type of negative feedback that was delivered. It is often assumed that negative feedback is delivered in the same way as positive feedback: calmly, considerately, and remaining focused on the behaviors while avoiding making internal attributions. The reality may be, as will be reviewed later, that

this is most often not the case in the applied setting (Ilgen, Mitchell, & Fredrickson, 1981; Larson, 1984; Liden, & Mitchell, 1985). Positive and negative feedback not only act differently, but they often differ in their delivery as well.

In addition to the consideration of the feedback delivery style, researchers fail to focus on the fact that the majority of feedback literature involves messages delivered via external, or interpersonal, sources. Despite the value placed on the source and the knowledge that characteristics of the source play a major role in the response, this component is frequently disregarded in the feedback literature, particularly pertaining to differences in reference to feedback sign.

It is generally agreed that the majority of people do not like to give negative feedback to others (Larson, 1986). Many managers report that delivering negative feedback to subordinates is one of the most unpleasant parts of their job (Lublin, 1994). This is due, in part, to the preexisting belief that negative feedback results in these defensive responses by the receiver. Such beliefs are maintained by research suggesting that, when giving negative performance evaluations, managers encounter some type of aggression 98% of the time (Schelhardt, 1996). Possibly as a result of the destructive delivery style that accompanies much of the negative feedback offered by supervisors, employees may reject the evaluation by placing blame elsewhere or redirecting attention to criticisms of the manager.

Regardless of the expectations of the sender concerning the response of the receiver, many people report feeling overall uneasiness when delivering negative feedback, regardless of the situation (Lublin, 1994). This finding was supported in a study conducted by Microsoft concerning providing feedback to computers (Gates,

1995). After performing a task, participants were asked by the computer to provide

feedback. Responses were generally positive. When asked by a second computer to

provide feedback concerning the performance of the first computer, the responses were

significantly more critical. Although silly, this study further demonstrates the disdain for

providing negative feedback directly to the object of the evaluation for fear of hurting its

feelings, whether it has feelings or not. Research generally supports that people do not

like to give negative feedback.

Due to their general reluctance to give negative feedback, supervisors avoid doing

so as long as possible. When they do give it, they often reduce the negative impact it may

have, distorting the feedback by factors that have little or nothing to do with the

employee's objective performance (Larson, 1989). Supervisors are a valuable source of

information for employees. When this information is distorted or inaccurate, it is difficult

for an employee to recognize where improvements are needed and what the standard for

performance is. This derails the entire feedback process and renders it more destructive

than useful.

Although ultimately harmful, this behavior is directed toward making the negative

feedback more comfortable, not only for the receiver, but for the sender as well. By

reducing the negative connotation of the feedback, the sender hopes to reduce his/her

own negative emotion and feel better about the delivery of the feedback.

Feedback-Seeking Behavior

Despite the fact that supervisors do not like to give negative feedback, and

employees have reportedly responded unfavorably to it, research supports the notion that

individuals are feedback-seeking creatures, searching for informational cues regarding

their performance from their surroundings (Anderson, Kulhavy, & Andre, 1971; Larson, 1989). There are many reasons why people seek feedback regarding work performance. Such knowledge, for example may provide information needed to direct behavior toward the attainment of desired goals whether they are organizational or personal goals of achievement, self-determination, or self-esteem (Ashford & Cummings, 1983). Feedback informs individuals about how they are performing and what actions must be taken to reach their desired destination. In this sense, feedback is only valuable if it reduces uncertainty regarding performance and goal attainment (Larson, 1989).

Research suggests that two feedback-seeking strategies are most often employed (Ashford & Cummings, 1983). These strategies include monitoring, when one maintains a level of general awareness of the informational cues provided by the environment, and inquiry, when individuals actively generate cues to provide them with information regarding their performance.

Generally, individuals consider themselves to be competent performers producing quality work, and prefer to view their work positively (Jacobs, Jacobs, Gatz, & Schaible, 1973; Pine & Jacobs, 1988; Pine & Jacobs, 1991; Schaible & Jacobs, 1975; Swann, 1984, 1987). When searching for information, individuals tend to seek out information that is consistent with this view of themselves. This type of feedback-seeking is termed self-verification (Swann, 1984, 1987). In addition to the general distortion provided by supervisors, individuals often receive distorted feedback through their own monitoring or inquiry methods. This distortion is partly a function of how they interpret the information (often in monitoring) and how the information is delivered (often in inquiry).

When work is of a high quality and standard, finding information to verify one's positive self-image is easy to find. When problems arise, one may begin to question his or her existing views. In this case, one often begins to seek information to aid in regaining a positive self-concept and reestablish positive feelings for him or herself. Because feedback is important in maintaining esteem and pride, receiving negative feedback, especially when expecting positive, can be quite damaging emotionally (Brickman, 1972). On the other hand, when expecting negative feedback, individuals still tend to seek out information that will provide them with positive, or less negative information. In other words, individuals generally try to cushion, or minimize, the amount of negative information they receive (Larson, 1989), further supporting the notion that people do not like to receive negative feedback.

The general disdain for giving negative feedback by supervisors causes many problems in the feedback process. Unless pressured by organizational policies and controls, managers are likely to ignore this responsibility until there is no choice but to inform the recipient (Meyer, 1991). Employees are also less likely to inquire, or seek out this information when they have a slight expectation that it will be negative, therefore reducing the likelihood of uncovering the negative information. When negative feedback is delayed, an unhealthy process begins. The receiver has no information as to the level of his or her performance, thus continues as before. Meanwhile, the amount of negative information for the receiver continues to build within the supervisor. The ultimate result is usually the eventual delivery of destructive, negative feedback.

At the point where negative feedback should be delivered, but is not, frustration begins to build inside of the sender. When there is no longer a choice to ignore the

feedback, due to regulations or because of damage created by the continuous mistakes, a large amount of negative feedback is delivered all at once. This often results in the manager being more upset by the insufficient behavior of the recipient than he or she would have been if the feedback had been delivered a little at a time. The result is often a biting tone that proves to be more hurtful and angry than necessary and results in internal attributions as to the cause. Such feedback is destructive in nature and more upsetting to the receiver of the message (Baron, 1988).

Functions

In the spirit of its complexity, the information contained in a feedback message, regardless of source or sign, is capable of serving several functions (Locke, Cartledge & Koeppel, 1968; Payne & Hauty, 1955). The first is a directional, or evaluative function. Performance information provided to a receiver contains an evaluative component that serves to provide information regarding his or her level of proficiency, above or below the requirement. This directional function allows the receiver to recognize the behavior required to improve, sustain, or reduce performance (Ammons, 1956). Information can include overall performance (e.g., 80% correct) or proficiency regarding specific items (e.g., right or wrong).

The motivational function of feedback serves to inspire action. Upon the receipt of information, one may be motivated to increase or decrease certain behaviors (Ammons, 1956). This sense of desire often arises because of some external reward one hopes to gain from performing at a certain level. Feedback provides information regarding how close one is to approaching this desired reward or avoiding a given punishment. From the motivational viewpoint, feedback affects one's perception of

incentives, the level of task difficulty, his or her confidence in ability to successfully

complete the task, and possible outside sources that may influence success (Hoska,

1993). This information interacts to produce a level of motivation.

Similarly, feedback itself can be considered an incentive, functioning as its own

reward or punishment (Ammons, 1956; Hoska, 1993). Hearing a superior or co-worker

congratulate a job well done can serve as a reward, just as hearing criticism or harsh

comments regarding one's work is degrading and hurtful, serving as a form of

punishment. Whether a reward or punishment, the other functions of feedback kick in to

produce a response. Specifically, one is often motivated to either improve or maintain

performance.

Motivation provides the individual with a reason to do something with the

information contained in the feedback itself. In this sense, it is doubtful that the effects of

each function can be isolated, especially in field settings (Locke et al., 1968; Payne &

Hauty, 1955). Thus, researchers and practitioners have attempted to combine as many of

these functions as possible when designing feedback interventions in an attempt to

extract the greatest behavioral return.

Although feedback generally serves these functions, feedback sign has been

identified as an influence on the effectiveness of specific functions. For example, one

study revealed that repeated negative feedback results in lower effort levels than no

feedback at all (Nease, Mudgett, & Quinones, 1999). Negative feedback is often

associated with punishment. Skinner has been considered responsible for giving

punishment a 'bad name' by focusing on the "real and imagined effects it has on people"

(Pinder, 1998, p. 421). The inconsistencies of the literature pertaining to the benefits of

punishment and the negative effects it has on the receiver has made punishment a topic of great controversy throughout the psychological literature. Despite its recorded benefits (e.g., Kazdin, 1975), many people advocated using reward rather than punishment, accepting Skinner's position without question (Pinder, 1998).

Recent research suggests that punishment can be effective. Issues arise, though, because of the complexity with which punishment affects behavior. In clinical settings, for example, punishment has been extremely beneficial for dealing with various deviant behaviors (Kazdin, 1975). Research also suggests that negative feedback often results in increased effort while positive feedback results in decreased effort (Bandura & Cervone, 1986; Bandura & Jourden, 1991; Locke & Latham, 1990; Podsakoff & Farh, 1989). In addition to support for the positive effects of punishment, a review of the literature suggested that, when examined in work organizations, many of the negative effects associated with punishment are not witnessed (Arvey & Ivancevich, 1980). This suggests that it may be premature to completely avoid punishment in the workplace.

In short, there have been a variety of dysfunctional side-effects attributed to the use of punishment for changing human behavior, but the research evidence underlying these beliefs is sparse, particularly as it relates to work settings. These inconsistencies lead to the search for alternative answers regarding the interaction of feedback sign and motivation. Not all negative feedback is considered a punishment and, in fact, some individuals find it encouraging. Given its beneficial characteristics and the functions it serves, negative feedback certainly has the potential to improve performance via individual growth and development.

Motivation

Virtually every human action involves some component of motivation (Mitchell & Daniels, 2003). Several definitions of motivation are used throughout the literature including "the energy a person expends in relation to work" (Pinder, 1998, p. 1) and "an inner desire to make an effort" (Dowling & Sayles, 1978, p. 16). Although research suggests that there are over 140 different definitions of motivation (Kleinginna & Kleinginna, 1981), the majority of the motivation literature revolves around defining what constitutes 'energy' or 'inner desire'.

Although there are a variety of definitions used for motivation, typically, they all include arousal (a force that initiates action), direction, and intensity or perseverance (Bandura, 1986; Kanfer, 1990; Pinder, 1998). The interaction of these components with feedback sources may help explain the differential responses to feedback messages, in that some people tend to respond favorably to negative feedback while others respond unfavorably. It is the suggestion of this paper that the feedback source interacts with feedback sign to produce given levels of motivation, and resulting improvements in performance. Motivational characteristics of the sources may help identify why people respond differently to negative feedback. Following is a brief discussion of motivation and its interaction with the source of a feedback message.

General Motivation Theories

Early motivation theories revolved around motivation driven by human nature (i.e., Maslow's (1943) Hierarchy of needs, McGregor's (1960) Theories X & Y, McClelland's (1961) need for achievement, and Herzberg's (1966) 2-factor theory). These theories played a critical role in building the foundation of contemporary

motivational theories. Although researchers generally disregard them, managers often find these early theories easy to relate to and use them to try to explain individual behavior in organizational contexts (Pinder, 1998).

All motivation theories include an initial force acting on an individual to result in behavior. These forces are generally classified as either intrinsic or extrinsic. The primary purpose of behavior resulting from extrinsic forces is to gain some type of physical or emotional reward (Deci, 1975). Intrinsically motivated behaviors, on the other hand, are performed for their own sake and result in feelings of competence and self-determination (Deci, 1975). It is clear from the definition that supervisors or organizations may more easily control extrinsic motivation by implementing reward, or other desirable programs. Intrinsic motivation, on the other hand, results from the satisfaction of higher-level growth needs and cannot as easily be influenced by supervisors. For this reason, researchers have explored the differential influences of certain characteristics of the job for influencing intrinsic motivation (e.g., Hackman & Oldham, 1976). This theory will be discussed in greater detail later.

Two components are required for one to be intrinsically motivated (Deci, 1976). First, a central component of intrinsic motivation is a sense of competence (Deci, 1975). Long considered a powerful reward for individuals (White, 1959) and an innate human need (Deci & Ryan, 1985), people generally seek to attain this state of competence. Second, a feeling of personal control is required for the development of intrinsic motivation (Deci, 1976). This component is so vital that, if one feels any lack of control, there can be no sense of intrinsic motivation. Although supported with relatively little empirical evidence, the suggestion that intrinsic motivation results from higher-level

growth needs is the most frequently cited explanation of intrinsic motivation. This explanation, though, makes it somewhat complicated to discuss and to use to influence behavior. For this reason, employers generally turn to extrinsic rewards when attempting to motivate their workforce.

The distinction between intrinsic and extrinsic motivation makes its way into a number of contemporary motivation theories (e.g., cognitive evaluation theory; job design; motivator-hygiene theory; self-determination; self-efficacy). Within these theories, feedback sign and source have been discussed at length when explaining the influences on both types of motivation.

Cognitive Evaluation Theory (Deci, 1975; Deci & Ryan, 1985) describes the influence of rewards and punishments on behavior, particularly in reference to intrinsic and extrinsic motivation. According to the theory, intrinsic motivation may either be enhanced or reduced by feedback perceptions. In other words, when perceived as negative, regardless of actual message content, feedback serves to decrease intrinsic motivation because it reduces one's sense of competence and control.

The theory also states that feedback sign acts differently on an individual given his/her motivational forces. Given an external motivation orientation, negative feedback hinders performance while this same feedback helps performance when one has an internal motivation orientation. Boggiano and Barrett (1985) found that positive feedback improved performance only for the intrinsically motivated individuals and extrinsics performed quite worse in the failure feedback than in the success feedback condition.

Although this theory provides some valuable information on the differential effects of feedback sign on performance given one's existing motivational state, as well

as the influence of the sign on motivation, there are a number of concerns that must be addressed to fully understand these relationships. Primarily, these findings do not take into account the different sources of feedback available to an individual. The majority of this research is based on feedback from interpersonal sources. As mentioned throughout this paper, interpersonal sources carry with them influences on the message and the receiver that independently interact with the message sign. It is not accurate to make statements about the interaction of feedback sign and motivation without considering the influences of the source.

Considering this interaction, one reason for the reduction in intrinsic motivation due to negative feedback is that people often feel that feedback is based on things that are out of their control. The evaluator plays a large role in this perception. One's mood, for example, is often related to performance evaluations. When in a bad mood, supervisors are thought to give lower scores on evaluations. These types of influences have led employees to feel that the evaluation they receive is influenced by these external factors and, thus, largely out of their control (Boggiano & Barrett, 1985). Such findings are reported as early as childhood. Moreso than children with an intrinsic motivation orientation, for example, children with an extrinsic motivation orientation exhibit lower perceptions of control and self-determination (Boggiano, Main, & Katz, 1988).

Cues from both the task and others provide the information needed to make a judgment of competence, one of the components of intrinsic motivation (Ilgen et al., 1979). Task feedback should increase intrinsic motivation because of the feelings of self-accomplishment without the interference of the opinion or approval of others, while negative feedback will motivate people to keep congruence between their goals and

behaviors (Ilgen et al., 1979). The task, as a source, interacts with individual characteristics of the recipient and provides a basis on which they judge their competence and degree of personal control over their behavior (Deci, 1979).

In addition to not taking into account the differential sources of feedback available to the individual, another concern with this theory is that its propositions are based on feedback perceptions, not the actual feedback itself. Using the previous example of moods, if a receiver is having a lousy day, any feedback may come across as negative. Also, if a supervisor is having a bad day, feedback may be sent as more negative than it is intended to be. This theory is based on interpersonally delivered feedback. To truly understand the sign of feedback and its role in motivation, one must include an examination of feedback from sources other than interpersonal. Feedback from the task, or other impersonal sources, may aid in understanding these processes.

Research suggests that there are two types of intrinsic motivation: that associated with simply doing the task (task behavior) and that associated with successfully completing the task (House, 1971; House, Shapiro, & Wahba, 1974). Interpersonal feedback provides information regarding successful completion or failure of a given task assignment, capturing only part of the task accomplishment component. Task feedback, on the other hand, can provide information relevant to encouraging individuals' intrinsic motivation because it can provide information regarding both task behavior and accomplishment. Given the dysfunctional use of negative or developmental feedback in the American workforce, a study is warranted that investigates the differential value of task and interpersonal sources in providing subordinates with negative feedback.

Throughout the literature, feedback from others, or interpersonal feedback, has been related to extrinsic motivation. This is due in part to the focus on performing for a reward or to avoid a punishment. One is aware of the consequences of a given level of performance. Interpersonal feedback, coming from another individual, increases extrinsic motivation because of the feeling of working to increase approval from others. Task feedback has been shown to increase both extrinsic and intrinsic motivation (Russell, Curtis, Studstill, & Grant, 1981). This study showed that task-focused internal feedback made performance more informative and resulted in both stronger expectancies of rewards and greater intrinsic motivation for the task than did task-focused external feedback, suggesting that as feedback becomes less interpersonal it becomes more intrinsically motivating.

The valuable role of task feedback in motivation is exemplified in the Job Characteristics Approach to motivation (Hackman & Oldham, 1976). In this theory, the term 'knowledge of results' is equivalent to feedback and refers only to that received from the task. Hackman and Oldham (1976) specified that the amount of task feedback, along with several other characteristics (i.e., task and skill variety and task identity), influences the amount of motivation and job satisfaction the particular job provides the individual, as well as influencing absenteeism and performance (Hackman & Lawler, 1971; Hackman & Oldham, 1976). They also suggested that internal motivation exists if one feels personally responsible (i.e., task and skill variety, task identity), the work is experienced as meaningful, and one has knowledge of results (a.k.a. task feedback; Hackman & Oldham, 1980), thus identifying task feedback as a critical component for maintaining motivation on the job.

Hackman and Oldham (1976) discuss several reasons why it is important to design jobs so they regularly provide the employee with feedback. First, it comes immediately after the task (timeliness). Second, it is less susceptible to interference from social-psychological processes. Finally, it is simple, direct, impersonal, and more powerful than outside forces.

These findings led researchers to further explore the relationship between feedback provided by the task and motivation. Ilgen et al., (1979) suggested that intrinsic motivation and one's desire to respond to task feedback are positively correlated. In addition to research on job enrichment (Hackman & Oldham, 1976), this relationship has been well documented in areas including human factors and ergonomics (McGrath, 1976).

Hypothesis 1: Feedback from the task results in greater intrinsic motivation than does interpersonal feedback.

Despite the frequent use of interpersonal sources of feedback in organizations, research has found that individuals tend to rely more on sources closer to them for information regarding their performance (Greller & Herold, 1975). Given the undesirable effects of providing negative feedback to employees via the supervisor, it is increasingly important to utilize those sources closer to the individual in the delivery of negative feedback. Since feedback from the self, the closest source to the individual, is less empirical, objective, and controllable than external sources, it is important to understand how to capture task feedback (the next closest source), and use it more effectively. Generally speaking, the less interpersonal the source, the more useful the feedback should be.

Effective Use of Feedback Dimensions

A final concern with the findings that negative feedback results in negative behaviors on the part of the receiver is that the literature doesn't account for the fact that the majority of negative responses to feedback are the result of rejection of that feedback, not because of the message itself. Although these generally aggressive behaviors may exist when positive feedback is rejected, they are more common with the rejection of negative feedback (Ilgen et al., 1979). Rejection occurs for a variety of reasons, but a major one has to do with the previously discussed issue of the destructive delivery style frequently accompanying negative feedback and the embarrassment associated with face-to-face interpersonal delivery.

Unfavorable consequences of rejection of feedback (most often negative feedback) led some to believe it should be completely avoided (Latham & Wexley, 1981). This is the approach that many US managers have taken when confronted with giving negative or developmental feedback. As discussed previously, negative feedback can be more valuable than positive feedback for learning what is being done wrong and how to improve (Buss, Braden, Orgel, & Buss, 1956). Although often seen as bad, factor analysis of responses to negative feedback resulted in both positive and negative factors (Geddes & Konrad, 2003). This indicates that negative feedback does not always (and exclusively) result in negative responses by the receiver. Many individuals find negative feedback useful in their personal development and growth. Negative feedback is often necessary (Ilgen et al., 1981), and it is unrealistic to avoid using it.

The inconsistencies in the findings of the effects of positive and negative feedback support the notion that these two types of feedback indeed act very differently

on the receiver. To understand why inconsistencies exist, researchers have attempted to understand negative feedback's processes. Researchers have identified that failure feedback resulted in richer mental models of the failed event than the mental models of successful events (Ellis & Davidi, 2005). Such research suggests that more cognitive activity is being directed toward the negative feedback message than the positive. The richer mental model provides greater detail to the learner and allows for performance improvement.

As stated, negative feedback is a very complicated process, but research clearly suggests that it has the potential of being beneficial for performance if given the right circumstances. Early researchers examined only one or two feedback dimensions at a time when trying to understand the influences on a given response (Ilgen et al., 1979). Due to the complexity of the feedback process, it is no surprise that little evidence was found for the influence of these individual dimensions.

As research progresses, researchers have identified several guidelines for making punishment more effective. They have identified that negative feedback is most effective when it is immediate, contingent upon behavior, intense, consistent, impersonal, and informational (McGregor, 1957). Following are some suggestions that have been made throughout research for how to reduce rejection of negative feedback. For each suggestion, an argument is made for why providing negative feedback through the task would be a good solution to the issue.

One suggestion was to provide more frequent feedback sessions (Ilgen et al., 1979; Landy, Barnes, & Murphy, 1978; Latham & Wexley, 1981). Research indicates that individuals have the capacity to handle a small number of task-focused, pieces of

negative information at a time and show improvement; not only in comparison with a large number of negative comments, but overall (Smither & Walker, 2004). Increasing the number of negative comments within a given session has a disproportionate impact on defensiveness. Providing negative information through augmented task feedback would allow for this increase in feedback sessions without having the individual feel a loss of control. After performing a task, augmented feedback would inform the individual of his or her performance in a timely manner.

A second suggestion is that negative feedback should be provided with specific examples to justify the criticism (Burke, Weitzel, & Weir, 1978; Ilgen et al., 1979; Landy et al., 1978). Providing negative feedback through the task would allow the individual to examine immediately how the performance was incorrect, thereby having more specific examples of incorrect behavior. The feedback dimension of specificity is incredibly popular in the feedback literature. Feedback specificity generally refers to the level of information provided in the message. There is, though, variance in how this definition is operationalized. Some researchers refer to specificity as whether the feedback message tells the respondent which answer is right or wrong, and what the right answer should have been (Goodman, Wood, & Hendricks, 2004). Other researchers discuss specificity in terms of how much information is provided (i.e., how to correct the problem and develop that skill; why the answer was correct or incorrect; Narciss, 2004).

Researchers have identified that, although specificity may initially improve performance, over the long term, performance is decreased (Goodman et al., 2004). Too much information decreases exploration and learning on one's own. In these cases, all the information needed to get the desired results is provided in the feedback message, and the

receiver does not have to do any additional work to improve performance. Although these findings suggest that the benefits of specificity in feedback declines over time, the authors suggest that those receiving the different varieties of feedback learned through different, but equally beneficial means (Goodman et al., 2004). Here, low specificity meant outcome only; high specificity meant specific guidance on the correct responses for decisions.

Timeliness aids in this process. Similar to frequency, the timing of a feedback message has also been investigated (e.g., Ellis & Davidi, 2005; Hackman & Oldham, 1976). Timing typically refers to the amount of time that passes between the behavior and the feedback message. Generally speaking, the less time that passes between the behavior and the feedback, the greater the effect of that feedback on subsequent performance (Hackman & Oldham, 1976). This is particularly important when the desired result is behavioral change, as in the delivery of negative feedback. Less time distance gives the receiver greater context and he or she is better able to recall the behaviors that led to the unsuccessful performance. Providing feedback through the task can aid in this process, particularly as it relates to negative feedback.

A final suggestion, advocated by a number of authors, is for managers to incorporate informal feedback into their regular style of management (Latham & Wexley, 1981). Providing informal feedback incorporates many of these solutions into one. Although this suggestion is feasible, due to supervisors' frequently busy schedules, informal feedback may realistically be rushed, pushed aside, or delivered in an ineffective way. The task may be a good alternative to providing this informal feedback to employees. This would supply employees with the frequent and timely feedback they

desire and take some of the pressure off of the managers at the same time. Computer-generated reports could be called upon at will or delivered at specified times each week.

These suggestions coincide with previous research that negative feedback requires specific amounts of frequency, timeliness, and specificity used in combination. Following these guidelines serves to reduce the negative emotion experienced by the receiver and improve the usefulness of a feedback intervention attempt. Augmented feedback provides a solution to the negative feedback delivery dilemma. Rather than depending on individuals to deliver or seek the appropriate amounts of information at the appropriate times, augmented task feedback could be administered frequently enough to account for these issues.

The supervisor is not the only person who can help feedback attain these required dimensions. The employee can engage in feedback-seeking behaviors in order to maintain the appropriate levels of frequency, specificity, and timeliness. It has been suggested that the feedback-seeking behavior of inquiry stops negative feedback from building (Larson, 1989). Because the subordinate initiates a discussion about his or her performance, the negative information is likely to come out earlier and in a more constructive fashion than if left to the supervisor's timeline.

Unfortunately, individuals tend to avoid feedback if they are expecting something negative. If they do ask, they are likely expecting some generally positive information. When the individual receives negative information when expecting positive, the effect can be more damaging than if they had received the feedback without asking and before they have had time to develop an expectation about the results (Brickman, 1972). The effect is multiplied when the project or task holds greater value for the individual. If there

is any feeling that the feedback may be less than desired, one may be much less likely to seek it than if it held little value. Similarly, individuals will be less likely to seek feedback information when they fear that such inquiries might cause them to be perceived as weak, lacking self-confidence, or unable to work autonomously. In other words, people will not be likely to seek feedback if they fear it will be damaging to their self-image or their appearance to others. In these cases, one may try to infer feedback from their natural surroundings, using the monitoring approach.

For monitoring, one may balance the importance of misreading an informational message against the potential benefits of the findings. When using the monitoring approach, there is always a risk that the naturally occurring feedback will be misinterpreted or inaccurately perceived. If it is very important that a project be performed correctly, possibly at the cost of being perceived as inadequate by others, one may be more likely to seek information from others. For general activities and tasks, information gathered via monitoring can be quite valuable for gauging timeliness, for example. But, when the project is critical, one may not be willing to take chances. At this time, a decision may be made to approach a supervisor or trusted other directly for his or her opinion regarding the task.

There are several reasons one may decide to engage or not to engage in a particular feedback-seeking behavior, or feedback-seeking behavior in general. One of these reasons may be the difficulty of applying the strategy. In other words, the less effort required by a particular strategy, the more likely one is to engage in it. If information can quickly and easily be identified without interruption of a task, one may be more likely to engage in the feedback-seeking behaviors. One should also be less likely to make direct

inquiries about how performance is evaluated by others when the nature of the work makes this strategy time consuming. Which method is used is, in part, determined by the consequences of the strategy. Feedback from the task can provide individuals with feedback that they do not need to actively seek out or interpret. This results in greater access to information that may otherwise have gone unattended or been inaccurately perceived.

<div align="center">*Acceptance*</div>

Research indicates that individuals actively assess the accuracy of a feedback message before making decisions to accept or reject it (Ilgen et al., 1979). Acceptance is a critical step in Ilgen et al.'s (1979) model for the effects of feedback on the receiver, as it moderates one's reaction to the message. According to the model, the recipient must first form a perception of the feedback and become aware of the source from which that information comes. Once the source has been established, the recipient must either accept or reject the critique. In this model, acceptance refers to one's belief that the feedback is an accurate portrayal of his or her performance (Ilgen et al., 1979; Kinicki, Prussia, Wu, & McKee-Ryan, 2004). In other words, only the perception of accuracy by the receiver is important, not the actual validity of this belief. Acceptance of the feedback is pertinent to the success of any feedback attempt. According to the model, acceptance must occur before there is a desire to respond, a decision to respond, and ultimately, a response to the provided information. There are generally three things that influence the acceptance of feedback: characteristics of the feedback, the source, and the receiver (Ilgen et al., 1979). These characteristics influence the perception, and ultimately acceptance, of that feedback (Levenstein, Jacobs, & Cohen, 1977).

Effects of the Feedback Itself

Characteristics of the message that lead recipients to find such communications believable should increase the extent to which the feedback is accepted. Characteristics of the message that have been examined include feedback sign, consistency, specificity, and timeliness (Ilgen et al., 1979). These dimensions have been discussed previously regarding their differential effects on feedback in relation to sign and source. One way their interaction influences behavior change is through feedback acceptance. For this reason, they will briefly be discussed again here. For example, feedback that is both consistent over time or with the source's role, and backed up by specific examples, should be more believable to the recipients.

Feedback sign is the most important message characteristic that influences acceptance (Ilgen et al., 1979). Several studies have found that feedback recipients are more likely to accept and use favorable than unfavorable feedback (Brett & Atwater, 2001; Facteau, Facteau, Schoel, Russell, Joyce & Poteet, 1998; Handelsman & Snyder, 1982; Kay & Meyer, 1965; Schaible & Jacobs, 1975; Smither & Walker, 2004; Stone & Stone, 1985). Additionally, positive feedback is not only rated as more accurate by the receiver, but the content of the messages maintain greater fidelity when being received than do negative feedback messages (e.g., Handelsman & Snyder, 1982; Jacobs, Jacobs, Feldman, & Cavior, 1973; Jacobs, Jacobs, Gatz, & Schaible, 1973; Johnston & Nawrocki, 1967). Positive feedback is often seen as more believable than negative because it fits what most people want to hear and already believe (Ilgen et al., 1979).

Accuracy is one component of, and is often included in survey items addressing, acceptance. The accuracy of negative feedback is attacked more frequently than positive

because it is often inconsistent with the efficacy beliefs of most individuals (Nease et al.,

1999). This is consistent with the earlier discussion of feedback-seeking behaviors in that

individuals tend not to actively seek information that is inconsistent with their

expectations of performance (Ammons, 1956). When faced with inconsistent feedback,

perceiving it as inaccurate helps individuals protect their self-esteem in that they do not

have to face the notion that they performed below their own expectations (Nease et al.,

1999). Rather than accept the inconsistency, they attribute the results to the inaccuracies

of the source and/or the evaluation method.

Effects of the Sender/Source

Most source characteristics that affect acceptance do so by influencing the

perceived credibility of the source. The dimensions of credibility that have the greatest

influence on acceptance are perceived trust, expertise, and reliability (Ilgen et al., 1979).

This model suggests that interpersonal sources vary most on expertise and trust.

Researchers mentioned assuring credibility of the source as a suggestion for reducing

rejection of negative feedback (Ilgen et al., 1979; Landy et al., 1978). Personal

characteristics can have a great influence on the perceived credibility of the source.

Although the sender can do some things to improve perceived credibility regarding these

components, personal characteristics often influence this perception. Race, for example,

has been found to influence perceived credibility in that employees generally attribute

greater credibility to white/Anglo managers (Geddes & Konrad, 2003). Although positive

feedback is generally rated as more credible by receivers (e.g., Jacobs, 1977; Pine &

Jacobs, 1988, 1991), each of these studies compared responses of positive and negative

feedback, but they did not alter the source of that feedback. In all cases, feedback was

delivered interpersonally. Perceptions of the source can serve to counteract the negative

response to negative feedback based on perceived credibility. Greater perceived

credibility in the source has been shown to result in more positive reactions to feedback

that was both slightly lower than expected and generally negative (Geddes & Konrad,

2003). The acceptance of negative feedback is positively related to the status of the

source, but the acceptance of positive feedback is unrelated to source status (Halperin,

Snyder, Shenkel, & Houston, 1976). This demonstrates an interaction between sign and

source regarding credibility, one component of acceptance.

Factors such as these, and others, interfere with the acceptance of any, but

particularly negative, feedback from interpersonal sources. Feedback from the task is not

as susceptible to interference from social-psychological processes (Hackman & Oldham,

1976). By taking out this factor, through delivering negative feedback via the task,

negative feedback may be better accepted by the receiver.

These results suggest that the response to negative feedback is, in part, due to the

perceived credibility of the source by the receiver. Reducing the interpersonal component

of feedback may help reduce these influences on perceived credibility and overall

acceptance. Rather than focusing on the source when deciding to accept or reject a given

feedback message, the focus can be redirected to the actual feedback message. By

providing feedback in a more objective way, receivers may have less interference from

the source.

Hypothesis 2: Negative feedback from the task is more likely to be

accepted than negative feedback from interpersonal sources.

Hypothesis 2a: Negative feedback from the task is seen as more credible

than negative feedback from interpersonal sources.

Hypothesis 2b: Negative feedback from the task is seen as more objective

than negative feedback from interpersonal sources.

Effects of the Receiver

Characteristics of the feedback message itself and the source of the feedback have

a great influence on its acceptance, but they are not the only influences. Individual

characteristics of the receiver play an equally important role in the acceptance of a given

feedback message and the subsequent behavioral response (Nease et al., 1999). One such

characteristic is the individual's perception of him or herself (Ilgen et al., 1979).

Consistent with the previous discussion, negative feedback is less accepted by those with

high self-efficacy. When exposed to negative feedback, these individuals report increased

frustration and begin to doubt the accuracy of the message. There is no difference in the

acceptance of positive versus negative feedback for the low self-efficacy individuals

(Nease et al., 1999).

It is clear from this research that providing negative feedback more frequently

should produce less negative emotion in the receiver due to both the sender delivering the

feedback in a less harsh manner and the negative information being delivered in smaller

'chunks.' It has been found that individuals can indeed handle negative information in

small doses with minimal negative effects (Smither & Walker, 2004). Inquiry has been

identified as a positive method for gaining negative feedback in both a kinder delivery

style and in smaller pieces. The research, though, indicates several situations in which

one may select not to engage in this feedback-seeking technique. If this occurs, the

benefits of negative information are reduced. For this reason, it is important to examine the possibility of delivering the feedback via augmented task feedback. This would eliminate the issues associated with waiting for the individual employee to inquire about the feedback and the risks of counting on the supervisor to deliver the feedback at the appropriate time.

The same characteristics that lead to increased acceptance result in decreased negative emotion for the receiver. When delivered in a constructive, timely, frequent manner, the individual can understand the feedback received and the purpose of that feedback. They feel less personal attack and this results in less negative emotion.

Hypothesis 3: Negative feedback from the task is associated with more positive emotion for receivers than is negative feedback from interpersonal sources.

Summary and Hypotheses

The previous review of the literature discusses where feedback has come from, where it is now, and where it is going. It provides evidence to support the notion that positive and negative feedback act very differently and should be examined in different ways. Much attention is given to the study of negative feedback in research, but in the work setting, people are more likely to use favorable than unfavorable feedback (Smither & Walker, 2004). Although negative feedback is being examined in research, it is not being examined in the appropriate ways. This may be the cause of inconsistent findings in the research, in which some findings suggest negative feedback can have positive effects on performance while others suggest that it is detrimental.

Generally speaking, supervisors do not like to give negative feedback; it produces negative emotions and makes them uncomfortable. Due to this general disdain for giving negative feedback, supervisors tend to delay its delivery as long as possible. When this occurs, the subordinate loses valuable information necessary for making improvements to behavior as well as overall development. This delay of information ultimately results in build-up of negative feedback and emotion in the sender. When the feedback is finally delivered, it is often more harsh than it would have been if delivered when the behavior originally happened.

This harsh delivery, combined with the reduced self-esteem associated with negative feedback in general, results in negative emotion in the receiver and a general dislike for receiving negative feedback. Feedback source can play an important role in the response to negative feedback.

Despite the plethora of research on feedback dimensions, source, and sign, no theory of feedback can predict a priori the effects of all of the important moderators that determine how feedback sign affects performance (Kluger & DeNisi, 1996). This may be due to the fact that no research, to date, has examined the interaction of feedback sign and source on performance, acceptance, or intentions.

This literature review cites many studies in support of negative feedback's potential to result in improved performance. In these cases, negative feedback served to be beneficial, or helpful, in personal development and improvement by identifying areas of weakness.

The task provides a great number of benefits for the delivery of negative feedback. Other than increased acceptance, the receiver may experience greater intrinsic

motivation due to an increase in a sense of competence and the perception of maintained

control. This delivery method also allows for greater frequency of feedback sessions,

resulting in fewer negative messages per session and closer timing of the information in

relation to the behaviors. The receiver has a better opportunity to relate specific

behaviors to the outcomes and aids in the appropriate behavioral change.

Hypothesis 1: Feedback from the task results in greater intrinsic

motivation than does interpersonal feedback.

The literature also reveals that the source can play an important role in the

delivery of negative feedback. Interpersonal delivery of negative feedback is faced with

influences of the perceived credibility of the sender and objectivity of the evaluation that

the sender provides. Removing the interpersonal aspect of the feedback from the message

should result in greater acceptance of that message. This greater acceptance will result

from greater perceived credibility and objectivity.

Hypothesis 2: Negative feedback from the task is more likely to be

accepted than negative feedback from interpersonal sources.

Hypothesis 2a: Negative feedback from the task is seen as more credible

than negative feedback from interpersonal sources.

Hypothesis 2b: Negative feedback from the task is seen as more objective

than negative feedback from interpersonal sources.

By providing negative feedback through less interpersonal sources, the negative

emotion associated with the feedback will be greatly reduced in supervisors. Rather than

having to provide the feedback face-to-face, the receiver can obtain the information

without interacting with his/her supervisor. This takes a great deal of pressure off of the

supervisor and the receiver. The receiver should experience less negative emotion when such feedback is delivered without the interaction of interpersonal influences.

> *Hypothesis 3: Negative feedback from the task is associated with more*
>
> *positive emotion for receivers than is negative feedback from*
>
> *interpersonal sources.*

Microworld Simulations

A continuous debate exists in the psychological literature over the advantages and disadvantages of studies utilizing laboratory versus field settings. Both have unique advantages and disadvantages, which often make it difficult to determine which is the best option (Brehmer & Dorner, 1993). Laboratory studies, for example, offer the researcher increased control and the ability to infer causal relationships. The problem with these settings, though, is that they are often difficult to generalize because they lack realism. Field settings, on the other hand, offer little control but greater external validity and generalizability.

Microworld simulations may serve to bridge the gap between laboratory and field settings by addressing many of the problems associated with each. Microworlds are generally real-life simulations that take place on a single or a group of networked computers (Omodei & Wearing, 1995). These simulations offer participants the opportunity to engage in real-life situations without actually leaving the lab. Such systems are often used in training situations in which real-life practice would be too dangerous or expensive.

Based on their benefits, Microworld simulations are increasingly being used in the psychological literature, specifically in the study of performance and team-related

constructs (e.g., Brehmer, 2005; Canas & Waern, 2005; Chapman, Nettelbeck, Welsh, & Mills, 2006; Gray, 2002; Rolo & Diaz-Cabrera, 2005). Although Microworld simulations take place in a laboratory setting, allowing for greater control and the ability to record performance and behavior more accurately than in field settings, they also offer a great deal of realism, allowing for greater generalizability. One of the hallmarks of Microworld simulations is that the program responds to the participants' choices and behaviors. The program actually makes adjustments based on the decisions of the participants, thus changing the outcome of the simulation. Participants are able to immediately see the results of the choices they make. This provides the participant with a more realistic view of the activity.

Pilot Study

Method

Participants

Twenty-four general psychology students participated in this pilot study to fulfill an experiment credit requirement (female = 13; male = 11). The vast majority of participants were freshmen (n = 15; sophomore = 6, junior = 1, senior = 2), with an average age of 20 years. Twenty-one of the participants were white while and three were of another ethnicity. With eight groups run in the pilot, the average group size was three participants.

Task

The pilot study was conducted using the Firechief computer simulation program (Omodei & Wearing, 1995). This computer simulation program is a microworld environment consisting of four sectors. In this simulation, each participant is playing the

role of a Fire Chief responsible for putting out fires in their respective sector. The map can operate up to four participants at a time, but each Chief participates individually. Group size ranged from one to four. Each sector contained a variety of resources (houses, livestock, forests, lakes, and grass) that were assigned different values. For each sector, the simulation was designed to record the number of each resource not destroyed by fire at the end of each session. The sectors were also designed to be mirror images of each other, identical in the number and placement of resources (see Appendix A). A red border separated the individual sectors (see Appendix B). This border prevented participants from crossing into the other sectors to put out fires or use water resources. This border also prevented fires from spreading from one sector to another.

To battle the fires, each participant was provided with two vehicles (one helicopter, and one fire truck). Advantages and disadvantages exist for each of the vehicles. The helicopter moves the fastest and is capable of fighting more intense fires, due to its high altitude. The water capacity of the helicopter, though, is very limited. For this reason, the helicopter must be refilled often, taking up valuable fire-fighting time. The traditional fire truck is slower than the helicopter, but has a larger water supply. Being closer to the ground, it is not capable of fighting the intense fires, as is the helicopter. The fire truck, though, also possess the ability to treat resources so that they do not burn when the fire reaches them. Many participants use this option to treat a line of clearing to protect a section of houses or pasture land, which hold more value and burn faster.

Procedure

Twenty-four students participated in the study in groups ranging from one to four. The purpose of this pilot was to set the appropriate amount of practice time required and set appropriate goals for the main study. Goals were intended to be set so that no more than 50% of the Fire Chiefs reached the goal at the end of the first trial.

Upon arrival, the experimenter described the scenario and gave a brief set of verbal directions explaining the simulation. Participants gathered around one of the computer screens and viewed a sample fire-fighting map used to demonstrate the map, resources, and vehicles to be used while the experimenter introduced the study and described the components. Participants were then directed into one of four task rooms. These rooms were on either side of a short hallway. The rooms were large enough for a computer and a couple of chairs and served the purpose of separating participants so they could not view the screens of other Chiefs. In their rooms, participants were provided with a set of directions (see Appendix C) along with a demographics survey (see Appendix D), and a consent form. Participants were asked to complete the survey and sign the consent form. They were also given an opportunity to read the directions and ask as many questions as they would like.

When all participants noted that they understood and had no more questions, the practice session began. The initial participants had a 10-minute warm-up/practice session, in which fires began immediately. It was soon determined that this was too overwhelming for the majority of the participants, resulting in an extremely steep learning curve after the first session. The warm-up session was subsequently changed so that in the first two minutes, participants had the opportunity to get acquainted with the

equipment and move the pieces around the map with no fires starting. At minute three, a small grass fire started. Participants were made aware of the fire, giving them the opportunity to see how the fires were going to look. They were also able to learn how to put out a small, slow-moving fire before becoming overwhelmed with large fires that quickly spread to other areas. At minute four, additional fires began to occur across the map. Some of these fires grew large very quickly.

The first 11 participants engaged in two additional 10-minute fire-fighting sessions, separated by a 5-minute break. For the first five participants, the two trial sessions used different fire maps; the landscape was the same, but the fires started in different places. For the last six participants, the same fire map was used for both trial sessions. Data was collected after both seven and 10 minutes for the last 13 participants.

Following the second 10-minute session, participants were debriefed, thanked, and released from the study. This pilot took approximately 45 minutes.

Results

Throughout the pilot, data was assessed for map difficulty and variance at different trial times. Initial mean analysis was conducted on the trials. These analyses revealed strong differences in the difficulty of the fire maps. In addition, at 10 minutes, participants were performing at the extremes; they were either performing above 90% or below 10%. Although the scores had a wide range, there was very little variance within those extreme bands. This is because those who caught on quickly had enough time to put all of their fires out and were sitting waiting. Others caught up with them and all finished with similar resources remaining. Those who did not catch on quickly struggled through the task while the fire consumed all of their resources. Within the last three

minutes, the fires had become so large that they spread very quickly and were uncontrollable.

The data collected after seven minutes was analyzed using percentiles. Data was analyzed for percent of resources remaining at the 50th percentile (70%), 60th percentile (72%), 70th percentile (79%), and 75th percentile (81%).

Discussion

Data from the initial five participants revealed that the two fire maps were very different in terms of difficulty. This difference in difficulty added undesirable complexity to the study. To assure similarity in difficulty, it was decided to conduct both trials on the same fire map. The landscape was the same, and the fires would start in the same place. It was a concern that participants would recognize the similarity in the fire start-ups and change their strategy accordingly. Scores did not reveal that this was an issue. To serve as a check, participants were asked if they noticed that the fires started in the same place. The responses revealed that the vast majority of the entire 24 participants were unaware of the similarity of fire start-up.

Data from the initial 11 participants revealed that that, after 10 minutes, many of the participants were hitting a ceiling; all of their fires were put out and they sat for 1-2 minutes with nothing to do. For this reason, data was recorded after seven and 10 minutes to examine if seven minutes was appropriate. The greatest amount of variance occurred at minute seven. After seven minutes, those who were doing well had put out many of the fires. Those whose fires had grown too large were unable to control the burning, resulting in bipolar scores. Seven minutes allowed for enough time to have variance in the scores without having the extreme differences.

A goal of 79% (30% pass/70% fail) was selected. Given that the purpose of this study is to capture differences in responses to negative feedback delivered through different sources, it was deemed necessary to err on the side of difficulty than simplicity. Setting the goals slightly higher than 50% pass/fail helped assure that no less than 50% would pass after the first trial. It was expected that, as the study continued, the Supervisor would become better at the delivering the instructions and answering participant questions. In addition, participants may talk to their friends and give them important information about the study that may aid in their performance. These factors, together, could result in improved performance scores throughout the extent of the study. Considering this, it was necessary to make the goals a little more challenging to assure a high sample size of those receiving negative feedback.

Experiment

Method

Participants

Two hundred and two psychology students participated in this study (Females = 98; Males = 107). The vast majority participated to fulfill an experiment credit requirement ($n = 191$), while the remaining participated for extra credit ($n = 4$) or to earn $5 ($n = 7$). A large majority of the participants were freshmen ($n = 129$; sophomore = 37, junior = 19, senior = 8, 5th year senior and other = 9), with an average age of 19.6 years. The average 'Modern Game experience' was 2.2, falling between *some experience* and *much experience*, while the average 'PC game experience' was 1.9, falling closer to *some experience* than *no experience*. These measures assess the level of experience participants have with video and PC games. The measures were included to examine differences

between the conditions and determine if there were significant differences in experience. Such differences may serve to explain performance differences that result.

Materials

This study was conducted using the previously described Firechief computer simulation program (Omodei & Wearing, 1995). Recall that this program is a microworld environment consisting of four sectors. Fire Chiefs are responsible for putting out fires in their respective sector. Each sector contained a variety of resources (houses, livestock, forests, lakes, and grass) that were assigned different values. For each sector, the simulation is designed to record the number of each resource that has not been destroyed by the end of the simulation. The simulation was also designed so that the fires burned identically within each of the four sectors. In addition, the sectors were mirror images of each other and were separated by an impermeable red border.

To battle the fires, each participant was provided with two vehicles (one helicopter and one fire truck). Advantages and disadvantages exist for each of the vehicles. The helicopter moves faster and is capable of fighting more intense fires, due to its high altitude. The water capacity of the helicopter, though, is very limited. For this reason, the helicopter must be refilled often, taking up valuable fire-fighting time. The traditional fire truck is slower than the helicopter but has a larger water supply. Being closer to the ground, it is not capable of fighting the intense fires, as is the helicopter. The fire truck, though, also possess the ability to treat resources so that they do not burn when the fire reaches them providing Chiefs with the opportunity to protect a group of valuable houses or fast-burning pasture land.

Participants in the Affective, Interpersonal, and Task Feedback conditions completed a Pre- and Post-Feedback Mood survey (Scollon, Diener, Oishi, & Biswas-Diener, 2005; see Appendix E) and the complete Feedback Effectiveness Survey (FES; see Appendices F & G). The Mood survey assesses both overall 'Happiness' and 'Sadness.' Both overall states are captured with four mood variables. Happiness is comprised of Joy, Happiness, Affection, and Pride. Sadness is comprised of Sadness, Worry, Guilt, and Irritation. Participants rate the intensity they feel related to each value ($0 = $ *no intensity* to $6 = $ *maximum intensity*). The total Happiness and Sadness represent the sum of the individual components. Both Happiness and Sadness mood scales had adequate reliabilities for both the pre-feedback (Happiness: $\alpha = .784$; Sadness: $\alpha = .753$) and post-feedback (Happiness: $\alpha = .822$; Sadness: $\alpha = .776$) mood scales.

In the FES, Fire Chiefs were asked to report the feelings and emotions induced by the feedback they received, hereafter referred to as Affective Variables, as well as answer a number of questions related to sources of feedback. In addition to Affective Variables, this survey assessed how effective the Chiefs felt the feedback was. A manipulation check was built into the survey as well. Participants were asked to report whether the feedback they received was positive or negative. This item served to indicate whether or not the participant was paying attention to the survey and the feedback or simply circling answers.

Those in the No Feedback condition did not complete the Mood Survey or respond to the specific feedback-related items in the FES because they did not receive feedback. Although they could have completed the Mood Survey, the purpose of that

survey was to help validate the Affective Variables contained in the FES, and therefore

was considered unnecessary for this condition.

Two hundred dollars in cash was used to motivate participants to perform their

best. All Fire Chiefs who reached the performance goals outlined at the beginning of the

study by the end of the second session were entered into a drawing for the cash.

Upon completion of the study, participants received a verbal debriefing of the

study (see Appendix H). This debriefing explained the purpose of the study as well as the

purpose of the specific condition.

Task/Procedure

Four different conditions were examined in this study: Task Feedback,

Interpersonal Feedback, Affective Feedback, and No Feedback. The same two

experimenters ran every participant in each condition. One of the experimenters played

the part of the Experimenter, whose role was to pick the participants up from the waiting

area, distribute and collect the paper work, instruct the participants to remove the paper

from the corner of the screen and view their performance score during the Task Feedback

condition, and debrief all of the participants at the close of the study. The second

experimenter played the part of the Supervisor, whose role was to introduce the task to

the participants, train them on the simulation, answer any questions, deliver the

Interpersonal and Affective Feedback, and inform the participants of who reached the

goal at the end of the second session.

Due to time constraints and limited access to the student sample, it was necessary

to run the No Feedback condition first while final changes were still being made to the

experimental conditions. For this reason, it was not possible to counterbalance the control

and experimental conditions. In addition, both experimenters were aware of the condition prior to delivering the instructions to the groups in the No Feedback condition.

For the remaining three conditions, Affective, Interpersonal, and Task, the Supervisor was blind to each group's condition until after the training session and the first seven-minute session had begun. This was to ensure that the Supervisor did not treat groups differently during the practice session based on their condition affiliation. The Experimenter was blind to each participant's performance until after the Post-Feedback Mood Survey had been completed. This served to ensure the Experimenter did not behave differently to each participant while asking him or her to complete the Survey, based on the Chief's performance. Doing so may have inadvertently resulted in different responses.

Upon arrival, the Supervisor provided all participants with a brief introduction to the activity and the role they were playing. All participants gathered around one of the computer screens. To ensure consistency, an initial set of instructions were read to each of these three groups (see Appendix I). The rooms used in the study were situated down a hallway across from a large classroom. Rather than read the instructions to each participant, individually, in their rooms, the initial instructions were read while standing outside of one of the task rooms. The rooms were situated in a corner and provided greater privacy and few distractions.

The Supervisor also provided a brief overview of the instructions the participants were to read momentarily. All participants were then shown the Supervisor's computer, which contained the Master Map of all four sectors. The purpose of this activity was to remind the participants that the Supervisor was viewing their performance and had access

to their scores. The Supervisor also discussed the goals, explaining that they were established based on a study of Kansas State students. The purpose of this was to prevent participants from feeling like the goals were too difficult, getting discouraged, and reducing their effort. At this point, the Supervisor reminded the participants of the drawing and informed them that his performance was based on their individual performance. Although the Supervisor was not actually being evaluated based on their performance, it was essential to the realism of the study. As in applied settings, supervisors are generally evaluated by the performance of their subordinates. In order to capture the participants' emotion toward the Supervisor based on the feedback received, it was necessary to include this component.

The participants were then allowed to select a task room where they each took a seat in preparation for the task. At this time, all participants read the directions (Appendix C), signed the consent form, filled out the Pre-Feedback Mood Survey, filled out the first page of the Feedback Effectiveness Survey (primarily demographics and expectations of performance), and asked task-related questions. Once materials were collected and the participants were ready to move on, the 10-minute warm-up/practice session began. These 10 minutes were intended to provide time for participants to get acquainted with the equipment. The Supervisor walked around and worked with participants to assure understanding. He made sure each participant practiced every move available to the vehicles. When the fires began, he pointed out the small fires and demonstrated which were capable of being fought by each of the vehicles. After the initial 10-minute session, the Supervisor again assured that there were no more questions. When all questions were answered, the first seven-minute trial began.

During each of the seven-minute sessions, there was a five-second pause at two minutes and at four minutes. The purpose of this pause was to give the participants a quick break and serve as a reminder that the Supervisor was watching their performance. Participants were told that the Supervisor was pulling the information off of his computer at this time. After the first seven-minute break, participants were asked to estimate how they performed, then they were provided with the feedback regarding their performance.

In the Interpersonal Feedback Condition, the Supervisor quietly informed each participant, individually, of his or her score and made a statement of whether they were above or below the goal. Two examples of this feedback would be, "You are at 82%; that is above the goal," and "You are at 59%; that is below the goal." This feedback is intended to provide the participant only with the basic information regarding his or her performance. This feedback was intended to simulate that which would be provided through a performance review where a supervisor makes judgments of one's performance in comparison to stated goals or criteria. Generally, this information is provided annually or semi-annually and is intended to capture all of one's performance up to that point.

In the Affective Feedback Condition, the Supervisor again quietly informed each participant, individually, of his or her score but this time included an emotional component intended to make the participant feel either good or bad about the performance. Two examples of this feedback would be, "You are at 82%; that is very good," and "You are at 59%; that is not very good." The same information was given regardless of the distance from the goal. If the goal was reached, it was considered 'very good'. If the goal was not reached, it was considered 'not very good'. Similar to the Interpersonal Feedback, this information is intended to simulate that which may be

provided in a work setting. Some supervisors may provide this evaluative component rather than just the performance rating and an overall statement of how the performance compares with the goal. It was this evaluative, or emotional, component that was the primary focus of this condition.

In the Firechief program, it is not possible to have participants access the feedback only during the break; it is either visible throughout the simulation, or it is not visible at all. Due to the need to keep this feedback as impersonal as possible, it was decided to have the feedback visible at all times and simply tape a piece of an index card over the portion of the screen with the feedback for the Task Feedback Condition. It was also necessary to keep the Supervisor out of the feedback delivery process for this condition to simulate task feedback that may be available in an applied setting. Although supervisors may be aware of the performance of their subordinates, in an applied setting, they are generally not involved in delivering feedback provided by the task. Due to the need to have someone tell the participants to remove the paper and view their score, and due to the distance of the Experimenter from the task, it was decided to have the Experimenter conduct this feedback session. Thus, the Experimenter asked the participants to remove the blue piece of paper and view their score. They were also asked to compare their score to the performance goals. Once they had viewed their performance, they were asked to place the paper back on the screen over their score. In the second trial, though, the score was removed from the simulation, just in case participants opted to peek under the paper to see their score. Although the Task Feedback condition is intended to simulate that which would be available to employees as they

perform their work, it is necessary to limit the availability of this information to only one session in order to keep the Task and interpersonal conditions as similar as possible.

It was important to ensure that participants did not overhear or see the feedback of the others. Overhearing others' feedback could influence how Chiefs viewed their own performance. Rather than comparing their performance to the goals, they may have compared their performance to each other. This would have changed the experiment from a criterion-referenced study to a normative study and, thus, changing the influencing factors for each group.

In all three conditions, participants were asked to complete a Post-Feedback Mood Survey to record any change in mood after the feedback.

In the No Feedback Condition, participants answered the survey item regarding their expectations of performance, then sat and waited out the remainder of the two-minute break. They did not receive any feedback during this break; therefore, they did not complete a Pre- or Post-Feedback Mood Survey.

In all four conditions, at the end of the two-minute break, the maps were re-set, the Supervisor reminded participants of their goals, and the second seven-minute trial began. Both seven-minute sessions utilize the same map and fire placement. This was intended to assure similarity in difficulty. The first 20 participants were asked if they knew the fires started in the same place. Only one of these participants knew it was the same set-up. Additionally, it was clear that the majority of the participants did not realize this because they did not treat over those areas or react to the fires any more quickly than in the original session.

At the end of the second seven-minute session, participants completed the rest of the Feedback Effectiveness Survey (Appendices F and G). Once all surveys were completed, participants were verbally debriefed (Appendix H), those participants reaching the goal were announced. All participants were then thanked and released from the study. Most of the groups took between 45 and 55 minutes to complete the study.

<div align="center">Results</div>

Prior to any analyses, the feedback provided to each participant was recoded to fall along a continuum. To attain a feedback value, each individual's performance, in terms of resources remaining, after the first seven-minute session was subtracted from the goal. This provides a value for the feedback each individual received. Those with positive scores received positive feedback, while those with negative scores received negative feedback. The feedback value for each participant represents the difference between the performance standard and their actual performance.

In addition, an Improvement Metric was calculated for each participant. This value represents the level of improvement between the first and second trial. This metric was calculated by subtracting performance after the first seven-minute session from performance after the second (final) seven-minute session. The Feedback Value and Improvement Metric were calculated for participants in all conditions, including the No Feedback condition. Even though these Chiefs did not receive feedback, they did have performance scores, which would have correlated with feedback they would have received.

Prior to any comparisons, conditions were examined for similarity (see Table 1). The conditions did not differ significantly in terms of age, race, gender, or class. The No

Feedback condition was assessed before participants were asked to state whether or not

they were color blind. Given, though, that there were no significant differences between

the experimental conditions on number of participants who were color blind ($F(2, 146) =$

1.79, $p = .171$, $n = 149$), and there were no significant differences in performance for

those who were color blind and those who were not for either Time 1 ($F(2, 146) = .594$, p

$= .554$) or Time 2 ($F(2,146) = 1.35$, $p = .262$) performance, it is not likely that there

would have been differences in this condition. The number of participants in each group

ranged from one to four. The average number of participants in each group did not differ

in the experimental conditions (M ranged from 2.27-2.47). In the No Feedback condition,

the average number of participants in each group was 3.13.

There were also no significant differences between the conditions based on

Modern Game ($F(3, 198) = .775$, $p = .509$) or PC Game Experience ($F(3, 198) = .145$, p

$> .05$) ($N = 202$). The responses to both experience items were recoded so that higher

values corresponded to greater experience. Both Modern Game and PC Game Experience

were positively correlated with the Feedback Value ($r = .213$, $p < .05$ and $r = .160$, $p <$

.05, respectively). Neither Modern Game nor PC Game Experience were significantly

correlated with the Feedback Value for the No Feedback, Affective Feedback, or

Interpersonal Feedback conditions ($p > .05$). Both were, however, significantly related to

the Feedback Value in the Task Feedback condition (Modern Game: $r = .351$, $p < .05$; PC

Game: $r = .285$, $p < .05$). This suggests that, in the Task Feedback condition, experience

with Modern and PC games influenced performance on the task. It may be that receiving

the feedback without interpersonal interaction allows one's experience to drive

performance rather than emotion and extrinsic motivation.

Table 2 provides the means, standard deviations, and correlations of many of the variables discussed in this study. This table may be used as a reference for the remainder of this analysis.

Research has consistently supported the finding that people generally do not like to give or receive negative feedback. The overall focus of this study was to provide support for this finding while identifying the reasons and possible solutions. An analysis of items 13 through 16 "Generally speaking, what are your feelings toward giving (receiving) negative (positive) feedback," suggest that generally, people do dislike giving and receiving negative feedback (see Table 3). The majority of participants revealed that they generally dislike and receiving giving negative feedback. To assure this is a function of the sign of the feedback and not a function of giving or receiving feedback in general, these items were compared with those assessing the general preference for giving and receiving positive feedback.

The numbers clearly indicate a preference for giving and receiving positive over negative feedback, thus providing support for previous research. While 52% dislike giving negative feedback, only 1.5% dislike giving positive feedback. In addition, 63.8% of participants dislike receiving negative feedback while none of the participants indicated a dislike for receiving positive feedback.

The percentage of participants responding 'neutral' to each item varied. Giving and receiving negative feedback had the greatest percentage of 'neutral' responses, while giving and receiving positive feedback had much less. In most cases, the responses to these items did not vary across conditions. One exception did occur, though, in the preference to give positive feedback. Those in the Affective, Interpersonal, and Task

Feedback conditions reported a much stronger preference for giving positive feedback than those in the No Feedback condition ($p < .05$).

This study also attempted to provide support for the literature suggesting that negative feedback can result in performance improvement. To examine this finding, the Feedback Values were correlated with the Improvement Metric Scores for participants across all conditions. A significant, negative correlation was identified ($r = -.486$, $p < .05$, $N = 202$) suggesting that negative feedback is associated with more performance improvement than is positive feedback.

To more deeply examine the relationship between the feedback received and improvement, correlations were run to examine the relationship between the Feedback Value and Improvement Metric for each of the conditions. There were significant relationships between the variables for all conditions. Affective ($r = -.435$, $p < .05$, $n = 52$) and Interpersonal ($r = -.436$, $p < .05$, $n = 50$) both had very similar relationships while the Task Feedback condition revealed a slightly stronger relationship ($r = -.514$, $p < .05$, $n = 50$). The No Feedback condition actually revealed the strongest relationship ($r = -.530$, $p < .05$, $n = 50$). Although differences exist between the relationships across conditions, these differences are not significant ($p > .05$; Blalock, 1972).

To examine the differences in the level of improvement for each of the four conditions, a one-way, planned contrast ANOVA was run on the improvement metric. It was expected that those in the No Feedback condition would show the least improvement, followed by the Affective Feedback condition, then the Interpersonal, and finally, the Task Feedback condition. Those in the Task Feedback condition were expected to show the greatest amount of improvement. The ANOVA indicated no

significant improvement differences between the conditions (F(3, 198) = .772, p = .511,

N = 202). Though not significant, participants in the Task Feedback condition showed the

greatest improvement (M = 13.2, n = 50), followed by Affective Feedback (M = 8.6, n =

52), then the No Feedback (M = 8.4, n = 50), and finally, the Interpersonal Feedback (M

= 6.3, n = 50).

To obtain a more subjective look at the benefits of the feedback, survey item 5,

"Regarding your performance, how beneficial was the feedback you received?" was

correlated with the Feedback Value for each condition. The responses were recoded so

that a response of *1* corresponded to *Very Negative* while a response of *5* corresponded to

Very Beneficial. Those in the No Feedback condition did not respond to this item,

therefore, they will not be included in this analysis. Again, the relationships between the

variables in the Affective (r = .601, p < .05, n = 52) and Interpersonal (r = .605, p < .05, n

= 50) conditions were very similar while the relationship between the variables in the

Task condition (r = .321, p < .05, n = 50) was slightly flatter. The strengths of the

relationships in the Interpersonal and Task Feedback conditions were significantly

different from one another (p < .05; Blalock, 1972) suggesting that feedback received via

these two sources have a significantly different influence on perceived benefit. The

relationships in the Affective and Task Feedback conditions were not significantly

different from one another (p = .08; Blalock, 1972).

To further examine the perceived benefit of the feedback, the feedback each

participant received was split between positive and negative. Those scoring up to 78.9%

were recoded as *1* for negative feedback and those scoring a 79% or above were recoded

as *2* for positive feedback. Two separate ANOVAs were then run on the perceived

benefit of the feedback for each of the three experimental conditions: once on those receiving positive feedback and again on those receiving negative. There were no significant differences between the responses in the different groups for the positive feedback. For the negative, though, the Affective ($M = 3.13$, $n = 31$) and Task ($M = 3.88$, $n = 34$) conditions differed significantly ($F(2, 90) = 3.612$, $p < .05$). This analysis demonstrates that negative feedback in the Task condition was perceived as significantly more beneficial than the negative feedback in the Affective.

The responses of those receiving positive versus negative feedback were also compared across conditions via the one-way ANOVA. In the Affective and Interpersonal conditions, those receiving positive feedback rated the feedback as significantly more beneficial than those receiving negative ($p < .05$ for both). In the Task condition, though, there was not a significant difference between the responses of those receiving positive and negative ($p > .05$).

To capture a broader picture of performance improvement, the Feedback Value at Time 1 was correlated with the Feedback Value at Time 2. The Feedback Value at Time 2 is simply a representation of performance at Time 2 and is equivalent to the feedback participants would have received after the second trial if feedback was being delivered. The overall relationship between these variables across all conditions was significant and positive ($r = .524$, $p < .05$, $N = 202$). The same analysis was then run on each condition individually. Again, all conditions had significant, positive relationships between these variables. The No Feedback condition had the weakest relationship ($r = .440$, $p < .05$, $n = 50$), followed by the Interpersonal Feedback condition ($r = .474$, $p < .05$, $n = 50$). Task Feedback had a slightly stronger relationship ($r = .501$, $p < .05$, $n = 50$), while Affective

Feedback had the strongest relationship ($r = .671$, $p < .05$, $n = 52$). There were no significant differences between these relationships ($p > .05$; Blalock, 1972).

To examine these relationships further, participants were split into those receiving positive feedback and those receiving negative feedback after Time 1. The correlations between the two Feedback Values were run on each of the conditions twice, once for those receiving positive and again for those receiving negative. Although all conditions showed significant relationships between the variables when all of the data was put together, the picture was slightly different when it was divided. The Task (positive: $r = .511$, $p < .05$, $n = 16$; negative: $r = .480$, $p < .05$, $n = 34$) and Affective (positive: $r = .459$, $p < .05$, $n = 21$; negative: $r = .618$, $p < .05$, $n = 31$) Feedback conditions maintained significant relationships in both the positive and negative feedback groups. There were no significant differences between the strengths of the relationships between the two conditions or feedback sign (p > .05; Blalock, 1972). The No Feedback (positive: $r = .107$, $p = .682$, $n = 17$; negative: $r = .154$, $p = .392$, $n = 33$) and Interpersonal Feedback (positive: $r = .073$, $p = .748$, $n = 22$; negative: $r = .098$, $p = .619$, $n = 28$) conditions, though, revealed nonsignificant relationships in both the positive and negative feedback groups. There were also no significant differences between the strength of the relationships between these two conditions or the feedback sign ($p > .05$; Blalock, 1972).

Hypothesis 1, feedback from the task results in greater intrinsic motivation than does interpersonal feedback, was examined with the Fire Chief survey items 24 through 32. A confirmatory factor analysis was conducted on the responses to each item. As expected, two factors emerged, intrinsic and extrinsic. The intrinsic factor contained eight variables (see Table 4) and accounted for 38.9% of the variance. The reliability of the

scale created by the items in this factor was adequate ($\alpha = .749$). The extrinsic factor

included only one variable, 'the Prize' and accounted for 14.4% of the variance.

To examine the differences in intrinsic and extrinsic motivation in the different

conditions, a one-way ANOVA was conducted. Although it was expected that those in

the Task Feedback condition would show more intrinsic motivation than those in all

other conditions, the ANOVA revealed no significant differences in motivation across the

conditions ($p > .05$).

Two, 2x4 ANOVAs were run to examine the interaction between the condition

and the feedback received on both intrinsic and extrinsic motivation. The interaction

between the condition and the feedback sign had a significant effect on intrinsic

motivation ($F(3, 193) = 3.8, p < .05$). The No Feedback condition resulted in the most

extreme intrinsic motivation scores for both positive ($M = 2.25$) and negative ($M = 2.83$)

feedback (1 = *Strongly Agree*; 5 = Strongly *Disagree*). Of the experimental conditions,

positive feedback in the Affective condition resulted in the greatest intrinsic motivation

($M = 2.32$) followed by negative feedback in the Task feedback condition ($M = 2.38$). As

predicted, when receiving negative feedback, the Task resulted in greater intrinsic

motivation than all other conditions, and was second highest overall, when positive and

negative were combined. Positive feedback in the Interpersonal condition resulted in the

least intrinsic motivation ($M = 2.77$).

There were no significant differences between the conditions in the average levels

of intrinsic motivation for those receiving positive feedback ($p > .05$). For those receiving

negative feedback, though, there was a significant difference in level of intrinsic

motivation for those in the No Feedback condition ($M = 2.83$) and the Task Feedback

condition ($M = 2.38$) ($F(3, 121) = 3.3$, $p < .05$). This suggests that those in the Task

Feedback condition agree more strongly to the intrinsic motivation statements than those

in the No Feedback condition, thus providing partial support for this hypothesis.

For extrinsic motivation, though, only the feedback sign had an effect ($F(1, 194)$

$= 10.9$, $p < .05$). Those receiving positive feedback were more extrinsically motivated

toward the cash drawing ($M = 2.14$), while those receiving negative feedback were less

extrinsically motivated toward the cash drawing ($M = 2.65$). A one-way ANOVA was

conducted to examine the differences between the conditions revealing no significant

differences in extrinsic feedback across conditions ($p > .05$).

The literature reveals that many researchers operationalize acceptance as

perceived accuracy, or whether or not the feedback was a true reflection of one's

performance (e.g., Ilgen et al., 1979). For this reason, this study also operationalized

acceptance in this way. *Hypothesis 2, negative feedback from the task is more likely to be*

accepted than negative feedback from interpersonal sources, was initially assessed with

item 23, "The feedback I received was a true reflection of my performance." Responses

were reverse coded so that larger numbers correspond to greater acceptance. Two one-

way ANOVAs were conducted on acceptance of the feedback. The first ANOVA

examined mean differences between the conditions for those receiving positive feedback.

As expected, the feedback was equally accepted across conditions ($p > .05$). The second

ANOVA examined the difference in acceptance for those receiving negative feedback. It

was expected that those in the Task Feedback condition would accept the feedback more

than those in either the Affective or Interpersonal Feedback Conditions. The ANOVA

revealed no significant differences between the Affective ($M = 3.71$), Interpersonal ($M =$

3.86), or Task (*M* = 3.59) conditions in response to this item ($F(2, 90) = .657$, $p > .05$). Smaller means represent greater acceptance, or perceived accuracy of the feedback. An additional ANOVA was conducted on all participants together. There were again, no significant differences in acceptance between the conditions ($p > .05$).

To further explore these differences, within each condition, the Feedback Values were split into two groups: positive and negative. A 2x3 ANOVA was run to examine the effects of the condition, the feedback sign, and the interaction on acceptance. The ANOVA revealed no main effects for either the condition ($F(2, 146) = .652$, $p = .522$), the feedback sign ($F(1, 146) = .766$, $p = .383$), or the interaction ($F(2, 146) = .182$, $p = .834$) on acceptance of the feedback.

A final attempt to understand the perceived accuracy of different sources of feedback was made by asking participants to rank-order six sources on accuracy (item 20; see Table 5). Clearly, participants ranked 'face-to-face feedback from a boss' as most accurate. Though less clear, participants ranked 'feedback from the work' number 2, 'feedback from a boss over the telephone' number 3, and 'feedback from a boss over e-mail' number 4. For the middle rankings, the order was not clear based on percentage of responses ranking each source. For this reason, these rankings were determined based on the percentage of participants ranking each of the sources as a 1 or 2, 2 or 3, and 3 or 4, respectively. This was intended to capture the general vicinity of the rankings for each of the middle sources. Those sources generally placed higher in the ranking were considered to be rated as more accurate than those sources generally placed lower in the ranking. 'Feedback from a co-worker or peer' was ranked number 5 while 'feedback from

someone who reports to you' was ranked number 6 based on the percentage of participants clearly identifying these sources as number 5 and 6, respectively.

Acceptance was also be captured by assessing credibility and objectivity. *Hypothesis 2a, negative feedback from the task is seen as more credible than negative feedback from interpersonal sources*, and *Hypothesis 2b, negative feedback from the task is seen as more objective than negative feedback from interpersonal sources*, was assessed in the same manner as *Hypothesis 2*. For *Hypothesis 2a*, item 10 asked participants to indicate the level of credibility of the feedback they received. Responses were recoded so that larger values corresponded to greater perceived credibility. Two one-way ANOVAs were conducted to examine the differences in perceived credibility between the conditions for those receiving positive and those receiving negative feedback. As expected, when receiving positive feedback, there were no significant differences in perceived credibility of the feedback between the conditions ($p > .05$). For those receiving negative feedback, it was expected that those in the Task Feedback condition would view the feedback as more credible than those in either the Affective or Interpersonal Feedback Conditions. The ANOVA revealed no significant differences between the Affective ($M = 4.45$), Interpersonal ($M = 4.32$), or Task ($M = 4.50$) conditions in responses to this item ($F(2, 149) = .705$, $p > .05$). Again, smaller values correspond to greater perceived credibility. A final ANOVA was conducted on all participants together. There were no differences between perceived credibility across conditions ($p > .05$).

To further explore possible differences, within each condition, the Feedback Values were split into two groups: positive and negative. A 2x3 ANOVA was run to

examine the effects of the condition, the feedback sign, and the interaction on perceived credibility. The ANOVA revealed no main effects for the condition ($F(2, 146) = .758$, $p = .471$), the feedback sign ($F(1, 146) = 3.63$, $p = .059$), or the interaction ($F(2, 146) = .099$, $p = .906$).

Participants were again asked to rank-order six sources of feedback based on their credibility (item 21; see Table 6). 'Face-to-face feedback from a boss' was clearly ranked number 1. Based on the percentage of participants ranking the following as 1 or 2, 2 or 3, and 3 or 4, 'feedback from the work' was ranked number 2, 'feedback from a boss over the telephone' was ranked number 3, and 'feedback from a boss over e-mail' was ranked number 4. As mentioned previously, these middle rankings were determined based on the percentage or respondents ranking the sources as 1 or 2, 2 or 3, and 3 or 4. These values were used because the rankings of the middle sources were not clear based on the individual rankings of 2, 3, or 4. Ranking number 5 and 6 were very clear based only on the percentage of responses in each position. 'Feedback from a co-worker or peer' was ranked umber 5 and 'Feedback from someone who reports to you' was ranked number 6.

The same analyses were run for *Hypothesis 2b*. Item 11 asked participants to indicate the level of objectivity of the feedback they received. Responses were recoded so that larger values corresponded with greater perceived objectivity. Two separate ANOVAs were conducted to examine differences in perceived objectivity between the conditions for those receiving both positive and negative feedback. For those receiving positive feedback, as expected, there were no differences in perceived objectivity ($p > .05$). For those receiving negative feedback, it was expected that those in the Task Feedback would perceive the feedback as more objective than those in either the

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Affective or Interpersonal Feedback Conditions. The ANOVA revealed no significant differences between the Affective ($M = 4.42$), Interpersonal ($M = 4.43$), or Task ($M = 4.29$) conditions in responses to this item ($F(2, 149) = .8$, $p > .05$). Smaller values correspond to greater perceived objectivity. An ANOVA was also conducted to examine the differences in perceived objectivity with all participants together. There were no differences in perceived objectivity across conditions ($p > .05$).

To further explore possible differences, within each condition, the Feedback Values were again split into two groups: positive and negative. A 2x3 ANOVA was run to examine the effects of the condition, the feedback sign, and the interaction on perceived credibility. The ANOVA revealed no main effects for the condition ($F(2, 146) = .754$, $p = .472$), the feedback sign ($F(1, 146) = .727$, $p = .395$), or the interaction ($F(2, 146) = .567$, $p = .568$).

A final attempt to understand the perceived objectivity of different sources of feedback was made by asking participants to rank order the six sources of feedback based on their objectivity (item 22; see Table 7). 'Face-to-face feedback from a boss' was clearly ranked number 1. Close behind, ranked number 2, was 'feedback from the work'. 'Feedback from a boss over the telephone' was ranked number 3, and 'feedback from a boss via e-mail' was ranked number 4. Again, these middle rankings were determined based on the percentage or respondents ranking the sources as 1 or 2, 2 or 3, and 3 or 4. These values were used because the rankings of the middle sources were not clear based on the individual rankings of 2, 3, or 4. 'Feedback from a co-worker or peer' was clearly ranked number 5, and even more clearly, participants ranked 'feedback from someone who reports to you' as least objective.

Hypothesis 3, negative feedback from the task is associated with more positive

emotion for receivers than is negative feedback from interpersonal sources, was

examined by first examining the correlations of each of the Affective Variables with the

Feedback Value across all conditions (see Table 8). Each Affective Variable was

significantly and negatively correlated with the Feedback Value ($r = -.216$ to $r = -.568$, p

$< .05$). Nine of the Variables had correlations over -.4. This suggests that, generally,

negative feedback results in negative emotion.

To further examine these relationships, the correlations were run individually on

each condition to identify any differences in the relationship between the Feedback

Values and the rating of each of the Affective Variables across conditions. In the

Affective condition (see Table 9), only three Affective Variables were not significantly

correlated with the Feedback Value (it was comfortable for my supervisor, I was inspired,

and I was motivated). In the Interpersonal condition (see Table 10), again, only three

variables were not significantly correlated with the Feedback Value (it made my

supervisor feel good, my supervisor was inspired, and I was motivated). In the Task

condition (see Table 11), though, 11 of the 20 Affective Variables were not significantly

correlated with the Feedback Value ($p < .05$).

An exploratory factor analysis was run to determine if the Affective Variables fall

along a continuum or if they create multiple factors. One factor was identified,

accounting for 58.4% of the variance. Factor loadings for the Variables ranged from .517

to .866. This single factor indicates one scale with adequate reliability ($\alpha = .957$). Each of

the Variables were then added together to capture an Item-Based Total Intensity Value

(ITIV). This value represents the overall intensity of emotion for each individual, with

higher values being associated with more negative emotion. It was expected that, overall, there would be a negative correlation between the Feedback Value and the ITIV (see Table 8). This was supported (r = -.523, $p < .05$). The same correlation was then run for each of the three feedback conditions. It was expected that those in the Affective and Interpersonal Feedback conditions would experience more negative (less positive) emotion than those in the Task Feedback condition. This was supported, though the negative correlation was still significant in all three feedback conditions. The Affective (r = -.585, $p < .05$) and the Interpersonal (r = -.599, $p < .05$) Feedback conditions had the strongest negative correlations, though the Task Feedback condition still maintained a significant, negative correlation (r = -.375, $p < .05$). The strengths of the relationships were not significantly different for any of the conditions ($p > .05$; Blalock, 1972).

Although an analysis of the Affective Variables was conducted to identify emotional response to negative feedback in the different conditions, it was deemed necessary to examine these differences with a validated mood scale (Scollon et al., 2005) to assure these variables are measuring what they are intended to measure. Throughout this paper, any time mood variables are discussed, they are referring to the variables captured from this mood scale. Both the pre-feedback Happiness (α = .784) and Sadness (α = .753) and post-feedback Happiness (α = .822) and Sadness (α = .776) scales had adequate reliabilities. Prior to analysis, it was determined that there were no significant differences in pre-feedback mood between the conditions for any of the mood variables. For this reason, the post-feedback mood was examined in relation to the Feedback Value. To begin, the Feedback Value for participants across all conditions was correlated with the post-Happiness measure (the sum of the four Happy variables; r = .178, $p < .05$, n =

142) and the post-Sadness measure (the sum of the four Sad variables; $r = -.281$, $p < .05$,

$n = 142$). Both relationships were significant suggesting that, overall, feedback influences

mood. These correlations also correspond to the relationships between the Affective

Variables and the Feedback Value, suggesting that the Affective Variables were indeed

accurately assessing emotion in the participants. Post-feedback Happiness and Sadness

were also significantly correlated ($r = -.289$, $p < .05$, $n = 142$).

Participants were then split by conditions and the correlations were run again. In

both the Affective and Interpersonal Feedback conditions, the Feedback Values were not

significantly correlated with the post-Happiness mood (Affective: $r = .246$, $p = .095$;

Interpersonal: $r = .239$, $p = .099$; $n = 142$). Post-Sadness mood, though, was significantly

related to the Feedback Values in both the Affective ($r = -.437$, $p < .05$) and Interpersonal

($r = -.377$, $p < .05$) Feedback conditions. In the Task Feedback condition, however,

neither correlation was significant (Happiness: $r = .093$, $p = .538$; Sadness: $r = .078$, $p =$

$.678$; $n = 46$). These correlations correspond to the patterns in the relationships between

the Feedback Value and Affective Variables across conditions. In the interpersonal

conditions, the majority of the Affective Variables were significantly related to the

Feedback Value. In the Task condition, though, there were far fewer significant

relationships. Again, this suggests that the Feedback Values are accurately assessing

emotion. The strengths of the relationships were not significantly different across groups

for post-Happiness or Sadness ($p > .05$; Blalock, 1972).

To gain greater insight into the differences between the conditions, an ANOVA

was run to examine the overall differences in post-Happiness and Sadness between the

conditions. Although the post-Happiness mood was higher in the Task condition ($M =$

11.11) than in the Affective ($M = 10.21$) or Interpersonal ($M = 9.86$) Feedback conditions, these differences were not significant ($F(2, 139) = .867$, $p = .422$). When the analysis was run for post-Sadness, the Interpersonal condition ($M = 5.08$) resulted in a less negative mood than the Task ($M = 5.22$) or Affective ($M = 5.30$) Feedback conditions, though these differences were, again, not significant ($F(2, 139) = .029$, $p = .972$).

Participants were once again divided into those receiving positive feedback and those receiving negative feedback. A one-way ANOVA was run on each of the conditions and post-feedback Happiness and Sadness. For those participants receiving positive feedback, there were no significant differences between the conditions on post-Happiness ($F(2, 52) = .494$, $p = .613$, $n = 55$). There was also no significant differences between the groups in post-Sadness ($F(2, 52) = 1.28$, $p = .287$, $n = 55$). Similar results were found for those participants receiving negative feedback. There were no significant differences between the conditions in post-Happiness ($F(2, 84) = 1.079$, $p = .345$, $n = 87$) or Sadness ($F(2, 84) = .731$, $p = .404$, $n = 87$).

Additionally, the Feedback Value was correlated with the post-feedback value for the mood variables across (see Table 12) and within (see Tables 13-15) each condition. The intention of this analysis was to gain insight on exactly which mood variables were most affected by the feedback received in each condition. Overall, both post-feedback Happiness and Sadness were significantly correlated with the Feedback Value ($p < .05$; see Table 12). Additionally, only Proud, Sad, and Irritated were significantly correlated with the Feedback Value ($p < .05$; see Table 12).

In the Affective Feedback condition ($n = 47$; see Table 13), significant correlations were revealed for Proud, Sad, Irritated, and Worried. In the Interpersonal Feedback condition ($n = 49$; see Table 14), significant correlations were again revealed for Proud, Irritated, and Worried. In the Task Feedback condition ($n = 49$; see Table 15), none of the mood variables were found to be significantly correlated with the Feedback Value ($p > .05$).

Participants were asked to rank order how they would prefer to receive negative feedback (item 18; see Table 16). The purpose of this was to identify a continuum of preference for different sources of negative feedback. Responses were analyzed by the most common ranking given to each source option. 'From your boss (face-to-face)' was the definite first choice. The bottom of the ranking was also very clear. Participants rated 'from a co-worker or peer' as 5, and the least preferred source for the receipt of negative feedback was clearly a subordinate. The middle of the ranking was less cut-and-dry. Based on the percentage of respondents placing 'from your work', higher in the ranking, this source was ranked 2. 'Feedback from your boss via telephone' was ranked number 3 because the majority of participants placed this source toward the middle of the ranking, while 'feedback from your boss via e-mail' was ranked 4 because participants generally placed this source toward the bottom of the ranking.

Participants were also asked to rank order how they would prefer for someone who reports to them to receive negative feedback (item 19; see Table 17). The purpose of this was to support the literature suggesting the supervisors do not like to give negative feedback, and to create a continuum of preference for different sources of negative feedback. Responses were analyzed by the most common rating given to each source

option. 'From you (face-to-face)' was the definite first choice based only on the percentage of participants ranking this source number 1. The bottom of the ranking was also very clear. Participants rated 'from a co-worker or peer' as 5, and the least preferred source for the receipt of negative feedback was clearly a subordinate. Due to the results that did not clearly identify the sources falling in the 2, 3, and 4 positions, it was necessary to examine the percentage of respondents ranking the sources in the 1or 2, 2 or 3, and 3 or 4 positions. Based on the general range of the placement of each of the following sources, 'from their work' was ranked 2, 'feedback from you via telephone' was ranked number 3, and 'feedback from you via e-mail' was ranked 4.

Discussion

The purpose of this research was to gain greater understanding of the processes involved in a negative feedback message. Much of the literature discounts the benefits of negative feedback because of the frequent research revealing that these messages are more often rejected than are positive feedback messages (Ilgen et al., 1979). It is the intention of this study to demonstrate that negative feedback does not always result in rejection and negative emotion. By focusing on the different sources of the message, research and practice can gain more insight into what causes the negative responses by the receiver.

Further, this study is an attempt to demonstrate that impersonal sources are better than interpersonal sources for the delivery of negative feedback messages. This is due to the increased distance between the sender and receiver. This distance allows for the message to be received without the interference of the characteristics of the sender.

Although this study stresses the value of the task for the delivery of negative feedback messages, face-to-face feedback is generally unavoidable in an applied setting (i.e., annual or semi-annual performance reviews). By understanding the emotions evoked by negative feedback messages, feedback providers may be better prepared to respond to negative reactions that they may encounter from the receiver as well as within themselves. This preparation may improve the delivery of negative feedback messages from interpersonal sources as well as make the experience much more pleasant and beneficial.

Although there is a tremendous body of research on feedback itself, a surprisingly small amount of that literature focuses primarily on negative feedback. This study is helping to fill this gap in the literature by providing better understanding of negative feedback and how it operates within both supervisors and subordinates.

Negative information, though undesirable, is critical for individual and organizational growth and it does not always have to result in negative emotion. The task can provide a valuable source for the delivery of negative feedback. Supervisors and subordinates alike should report greater desire for this source as well as less negative emotion.

Organizations struggle with delivering negative results in performance evaluations. Supervisors would prefer not to do it and subordinates would definitely prefer not to hear it. Providing organizations with an alternative for delivering this feedback will help reduce this tension associated with performance evaluations while providing subordinates with the feedback they need to make necessary improvements.

This study supported the literature suggesting that, generally, people do not like to give or receive negative feedback (see Table 3). Results indicated that the majority of participants dislike giving and receiving negative feedback, though a greater majority responded unfavorably to receiving than giving. When it comes to giving and receiving positive feedback, the responses are also very clear. The vast majority of participants indicated that they liked to give and receive positive feedback, with a greater majority showing a preference for receiving feedback. Responses suggest that emotion is more strongly tied to receiving feedback than to giving. It may be that negative or positive emotion around feedback is more driven by emotions derived from receiving the feedback than giving. It also may be that participants, the vast majority being college freshmen, do not have enough experience with giving feedback to have strong feelings either way. The strong preference for giving positive feedback may be a function of the positive emotion *associated* with it more so than the emotion that is *actually felt* as a result of giving the feedback.

The percentage of participants responding *neutral* to each item also varied as a function of the feedback sign. Giving and receiving negative feedback had the greatest percentage of *neutral* responses, while giving and receiving positive feedback had much less. This may suggest that there are much more mixed feelings and confusion toward negative feedback. People recognize that positive feedback is good, but they are uncertain on negative feedback. Many take it as critical or a punishment, but others recognize that it is a valuable learning tool. Although it may be hurtful to hear, it can be very beneficial for development. This may be the reason for the mixed reviews and the neutral responses. In addition, although 52% don't like to give negative feedback, 47.5%

are either neutral or actually enjoy giving negative feedback. Clearly, they are not as affected by the negative emotion, or they see the benefits of negative feedback. Future research should look into why these responses may be. Also, although 63.8% of people don't like to get negative feedback, 35.7% are either neutral or actually enjoy it. Based on the negative emotion revealed in the study, discussed later, it may be logical to assume these results are due to understanding of the benefits of negative feedback.

This study also provided support for the literature suggesting that negative feedback could result in performance improvement. To examine this finding, the Feedback Values were correlated with the Improvement Metric Scores for participants across all conditions, revealing significant, negative correlation. This suggests that negative feedback is associated with more performance improvement than is positive feedback. Although it may be argued that ceiling effects and regression toward the mean may have influenced this relationship, it is not the effects of positive feedback that are the focus.

The focus of this examination was that of the negative feedback. Kluger and DeNisi (1996) revealed that negative feedback may not serve to improve performance but actually harm performance. This study served to provide evidence against Kluger and DeNisi's (1996) previous findings by demonstrating that negative feedback could actually improve performance. It is recognized that those receiving positive feedback may have less improvement to make, therefore show less improvement. Again, the focus was primarily on the performance of those receiving negative feedback, independent of those receiving positive.

To more deeply examine the relationship between the feedback received and improvement, correlations were run to examine the relationship between the Feedback Value and Improvement Metric for each of the conditions. There were significant relationships between the variables for all conditions with the No Feedback condition revealing the strongest relationship. Although the relationship was the strongest in the No Feedback condition, it was not significantly different than the other conditions. In addition, the strength of the relationship was not significantly different across any of the conditions, suggesting that the feedback behaved similarly in all conditions. As feedback became more negative, participants showed greater performance improvement. Despite the finding that negative feedback results in greater performance improvement is stated here, more research is needed before further conclusions are drawn. This analysis was simply conducted to dispute findings that negative feedback may actually hurt performance. Considerations were not taken for ceiling effects or regression toward the mean, therefore, this conclusion should not be accepted blindly.

An ANOVA was conducted to identify any significant differences in performance improvement between the groups. This analysis revealed no significant differences suggesting that the feedback condition itself did not influence performance improvement. This finding was not unexpected, though, given that it is the interaction of the sign and condition that would be expected to influence performance improvement, not just the condition itself. Nonetheless, though not significant, participants in the Task Feedback condition showed the greatest improvement, followed by Affective Feedback, then the No Feedback, and finally, the Interpersonal Feedback. This is interesting because those in the Task Feedback condition showed greater improvement than all other conditions. In

the remaining three conditions, improvement was very similar. This suggests that, if given a more appropriate task and a larger sample, those in the Task Feedback condition may have shown significant improvement regardless of Feedback Value.

Participants were asked to rate how beneficial the feedback they received was, in reference to their performance. This item was correlated with the Feedback Values for each condition. All relationships were significant and positive, suggesting that, as the feedback becomes more negative, it is perceived as less beneficial. In the Task Feedback condition, though, the relationship was much flatter than in the other two conditions and significantly different from the Interpersonal conditions. This suggests that, when receiving negative feedback from the task, as opposed to interpersonal sources, the feedback may not be perceived as negatively.

The Interpersonal and Task conditions were the most similar conditions in terms of content. The significant differences between the strength of the relationships suggest that it is the source, not necessarily the content, which has the greatest influence on perceived benefit. When receiving negative information interpersonally, receivers may be much more likely to perceive it as negatively influencing their performance than when the same information is delivered via the task. This provides support for the suggestion that the task is a better source for the delivery of negative feedback by reducing the influences of the interpersonal interaction between the sender and receiver.

When participants were split into those receiving negative feedback and those receiving positive, there were no significant differences between the responses to perceived benefit. For those receiving negative feedback, though, there was a significant difference in perceived benefit for those receiving affective feedback and those receiving

the feedback from the task. Those in the Task Feedback condition found the negative

feedback to be significantly more beneficial than those in the Affective Feedback

condition. Although little information can be derived from this analysis as to why

participants rated the negative feedback in the Affective condition as less beneficial than

that in the Task, it does follow the expected pattern and provides support for the benefit

of the task for the delivery of negative feedback. One possible explanation is the negative

emotion aroused by the interpersonal interaction. Another explanation may be affective

component tacked onto the end of the feedback message ('That's not very good'). Given

the nonsignificant difference between the Interpersonal and Task conditions, it may be

that it was this affective message that evoked the negative emotion as opposed to the

interpersonal component alone.

Within each condition, responses based on perceived benefit were compared for

those receiving positive and negative feedback. The significant differences in the

Affective and Interpersonal Feedback conditions reveal that, those receiving positive

feedback rated the feedback as significantly more beneficial than those receiving

negative. In the Task condition, though, there was no significant difference in perceived

benefit between those receiving positive and negative. This suggests that, when receiving

interpersonal feedback, people tend to perceive negative feedback as less beneficial than

positive. People clearly see the benefit of positive feedback; it makes them feel good and

lets them know they are on the right track. When receiving negative feedback, though,

people tend to disregard the benefit it can provide. Again, it is unclear from this analysis

why people perceive negative feedback as less beneficial when coming from

interpersonal sources. Whatever the reason, people are tending to grasp onto the negative

aspects and are dismissing the potential value of the information they have been provided.

Although there was a significant difference in the perceived benefit of those receiving positive and negative feedback in the interpersonal conditions, there was no significant difference in the Task Feedback condition. Although those receiving positive feedback perceived the feedback as more beneficial than those receiving negative feedback, these differences were not strong enough to be significant. Those receiving negative feedback from the task did not consider the feedback to be as damaging to their performance as those in the interpersonal conditions. Whether receiving positive or negative feedback, when receiving it via the task, participants were able to see the potential benefit.

This study demonstrated that, when receiving negative feedback from interpersonal sources, participants were much more likely to perceive this information as negatively influencing their performance than those receiving the same information from the task. All participants receiving positive feedback tended to rate the information similarly in terms of benefit, regardless of condition. When receiving negative feedback, though, those in the Task condition tended to rate the information as more beneficial than those in the Affective condition. In addition, there was no significant difference between the perceived benefit of the feedback for those receiving positive and negative feedback when delivered via the task. This was not the case in the interpersonal conditions. In terms of perceived benefit, this study demonstrated that the Task is a more effective method for the delivery of negative feedback than are interpersonal sources.

To gain a broader perspective on the relationship between performance at Time 1 and Time 2, the Feedback Values for each trial were correlated. The relationship was significant for the overall correlation as well as that for each of the conditions, individually, though none of the relationships were significantly different from each other. The significant relationships suggest that, lower scores at Time 1 generally resulted in lower scores at Time 2, while higher scores at Time 1 generally resulted in higher scores at Time 2. The same analyses were then run on those receiving positive and negative feedback, individually. In both the positive and negative feedback groups, the No Feedback and Interpersonal Feedback conditions resulted in nonsignificant relationships. This suggests that, within each group, individuals did not necessarily maintain their respective rankings. Within those receiving positive feedback, for example, someone scoring the highest may have dropped in performance while someone scoring only slightly above the goal may have improved substantially. In this analysis, the Interpersonal and No Feedback conditions responded very similarly. Providing someone feedback by simply stating their performance in a face-to-face manner, with no additional information, may result in behavior as unpredictable as those receiving no feedback at all.

For those in the Task and Affective Feedback conditions, on the other hand, maintained the positive relationship between performance at Time 1 and Time 2 in both the positive and negative feedback groups. These significant relationships suggest that, in these conditions, people generally maintain their same ranking in terms of performance. Despite the range restriction caused by splitting the data in half, positive and negative feedback correlations were still significant in both the Task and Affective Feedback

conditions. It is interesting that task and affective feedback behave very similarly in this analysis. Given that affective feedback is a form of interpersonal feedback, it may have been expected that affective and interpersonal would behave more similarly than task and affective. The difference in the Task and Interpersonal Feedback conditions suggest that it may be the interpersonal aspect of feedback that results in the reduced benefit of negative feedback, when simply providing the same information one may have received via the task. When introducing the affective component, though, the benefits are similar to that of providing the feedback via the task. Although people may not like the affective information, it still results in the same behavior change as the task alone.

Hypothesis 1 suggested that feedback from the task would result in greater intrinsic motivation than interpersonal feedback. When positive and negative feedback were included in the analysis together, there were no significant differences in motivation between the conditions. When those receiving positive feedback and those receiving negative feedback were separated, however, interesting results were revealed. The interaction of feedback sign and the condition had a significant effect on intrinsic motivation. For the experimental conditions, positive feedback in the Affective condition resulted in the greatest intrinsic motivation of any sign and any condition, while positive feedback in the Interpersonal condition resulted in the least. The extreme difference in intrinsic motivation between the Affective and Interpersonal conditions suggests that it is the emotional component that is driving these differences. Telling people that they are doing well, a verbal pat-on-the-back, may actually serve to build competence and, thus, drive intrinsic motivation.

Although the intrinsic motivation level for positive feedback in the Task condition fell slightly below that of the Affective condition, it was much higher than the Interpersonal condition. Given that the only difference between the Task and Interpersonal conditions was the delivery method of the performance information, this result suggests that it is the face-to-face component of the feedback that reduces intrinsic motivation when receiving positive feedback.

When receiving negative feedback, though, the Task condition served to drive the greatest intrinsic motivation, followed by the Affective, the Interpersonal conditions. This suggests that, when receiving negative feedback, the task may allow one to maintain a certain amount of perceived competence and self-control, two components of intrinsic motivation (Deci & Ryan, 1972a). Not surprising was the finding that intrinsic motivation was most extreme in the No Feedback condition. When performing well, participants reported the greatest intrinsic motivation of all conditions. When performing poorly, participants reported the lowest intrinsic motivation of all conditions. Research suggests that people will seek, and receive, feedback even when none is readily available (Brief & Hollenbeck, 1985). Based on visual cues, participants were able to gauge, fairly accurately, how well they were performing. When performing well, participants perceived a higher level of competence and control. When performing poorly, though, they may have felt a loss of control and competence, thus resulting in the reduced intrinsic motivation.

When receiving negative feedback, those in the Task condition and those in the No Feedback condition differed greatly in level of intrinsic motivation. This finding

suggests that the task may indeed serve to reduce the perceived loss of control and competence and increase, or maintain, intrinsic motivation.

Extrinsic motivation was not found to be influenced by the feedback condition. Rather, the feedback sign had the greatest influence on the participants' levels of extrinsic motivation. Results indicate that, when receiving positive feedback, participants were more motivated toward the cash drawing than when receiving negative feedback. This was an expected finding. As people are performing well, they tend to strive for the prize. When they are performing poorly, and begin to doubt their ability to reach the goal, they may strive to perform to maintain their self-concept. Although they may not be able to reach the goal and gain the prize, they may still be able to perform to their own standards, thus leaving the event feeling good about themselves.

Hypothesis 2 predicted that negative feedback from the task would be more accepted than negative feedback from interpersonal sources. This hypothesis was not supported by the analyses. No significant differences were found across conditions for acceptance. In addition, the 2x3 ANOVA revealed no main effects for the condition or sign as well as no significant effects of the interaction. These findings suggest that both positive and negative feedback were equally accepted, or rejected, across conditions. This finding may be a product of the task and the feedback provided. Given the technological base of the task, participants engaged in a computer simulation that recorded their performance. This performance was recorded by the Supervisor and delivered to the participants (or it was read by the participant off of the computer screen). This left little room for the participants to doubt the accuracy of the information.

Hypotheses 2a and *2b* are related to *Hypothesis 2* in that credibility and objectivity are two components of accuracy and acceptance. These hypotheses also predicted that negative feedback from the task would be seen as more credible and objective than negative feedback from interpersonal sources. The same analyses were run and, again, there were no significant differences found in responses to the credibility or objectivity of the feedback based on the condition. The 2x3 ANOVA also revealed no significant influence of the feedback sign, the condition, or the interaction of the two on either the credibility or objectivity of the information received. The same explanation can be given as was given for the insignificant findings for accuracy. The task provided no subjectivity. The computer recorded their performance, the Supervisor wrote the scores down, and the information was delivered directly to the participant. For true differences to be revealed there must be more time between the performance and the delivery of feedback. Also, the more technology involved in the recording of the information, the less subjective and more credible the recorded information is likely to be.

A less objective method for understanding the perceived accuracy, credibility, and objectivity of different sources of feedback was made by asking participants to rank order six sources of feedback based on these characteristics. 'Face-to-face feedback from a boss' was the clear first choice based on all three characteristics. This is what people are used to and what they want to believe is very accurate and credible. This came as a slight surprise in terms of objectivity. Many people view performance reviews as subjective, in that supervisors only view a portion of one's behaviors. In addition, the performance reviews are generally timed once or twice a year. It is difficult for someone to remember all relevant behaviors over such a long period of time. Finally, it is often felt that

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performance reviews are based more on personal feelings toward the individual than on behavior.

The placement of 'face-to-face feedback from your boss' as number one, though, is likely due to familiarity. Although less clear, 'feedback from your work' was ranked number 2 in preference. It is interesting that this source was ranked second because, despite the frequent use of face-to-face feedback and the clear disdain for the receipt of negative feedback, the face-to-face option was still ranked 1 while the 'feedback from your work' option was ranked second. Feedback from a boss over the phone was ranked 3 while feedback from a boss over email was ranked 4. These are still sources coming directly from a boss, they are just being delivered via different sources. Despite the uncertainty and unfamiliarity with feedback from the work, this option was still ranked as more accurate, more credible, and more objective than feedback from a boss over the phone or email. This suggests that people may still be so unsure of feedback from the work that they are not willing to rank it number one, but it comes across as an interesting and plausible option.

The lowest ranking sources for all characteristics were 'feedback from a co-worker or peer' and 'feedback from a subordinate.' Most people recognize these as most distant from the information, particularly a peer or co-worker. When such individuals receive information, it generally comes from the 'rumor mill' in which they hear about information from a third source. This information is likely to be considered less accurate, credible, and objective.

To fully capture the differences in preference between sources of positive and negative feedback, it would have been ideal to ask participants to rank based on both of

these types. It was expected, though, that the majority of individuals do not recognize that they perceive the feedback to be more or less accurate, credible, or objective based on the sign. It was not the purpose of this study to draw attention to differential feelings or emotions based on sign. It was hoped that these differing emotions would be captured by simply asking about negative feedback. It is likely that participants simply lumped positive and negative together and showed a general preference for feedback directly from the source, face-to-face, than any other method. Feedback from the work, though, strangely still ended up ranked 2.

Based on the literature, it was expected that people would prefer to receive negative feedback from impersonal sources rather than interpersonal sources. Similarly, it was expected that people would prefer not to give negative feedback directly to their subordinates but have them receive negative feedback via their own work. Based solely on the rank ordering, this notion was not supported (see Tables 13 & 14). Face-to-face feedback, directly from the boss, was the preferred method for both giving and receiving negative feedback, while feedback from peers or subordinates were the least preferred methods. Feedback from the work and from the boss via the phone or e-mail, generally fell somewhere in the middle.

Based on the percentages of responses, feedback from the work was the second most preferred method in both situations. Although it did fall as number two, it was not a definitive placement. Responses to feedback from the work were highly distributed throughout the options. This suggests that there are widely mixed views on feedback from the work. Feedback from the boss via the phone was contained between response

positions 2-4, while responses to feedback from the boss via e-mail primarily fell from 3-4.

The same situation occurred for source preference for subordinates receiving negative feedback. Although feedback from the work had the greatest percentage of responses between rankings 1 and 2, a large percentage of respondents ranked feedback from a boss via the telephone as number 2 as well. The majority of responses for receiving feedback via telephone fell, though, between 2 and 3. Feedback from the work fell between 1 and 4 and the number of respondents ranking in each placement ranged considerably. This further demonstrates the confusion that may exist around feedback from the work. This confusion may arise from lack of familiarity, but there is a clear curiosity about the source. Although face-to-face feedback from a boss is a definite first choice, there is a large sub-population that shows an interest in feedback from the work for the delivery of negative feedback. The value is being recognized, though some are not yet willing to consider it as the first, and best, choice. There is a strong bias toward face-to-face feedback from the boss that is not yet ready to be removed. Although it may never fully replace the classic face-to-face feedback, given time, the benefits of feedback from the work may be recognized by individuals and organizations.

The examination of the rank order of the various sources of feedback was exploratory. There was no clear expectation for how the rankings would fall. Although the literature suggests that feedback from the work may be the most preferred method for the delivery and receipt of negative feedback, it does not take into account the history of feedback and the expectations people have for what that looks like. Generally, people have known feedback as information received from a supervisor regarding their

performance. Therefore, this is the first thing that comes to mind when discussing 'feedback.'

Feedback from the work, or task feedback, may not yet be well understood. Considering the sample used for this study, it is likely that the participants did not fully understand what feedback from the work was referring to. Additionally, they have likely not yet received much negative feedback from a boss in a work setting, and therefore, have not built a schema for it. When receiving negative feedback in school, it is generally developmental feedback and may be substantially different from feedback in a work setting.

Finally, this item may be problematic because many people recognize the benefit of face-to-face feedback. Despite the negative emotion that may be associated with it, this is what people are familiar with. Expecting college students to identify the benefits of feedback from the task over face-to-face feedback from a supervisor for the delivery of negative feedback may have been too unrealistic. It may have proved more fruitful to attempt an alternative method over directly asking participants to rank-order their preferences. It is clear that respondents were confused as to what to do with feedback from the work. There was definite variance between the scores with many participants clearly preferring it to al others.

Hypothesis 3 suggested that negative feedback from the task would be less emotionally distressing than negative feedback from interpersonal sources. This hypothesis was supported. To begin, the Affective Variables were individually correlated with the Feedback Value across all conditions. This analysis indicated that all Affective Variables were significantly and negatively correlated with the Feedback Value; as the

feedback becomes more negative, positive emotion reduces. This supports the literature suggesting that, generally, negative feedback results in negative emotion.

To examine these relationships further, the same correlations were run again, but this time they were run for each condition, individually. This analysis was intended to assess any differences in these relationships given the source of the feedback. In both the Affective and Interpersonal Feedback conditions, all Affective Variables were significantly and negatively correlated with emotion except three variables each. In both conditions, 'I was motivated' was nonsignificant. This finding was a slight surprise. It was expected that, in the interpersonal conditions, negative feedback would result in less motivation than the positive feedback. These findings suggest that feedback from any source can still serve as a motivator, regardless of its sign.

Additionally, 'it was comfortable for my supervisor' was found to be nonsignificant in the Affective condition, and 'it made my supervisor feel good' was found to be nonsignificant in the Interpersonal condition. It was expected that the negative feedback from the interpersonal sources would result in the recipient feeling as if the Supervisor was uncomfortable in the feedback scenario. The nonsignificance of these Affective Variables may be due to the ease with which the Supervisor delivered the feedback. Rather than sitting down at a desk and having to spend a great deal of time talking about the negative performance, as may be the scenario in an applied setting, the Supervisor in this study spent only a few seconds delivering the feedback before leaving the room to move onto the next participant. He did not change his expression or tone based on the sign of the feedback being delivered. This finding may suggest that it is the

awkwardness with which the negative feedback is delivered that results in negative feelings being projected onto the Supervisor by recipients.

Also, 'I was inspired' and 'my supervisor was inspired' were found to be nonsignificant in both the Affective and Interpersonal conditions, respectively. This may not be too surprising, though. There were no words of encouragement or inspiration. The sterility of the feedback may have driven these results.

Although the majority of Affective Variables were significantly correlated with the Feedback Value in the Interpersonal and Affective conditions, 11 of the 20 variables were nonsignificant in the Task Feedback condition. This suggests that the task may serve to shield much of the negative emotion created in a receiver as the result of a negative feedback message. In the interpersonal conditions, the majority of the Affective Variables were significantly correlated with the Feedback Value, suggesting that these negative messages resulted in greater negative emotion. In the Task condition, on the other hand, the majority were not related, suggesting that the Feedback Value had less influence on the recipients' emotional states.

As expected, none of the variables associated with Supervisor emotion were significantly related to the Feedback Value. This is due, in part, to the distance between the Supervisor and the feedback received. Although participants were aware that the Supervisor was watching their performance, it did not appear to affect their emotions when receiving negative, or positive, feedback via the task. In the Interpersonal and Affective conditions, the Supervisor was taken into consideration a number of times. Aspects of the Supervisor's thoughts, feelings, and emotions were significantly correlated with the Feedback Value in reference to, 'my supervisor was proud', 'it reflected

positively on my supervisor', 'my supervisor felt good for me', and 'I felt good for my supervisor'.

The feelings and opinions of the Supervisor were clearly not a concern in the Task Feedback condition. By taking some of the attention and concern off of the source, recipients can focus more attention on the message. In addition, the inspirational and motivation components were again found to be nonsignificant in the Task condition, similarly to the interpersonal conditions. Although it is possible that the different sources of feedback do not differ on inspiration and motivation provided to the receiver, it is more likely that this task simply did not capture these components of the feedback message. As mentioned previously, the Supervisor did not engage in a lengthy feedback session in which motivation and/or inspiration could have been given or withheld, as would be the case in an applied setting.

 All significant correlations were negative, suggesting that negative feedback evokes negative emotion in receivers. In the Affective and Interpersonal conditions, the vast majority of the Affective Variables were significantly negatively correlated with the Feedback Value, while in the Task condition the majority were not significantly correlated. This suggests that the negative feedback in the Affective and Interpersonal conditions is, generally, evoking more negative emotion from receivers when receiving negative feedback than negative feedback in the Task condition. Unlike the Affective and Interpersonal conditions, the Task condition did not appear to evoke much emotion at all.

The Affective Variables were factor analyzed to determine their factor structure, and one factor was identified. For this reason, all Affective Variables were added together to create an Item-Based Total Intensity Value (ITIV). This value represents the

amount of negative emotion for each participant (higher values correspond with more negative emotion). As expected, there was an overall significant and negative correlation between the ITIV and the Feedback Values. This same finding was repeated for each of the conditions as well. Although it was expected that the Task condition would result in less negative emotion for participants, when the Affective Variables are added together, the strength of a few of the variables brings the entire relationship down. The statistics suggest a weaker relationship in the Task condition than in the Affective and Interpersonal, but all relationships were found to be significant at $p < .05$.

These significant relationships suggest that, generally, negative feedback does indeed increase overall negative emotion. To understand what emotions and feelings are driving these relationships, it was important to examine the individual Affective Variables. This examination revealed interesting differences in perceived supervisory emotion in the Task and interpersonal conditions. Other than 'I was inspired' and 'I was motivated', which proved to be nonsignificant in all conditions, all of the nonsignificant Affective Variables in the Task condition were those pertaining to perceived supervisory emotion. These findings suggest that it may be the projected emotion that receivers place on the sender that results in the negative emotion associated with negative feedback. By introducing this feedback via the task, it may be possible to greatly reduce, or even eliminate, the negative emotion caused by the interaction with supervisors, and, thus, increasing the amount of energy that may be spent on the message itself.

In addition to the Affective Variables, a validated mood scale (Scollon et al., 2005) was used to understand the effects of the feedback sign and condition on receivers' moods. Across all conditions, the Feedback Value was significantly positively correlated

with the post-feedback Happiness measure. This suggests that, as feedback became more positive, generally, participants report being in a more positive mood. Similarly, the Feedback Value was significantly negatively correlated with the post-feedback Sadness measure. Again, this suggests that, as feedback becomes more negative, participants report being in a worse mood. This finding was expected and is supportive of the research suggesting that, generally, negative feedback decreases emotion and mood.

To more directly address the hypothesis that negative feedback from the task results in more positive emotion, or mood, than negative feedback from interpersonal sources, the correlations were run on each condition, individually. In the interpersonal conditions, both Happiness and Sadness were significantly correlated with Feedback Value. As the feedback became more positive, Happiness increased, and as the feedback became more negative, Sadness increased. These relationships indicate that participants' moods were strongly influenced by the direction of the interpersonal feedback they received.

In the Task Feedback condition, a different result was revealed. The Feedback Value was not found to be significantly related to post-feedback Happiness or Sadness. This suggests that feedback from the task does not alter the moods of the receivers. When receiving positive feedback, participants do not feel happier. More importantly, and more relevant to the hypothesis, when receiving negative feedback via the task, participants did not feel worse afterward. These findings provide strong evidence for the notion that the task is a good source for the delivery of negative feedback by not influencing the emotional state of the receiver. Rather than introduce interference from emotional hurdles, the information may be sent and received with greater fidelity and accuracy.

To gain greater insight into which mood variables may have been driving the relationships between overall Happiness and Sadness and the Feedback Value, the Feedback Values were correlated with each post-feedback mood variable. In the Affective and Interpersonal Feedback conditions, Proud, Sad, Irritated, and Worried revealed significant relationships with the Feedback Value. This illustrates the influence of feedback delivered interpersonally on the mood of receivers. When performing better, participants felt proud, but the remaining happy mood variables were not influenced by the feedback. On the other hand, three of the four negative mood variables were influenced by the feedback received. Although the participants did not feel more or less guilty following the feedback, they were influenced negatively.

The finding that three of the four happy mood variables were not significantly correlated with the Feedback Value suggests that, although negative mood may be influenced by the feedback source, positive mood is not as influenced. Thus, providing receivers with negative feedback may not make them feel more or less happy, but it will likely make them feel more down.

In the Task Feedback condition, on the other hand, none of the mood variables were significantly affected by the feedback. Whereas many of the variables were influenced by feedback in the interpersonal feedback conditions, in the Task Feedback condition, the direction of the feedback appeared to have no affect on mood. This provides even further support for *Hypothesis 3* stating that negative feedback has less of an effect on mood and emotion when delivered via the task than when delivered via interpersonal sources.

The Mood Scale (Scollon et al., 2005) was intended to help assure that the Affective Variables were adequately capturing emotion experienced as a result of the feedback received. The similarity in results when examining the Affective Variables or the validated Mood Scale suggests that the Affective Variables are assessing similar constructs. Based on these results, it would be appropriate to use the relationships between the Feedback Value and Affective Variables to suggest that negative feedback more negatively influences emotion when delivered interpersonally than when delivered via the task.

A final attempt to understand preference for the receipt and delivery of negative feedback was made by asking participants to rank-order how they would prefer to receive negative feedback and how they would prefer for a subordinate to receive negative feedback. The same response pattern emerged as that of accuracy, credibility, and objectivity. It was evident that participants would clearly prefer to receive negative feedback directly from a boss face-to-face. They would also prefer for subordinates to receive negative feedback directly from them, face-to-face.

Again, it came as a bit of a surprise to find that participants preferred to receive negative feedback from a boss face-to-face given the past research. It was also surprising that participants preferred to directly deliver feedback to their subordinates face-to-face. The same explanation can be given as was given for the findings for accuracy, credibility, and objectivity. Face-to-face feedback is the most well-recognized and understood source of feedback. It also has a number of merits. In addition, the research states that, generally, people do not like to give or receive negative feedback. If given an option, they would likely choose to not give or receive the feedback at all. Since they are given only an

option in source, though, it may be less surprising that participants generally went with the source they are most familiar with.

The second most preferred source for both receiving and giving negative feedback was the work itself. Participants clearly recognize the value of the work itself for the delivery of important, task-related information. They may not be, though, familiar enough with it to consider it their most preferred source. It may be recognized as a good additional source of information, but people generally recognize the value of the one-on-one interaction between a supervisor and subordinate. Although the task may serve to fill in the gaps between feedback sessions, it appears that it does not serve as a substitute for performance reviews.

Feedback from a boss over the phone and over email were ranked 3rd and 4th, respectively. Here, feedback from a boss is still considered valuable, more so than feedback from a co-worker or peer and feedback from a subordinate, which were ranked 5th and 6th, respectively. It is clear that feedback from a boss is valuable, desired information. Few people want to hear negative feedback from a co-worker or peer, and even fewer want to hear it from someone who reports to them. These sources were clearly the least desired sources of all.

These findings were not too surprising. Although it comes as a slight surprise that, despite the negative feelings toward giving and receiving negative feedback, and the negative emotions related to negative feedback from interpersonal sources as revealed in this study, participants still demonstrated a clear preference for this direct feedback over feedback from the work. As explained, though, feedback from the work is less familiar. If

forced to choose, people will likely select to give or receive feedback face-to-face rather than over the phone or email.

Despite the inconclusive findings surrounding acceptance, credibility, and objectivity, this study provides strong support for the potential benefits of the task itself as a method for the delivery of negative feedback. This study provided support for the suggestion that negative feedback from the task may be more beneficial than negative feedback from interpersonal sources. When asked how beneficial was the feedback they received, participants receiving negative feedback from the task rated this feedback as more beneficial than those receiving negative feedback from interpersonal sources. There were no differences in perceptions of performance for those receiving positive feedback.

This study also supported the notion that negative feedback would result in greater intrinsic motivation when received via the task than when received via interpersonal sources. This interaction between sign and source also provides further evidence for the notion that positive and negative feedback are indeed two individual types of feedback that should be treated differently. When receiving positive feedback, delivery source did not influence motivation. Rather, sign alone resulted in different types of motivation, such that positive feedback resulted in greater extrinsic motivation.

Finally, this study revealed that negative feedback results in less negative emotion when received via the task itself than when received via interpersonal sources. When receiving negative information from the task, emotion resulting from projected feelings onto the supervisor was completely removed. The majority of the emotions that were not related to the feedback received in the Task condition were those relating to the supervisor. As expected, receiving feedback from the task reduces negative emotion

experienced by receivers largely due to the removal of negative emotion associated with the supervisor.

Practical Implications

Following Kluger and DeNisi's (1996) statement that negative feedback may serve to reduce performance, individuals and organizations worried that providing feedback to employees was doing more damage than good. This study served to reduce some of these concerns by providing support for the vast research suggesting that negative feedback serves to improve performance. This result was revealed across conditions, suggesting that, regardless of the source, negative feedback can be beneficial for performance.

For this reason, organizations should continue to provide feedback to employees, positive or negative. Negative feedback, more so than positive, serves to provide employees with valuable information necessary for making improvements. Although positive feedback may serve to maintain and build upon strengths, it is in the weaknesses where the most improvements can be made.

Performance improvement may not have differed across sources, but there was a clear perception that negative feedback was more beneficial when it was delivered via the task than interpersonal sources. When delivering negative feedback, many senders and receivers prefer to do it face-to-face. This is evidenced by the rank ordering of preferences to give and receive negative feedback in this study. Participants clearly ranked face-to-face feedback from a boss as the number one choice. When asked a different way, though, participants found the negative feedback from interpersonal sources to be more detrimental to their performance than negative feedback delivered via

the task. Stated another way, negative feedback was considered more beneficial when received via the task than interpersonal sources.

Although receivers may not realize that they perceive negative feedback from the task as more beneficial, organizations may see great improvement in morale by implementing programs to provide employees with ongoing feedback from the task. This would, obviously, include positive and negative feedback. Positive feedback did not reveal any differences between the groups, but the benefits received by having the task deliver negative feedback rather than a supervisor may serve to improve employee morale and feelings toward receiving negative feedback.

Research has consistently supported the notion that increasing intrinsic motivation results in greater work satisfaction and performance than increasing extrinsic motivation (Hackman & Oldham, 1976; Ilardi, Leone, Kasser, & Ryan, 1993). That said, organizations often find it difficult to increase intrinsic motivation. It is easy to increase extrinsic motivation. Introducing a bonus plan or desirable rewards, for example, are often employed by organizations in attempts to gain more output from employees. Increasing intrinsic motivation, though, is substantially more difficult.

This study revealed that the source of the feedback, given the sign, can serve to improve intrinsic motivation. When the feedback is positive, providing the feedback with an affective component, "that was great" for example, resulted in greater intrinsic motivation than providing sterile feedback to the receiver. Given this sterile feedback, though, the task resulted in substantially greater intrinsic motivation than the face-to-face interaction. This suggests that, when providing positive feedback, organizations may use

interpersonal or task sources. If the source is interpersonal, though, it must include an affective component.

When the feedback is negative, the task resulted in the greatest intrinsic motivation. Unlike when receiving positive feedback, in which interpersonal and task sources could both serve to result in high intrinsic motivation, when receiving negative feedback, the task resulted in substantially greater intrinsic motivation than the interpersonal sources. It is clear from this study that the task may be a beneficial source for employers seeking methods for increasing the amount of intrinsic motivation in their workforce.

It is generally believed that negative feedback results in more negative emotion than positive feedback. Although this was found to be the case in general terms, when the relationships were examined within the different sources, a different picture emerged. When receiving negative feedback from the task, participants reported experiencing much less negative emotion than when receiving negative feedback from interpersonal sources. These relationships were found in the emotion variables as well as in the validated mood scale.

This finding has huge implications for organizations. Emotion has a great influence on employee satisfaction and productivity. Research suggests that when employees are experiencing unpleasant mood, which behaves similarly to negative emotion, they experience less cognitive flexibility and decreased performance of tasks requiring creativity (Murray, Sujan, Hirt, & Sujan, 1990). As this study supported, people generally do not like to give or receive negative feedback. Based on the findings of this study, this is likely due to the negative emotion than surrounds the feedback, not the

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feedback itself. The Affective Variables that were not significantly influenced by the feedback in the task condition were those variables related to perceived supervisory emotion. When receiving negative feedback, many receivers project emotion onto their supervisor. Providing this information via the task rather than interpersonal sources can serve to reduce the negative emotion associated with perceived supervisory emotion. This can reduce a great deal of negative emotion in the receiver. Rather than being influenced by the interpersonal interaction between the sender and receiver, the receiver may focus on the information.

This study did not reveal any significant differences in perceived accuracy, credibility, or objectivity of the feedback based on the source. Again, this may have been due to the task and the type of information provided rather than a true function of the condition. Regardless of the reason, no differences were found. Despite this finding, the rank orders suggest that people are beginning to be curious about the work itself as a potential source of negative feedback. Face-to-face feedback from a boss was most preferred in terms of giving and receiving negative feedback. It was also ranked highest in terms of perceived accuracy, credibility, and objectivity. Feedback from the work, though, was ranked number 2 in all categories, above other interpersonal sources including the boss via phone or email. This shows a clear interest in this information.

Despite the clear interest in, and curiosity of, feedback from the work as a potential source, the finding that face-to-face feedback from a boss was a clear preference indicates that people may not be quite ready for the implementation of a task-feedback system. Even though participants revealed that they found negative feedback from interpersonal sources to be less beneficial, were less intrinsically motivated by it, and had

greater negative emotion toward it, they still find comfort in this traditional method of receiving information. Over time, it may be beneficial for organizations to slowly begin to implement task-feedback systems into their daily routine in order to gradually increase awareness and familiarity with the source. To implement a full system at one time, though, may serve to be more destructive than helpful.

Although this study did not support the task as more effective than other sources for improving performance, there are clear benefits to using the task for the delivery of negative feedback. This feedback was considered more beneficial and less emotionally disturbing for receivers while increasing intrinsic motivation. These findings demonstrate clear potential for the source. Additionally, people are showing great interest in the work as a potential source for the delivery of negative feedback.

The task as a source for the delivery of negative feedback shows great potential for the near future. By implementing a task-feedback system, organizations can not only improve the well-being of their employees, but they may also be able to save valuable resources. Rather than depend on busy supervisors to both identify concerns and deliver it to the subordinate in a constructive manner, a task-feedback system would allow employees to receive the feedback without the involvement of the supervisor.

Limitations

The selected task was a clear limitation throughout the study. Although it provided an effective means for providing feedback and capturing performance, it was limited in scope. The task was not varied or long enough to provide for true behavior change and performance improvement. After receiving feedback, participants may have opted to engage in an alternative strategy. If this strategy succeeded, their performance

generally improved drastically. If this strategy failed, on the other hand, they did not have enough time to learn from their mistakes and recover. Given the same feedback from the same source, two participants may have both decided to change their strategy. One selected a strategy that succeeded while the other selected a strategy that failed. Although these two may have had the same behavioral response, the results were very different.

In addition, the task included a component that, if used properly, participants could perform very well, but if used improperly, the participant could fail miserably. This component was the treatment function on the fire truck. The treatment could be used to burn an area and prevent fire from burning there. A common method was to treat around an area of houses to prevent them from burning. Given that houses held the greatest value, this was an effective approach. If a house was inadvertently treated, though, the house caught fire. Houses were highly flammable and this fire could be devastating to a participant.

This component was included to function as increased concentration and focus. Those highly motivated to perform well were expected to engage in greater concentration and focus, thus resulting in more effective use of the treating function. Although this may have been the case, it also introduced additional variables not accounted for in the study. Irritation, for example, was measured via the mood scale. The inadvertent burning of houses, though, was not captured. The emotion raised by accidentally destroying resources and, thus, not reaching the goal was not captured by the items in the surveys. This accidental burning of houses may have influenced the emotion felt by participants more so than the feedback itself. Based on the information captured in the study, though, it is not possible to tell.

The need to maintain similar levels of difficulty resulted in the use of the same fire map for both trials. Although the vast majority of participants in the pilot study indicated that they were not aware of the similarity, there were a number of participants who did recognize this similarity. This recognition may have led them to higher scores after the second trial, regardless of the feedback or the condition. A greater concern, though, is that subsequent participants may have been aware of the similarity. As the study progressed, the number of participants who were aware of the similarity may have increased, thus accounting for the higher scores as the study progressed.

The artificial situation and environment associated with microworld simulation may not be entirely generalizable to a real-world situation. Although the cash drawing was intended to serve as motivation to perform, the experimental setting, particularly involving a microworld simulation, may lack some realism that would occur in a real-world situation. Participants lack certain control that may exist in an applied setting. To perform according to performance goals, one may be able to pull additional resources including working late and asking for help from others. In this microworld simulation, participants do not have the option of asking for additional help or working late into the night to finish the task and reach the goal. For this reason, there may be a ceiling effect as to how much the Fire Chiefs can improve after a feedback session.

In addition, supervisors generally have the ability to motivate subordinates through words of encouragement during a feedback session. The feedback provided to the Fire Chiefs in the Interpersonal Feedback condition was sterile and generic. In an applied setting, though, supervisors would not likely provide the same basic feedback to each subordinate.

Despite the clear limitations of the task, this simulation program shows great potential for similar studies. The time restriction of the current study limited the potential benefits of the program. Allowing more time for the simulation would allow participants to implement alternative strategies. If a mistake were made, the extra time would also allow for the participant to recover and change their strategy. Such extensions may allow researchers to better capture behavioral change as a result of the feedback received. Additionally, a larger map would allow for greater movement and strategy. The current study was limited in time by the size of the individual maps. More time would not have been feasible because all resources would have burned before the time was up.

This program also shows great potential for examination of team or group work. It can be used to understand how groups work together to create and fulfill a strategy. Given more time, a larger map, and groups working together, researchers can work to understand influences on, or relationships between, group strategy, motivation, leadership, and performance, just to name a few.

Another limitation is that of using a college-aged sample (Sears, 1986). The majority of the participants are expected to be between the ages of 18 and 20. This expected age distribution is not representative of most organizations. Organizations typically have a much wider age distribution. For this reason, the findings of this study may not be generalizable to the applied setting. An ideal sample would consist of full-time employees ranging in age from 20 to 65 and varying in industry and occupation.

Due to time and sample constraints, it was deemed necessary to begin running the study before all of the details were established for the experimental conditions. For this reason, all of the No Feedback groups were run first. Because of this, all conditions were

not counterbalanced with the No Feedback groups, and the Supervisor was aware that these groups were in the No Feedback condition. These influences may result in conditions that are not completely comparable.

Although the instructions did not change, the Supervisor may have become more skilled at delivering the instructions and answering participant questions. Throughout the initial groups, several of the same questions were being asked repeatedly. Due to this, the Supervisor knew to go ahead and address these issues in the initial introduction phase. Those in the initial groups who did not happen to ask these questions may have been at a slight disadvantage. Given that there were no significant differences in performance at Time 1, though, this limitation may not have been much of a concern.

The early administration of the No Feedback condition also resulted in the lack of Mood Survey data for these groups. It was decided to not rerun this condition to obtain this information for two reasons. First, the mood data was initially added to the study to help validate the selected Affective Variables. These variables were assessing feelings brought about by the feedback. Given that the participants in the No Feedback condition did not receive feedback, they did not take the survey with the Affective Variables. Therefore, they did not need to take the Mood Survey, in which the sole purpose was to validate the Affective Variables. Secondly, these limitations were so minor to the purpose of the study that it was considered a waste of resources and, thus, unethical to rerun the 50 participants already used for this condition.

Future Research

This study demonstrated that feedback from the work itself is not yet well understood by the general population. It would serve a great benefit to understand what

the existing perceptions and concerns are of task feedback. In addition, how these concerns relate to face-to-face feedback from a boss. Given the definitive responses when asking about feedback from a boss and the lack of certainty with responses to task feedback, it raises several questions. First of all, what do people think of when they think of task feedback, or feedback from the work itself? What images, thoughts, emotions, feelings, come to mind and how can we work to reduce negative emotions or concerns surrounding it? Answering these questions will help in the development of effective task-feedback systems that will be well accepted and understood by individuals and organizations.

When stating preferences for giving and receiving positive and negative feedback, the responses were very clear for positive feedback. Generally, people liked giving and receiving positive feedback. Preferences for negative feedback, though, were a little less clear. Neutral responses were very high suggesting that respondents were uncertain as to whether they liked or disliked negative feedback. Although they do not like to give or receive it, they may value the information it provides.

The previous mentioned examination may help to understand this issue. Do people have opinions on giving or receiving negative feedback or do they sincerely fall somewhere between like and dislike? It is not unrealistic to suggest that there is a love/hate relationship between people and negative feedback. Extensive research on the opinions and views of negative feedback would help to shed light on the issue and also aid in the development of feedback initiatives. Without a full understanding of the feedback itself, it is difficult to create a plan to improve acceptance and use of that feedback.

Negative feedback clearly evoked negative emotion. This study served to answer some of the questions surrounding the effects of different sources. A more in-depth examination of the actual emotions and feelings evoked by different sources of negative feedback, and intensity of those emotions, would serve to increase understanding of how negative feedback operates as well as assist in the delivery of negative feedback. Especially when feedback is being delivered interpersonally, which the majority of organizations do and will continue to do, understanding the specific emotions evoked would help the feedback providers deliver more effective feedback.

In addition, by understanding and recognizing the emotion induced by the receipt of negative feedback, receivers can better prepare themselves for the emotions and actively work to reduce its negative effects. As evidenced in the study, a great amount of negative emotion from interpersonal sources is derived from the negative emotion projected onto the supervisor by the receiver. Helping receivers understand these emotions and rationalizing them may serve to reduce their negative effects, especially when delivered interpersonally. Given then interpersonal feedback will continue to be a very popular method for feedback delivery, this information can serve to be invaluable.

Future research should capture the perspective of the supervisors. In this study, it was necessary to maintain consistency in the delivery of the feedback. For this reason, a confederate was used as the supervisor. To gain a full understanding of how negative feedback operates, it would be valuable to capture the feelings and emotions induced in the supervisor by the different sources. It would be expected that the task would induce less negative emotions for supervisors because of the reduction of face-to-face interaction, which may be the source of much of the emotional stress felt by supervisors.

Understanding the emotions and intensity of emotion evoked by the delivery of negative feedback would provide invaluable information for supervisors in this feedback-delivery role. Knowing what emotions to expect and understanding these emotions would allow supervisors to recognize and control these emotions. Supervisors can learn to take proactive steps toward controlling their emotions and deliver more effective feedback.

In general, people do not like to give negative feedback. Because of this, supervisors often delay the delivery of negative feedback (Larson, 1984). This may be due, in large part, to the negative emotion felt by the sender as well as the perceived negative emotion that will be experienced by the receiver. Providing supervisors with information regarding how to understand and respond to these emotions could serve to stop the domino effect of dislike for giving negative feedback that often, ultimately results in the delivery of ineffective feedback and the rejection of that feedback by the receiver.

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Table 1

Demographics by Condition

Variable		Overall	No Feedback	Affective	Interpersonal	Task
N Size		202	50	52	50	50
Age		19.7	19.2	20.0	20.0	19.4
Race	White	87%	88%	82%	90%	84%
	Other	13%	12%	13%	10%	16%
Gender	Male	53%	46%	56%	52%	58%
	Female	47%	54%	44%	48%	42%
Class	Freshman	64%	72%	58%	54%	72%
	Other	36%	28%	42%	46%	28%
Color Blind	Yes	2%	-	0%	2%	4%
	No	97%	-	100%	98%	96%
Status	Class Requirement	95%	100%	92%	92%	94%
	Extra Credit	2%	0%	0%	4%	4%
	$5 Cash	3%	0%	8%	4%	2%
Game Experience		2.2	2.3	2.1	2.3	2.2
	No	7%	2%	12%	8%	8%
	Some	62%	66%	63%	58%	60%
	Much	31%	32%	25%	34%	32%
PC Experience		1.9	1.8	2.0	2.0	1.9
	No	8%	4%	12%	10%	6%
	Some	78%	76%	77%	82%	76%
	Much	14%	20%	12%	8%	18%
Expectation		3.0	3.0	3.0	3.0	3.2
	Below to Far Below	19%	24%	16%	2%	16%
	Meet	60%	58%	69%	62%	52%
	Exceed to Far Exceed	21%	18%	15%	18%	32%
Average Trial 1		65.92	62.65	65.94	71.48	63.61
Feedback Value		-13.08	-16.36	-13.06	-7.52	-15.39
Sign	Positive	38%	66%	60%	56%	68%
	Negative	62%	34%	40%	44%	32%
Average Trial 2		75.05	71.04	74.58	77.80	76.77
Average Improvement		9.13	8.40	8.64	6.32	13.17

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Table 2

Means, Standard Deviations, and Correlations

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Age	19.66	2.49														
2 Game Exp	2.33	0.57	.00													
3 PC Experience	2.06	0.47	-.02	.57*												
4 Perform Expect	3.03	0.70	.07	.29*	.34*											
5 Trial 1 Perform	65.91	23.74	.05	.21*	.16	.02										
6 Predict Perform	2.26	0.95	.00	.21*	.18	.25*	.46*									
7 Feedback Value	-13.08	23.74	.05	.21*	.16*	-.02	1.00*	.46*								
8 True Reflection	3.46	0.93	.03	-.17	-.16*	-.10	.46*	.46*	.46*							
9 Trial 2 Perform	75.05	23.79	.07	.22*	.14	.02	.52*	.26*	.52*	.34*						
10 2nd Predicted	2.76	1.14	.01	.36	.25*	.29*	.40*	.52*	.40*	.47*	.63*					
11 Feed Value 2	-3.95	23.79	.07	.22*	.14	.02	.52*	.26*	.52*	.34*	1.00*	.63*				
12 Improvt Metric	9.13	23.18	.02	.61*	-.02	.04	-.49*	-.20*	-.49*	-.13	.49*	.24*	-.49*			
13 Perceived Benefit	3.66	0.89	.02	.23*	.11	.13	.49*	.39*	.49*	.51*	.49*	.50*	.49*	.00		
14 Percd Credibility	4.49	0.54	.02	-.14	-.07	-.03	.02	.02	.02	.22*	.08	-.08	.08	-.06	.20*	
15 Percd Objectivity	4.41	0.65	.04	-.11	-.17*	-.09	-.02	.15	.02	.06	-.01	-.04	-.01	.01	.06	.28*

Note: N = 202

* *p* < .05

Table 3

Preferences for Feedback

Preference	Dislike it Very Much (%)	Dislike It (%)	Neutral (%)	Like It (%)	Like it Very Much (%)	Average	Median
Give Negative	11.9	40.1	37.1	9.9	0.5	2.47	2
Give Positive	0.0	1.5	10.9	37.6	50.0	4.36	4.5
Receive Negative	17.3	46.5	23.3	11.9	0.5	2.31	2
Receive Positive	0.0	0.0	5.9	30.2	63.4	4.58	5

Note: Response options ranged from 1 - Dislike it Very Much to 5 – Like it Very Much

Table 4

Unrotated Confirmatoryy Factor Analysis Factor Loadings, Communalities (h), and Percent of Variance

Affective Variables	Factor 1[†]	Factor 2	*h*
Help my leader	.755		.691
Make my supervisor happy	.751		.767
Make the experimenter happy	.671		.722
Not looking bad	.671		.556
Pride	.659		.496
Being the best	.657		.599
Do my best	.561		.315
Not being the worst	.394		.240
the Prize		.534	.414
Variance accounted for	38.89%	14.44%	

† Factor Descriptions

    Factor 1 Intrinsic Motivation

    Factor 2 Extrinsic Motivation

Table 5
Perceived Accuracy

Ranking	Boss: Face-to-Face	the Work	Boss: Phone	Boss: E-mail	Peer/Co-worker	Subordinate
			Source			
1	65%	24%	1%	2%	6%	2%
2	24%	25%	33%	7%	8%	4%
3	4%	11%	38%	31%	11%	9%
4	4%	28%	12%	31%	16%	9%
5	1%	5%	19%	11%	38%	26%
6	2%	7%	3%	17%	20%	51%
1 or 2	89%	49%	33%	10%	14%	6%
2 or 3	28%	36%	65%	39%	19%	13%
3 or 4	8%	39%	45%	62%	28%	18%
4 or 5	5%	33%	31%	42%	54%	35%
5 or 6	3%	12%	22%	28%	58%	76%

N = 178

Table 6

Perceived Credibility

Ranking	Source					
	Boss: Face-to-Face	the Work	Boss: Phone	Boss: E-mail	Peer/Co-worker	Subordinate
1	74%	20%	0%	2%	3%	1%
2	19%	22%	37%	11%	9%	3%
3	3%	13%	30%	35%	12%	8%
4	3%	30%	17%	26%	15%	8%
5	0%	7%	13%	16%	39%	25%
6	1%	7%	4%	10%	22%	55%
1 or 2	93%	42%	37%	12%	12%	4%
2 or 3	22%	35%	66%	46%	21%	11%
3 or 4	7%	43%	47%	61%	26%	16%
4 or 5	3%	38%	30%	43%	53%	33%
5 or 6	0%	15%	17%	26%	61%	78%

N = 178

Table 7

Perceived Objectivity

Ranking	Source					
	Boss: Face-to-Face	the Work	Boss: Phone	Boss: E-mail	Peer/Co-worker	Subordinate
1	46%	41%	2%	4%	4%	3%
2	34%	13%	29%	9%	11%	4%
3	9%	8%	32%	35%	8%	7%
4	7%	21%	20%	28%	12%	12%
5	1%	7%	13%	12%	39%	28%
6	3%	9%	4%	12%	26%	45%
1 or 2	92%	49%	31%	13%	15%	8%
2 or 3	22%	21%	61%	44%	19%	12%
3 or 4	7%	29%	52%	63%	21%	19%
4 or 5	3%	28%	32%	40%	51%	40%
5 or 6	0%	16%	17%	25%	65%	73%

N = 179

Table 8

Correlations of Feedback Value with Affective Variables and Total Affective Value Across Conditions

Affective Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1 Feedback Value																					
2 Me feel good	.57*																				
3 Sup feel good	.22*	.45*																			
4 Comf for me	.40*	.62*	.34*																		
5 Comf for Sup	.22*	.41*	.54*	.56*																	
6 Good for perform	.41*	.53*	.24*	.57*	.40*																
7 Ref pos on me	.52*	.71*	.48*	.64*	.53*	.72*															
8 Ref pos on Sup	.33*	.50*	.48*	.52*	.54*	.58*	.69*														
9 I was encouraged	.43*	.60*	.43*	.59*	.50*	.65*	.74*	.58*													
10 Sup was encour	.33*	.46*	.62*	.42*	.42*	.43*	.63*	.63*	.61*												
11 I was inspired	.23*	.43*	.30*	.43*	.36*	.52*	.57*	.3*	.67*	.49*											
12 Sup was inpsired	.27*	.41*	.53*	.39*	.36*	.34*	.53*	.52*	.54*	.75*	.55*										
13 I was motivated	.23*	.31*	.09	.36*	.26*	.50*	.45*	.35*	.52*	.28*	.62*	.34*									
14 I felt proud	.54*	.70*	.42*	.64*	.40*	.52*	.75*	.54*	.67*	.57*	.55*	.53*	.41*								
15 Sup felt proud	.36*	.49*	.59*	.44*	.35*	.47*	.59*	.57*	.50*	.67*	.41*	.66*	.33*	.67*							
16 I felt uplifted	.42*	.60*	.48*	.56*	.45*	.53*	.70*	.57*	.72*	.61*	.57*	.55*	.41*	.77*	.66*						
17 Sup felt uplifted	.34*	.43*	.58*	.37*	.43*	.33*	.52*	.52*	.50*	.68*	.38*	.63*	.27*	.59*	.79*	.66*					

Table 8 Continued

Affective Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
18 I felt productive	.50*	.56*	.36*	.57*	.41*	.57*	.70*	.54*	.63*	.52*	.54*	.46*	.38*	.77*	.55*	.71*	.50*				
19 I felt good for me	.50*	.68*	.40*	.48*	.38*	.57*	.57*	.59*	.63*	.59*	.50*	.50*	.47*	.80*	.64*	.74*	.58*	.73*			
20 Sup good for me	.37*	.50*	.51*	.59*	.42*	.40*	48*	.57*	.47*	.59*	.41*	.55*	.34*	.62*	.68*	.59*	.66*	.56*	.69*		
21 I felt good for Sup	.37*	.44*	.43*	.49*	.40*	.46*	.49*	.60*	.52*	.59*	.47*	.55*	.28*	.64*	.61*	.63*	.62*	.65*	.66*	.68*	
22 Total Emot Value	.52*	.74*	.60*	.72*	.61*	.71*	.87*	.76*	.83*	.76*	.70*	.70*	.55*	0.86*	.77*	.85*	.72*	.80*	.85*	.74*	.77*

Note: *N* = 152

* *p* < .05

Table 9

Correlations of Feedback Value with Affective Variables and Total Affective Value for the Affective Condition

Affective Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1 Feedback Value																					
2 Me feel good	.59*																				
3 Sup feel good	.48*	.66*																			
4 Comf for me	.35*	.70*	.55*																		
5 Comf for Sup	.26*	.54*	.61*	.64*																	
6 Good for perform	.42*	.57*	.39*	.49*	.43*																
7 Ref pos on me	.58*	.81*	.66*	.64*	.55*	.66*															
8 Ref pos on Sup	.42*	.59*	.59*	.61*	.57*	.60*	.73*														
9 I was encouraged	.45*	.58*	.55*	.58*	.50*	.68*	.69*	.57*													
10 Sup was encour	.53*	.62*	.72*	.56*	.54*	.54*	.70*	.65*	.65*												
11 I was inspired	.23*	.40*	.42*	.28*	.19	.49*	.51*	.28*	.62*	.52*											
12 Sup was inpsired	.51*	.51*	.70*	.55*	.44*	.45*	.61*	.61*	.55*	.84*	.59*										
13 I was motivated	.28*	.32*	.21	.36*	.29*	.47*	.46*	.39*	.47*	.40*	.64*	.43*									
14 I felt proud	.56*	.75*	.60*	.61*	.45*	.51*	.75*	.48*	.62*	.60*	.48*	.65*	.41*								
15 Sup felt proud	.48*	.60*	.65*	.59*	.50*	.57*	.73*	.71*	.57*	.71*	.41*	.75*	.40*	.74*							
16 I felt uplifted	.48*	.73*	.55*	.61*	.48*	.60*	.74*	.63*	.74*	.58*	.51*	.61*	.45*	.84*	.71*						
17 Sup felt uplifted	.51*	.61*	.70*	.54*	.62*	.47*	.65*	.58*	.56*	.66*	.37*	.67*	.42*	.71*	.81*	.67*					

Table 9 Continued

Affective Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
18 I felt productive	.55*	.71*	.54*	.61*	.59*	.55*	.70*	.51*	.69*	.65*	.52*	.60*	.44*	.81*	.60*	.78*	.66*				
19 I felt good for me	.55*	.72*	.59*	.68*	.59*	.57*	.76*	.59*	.65*	.66*	.55*	.66*	.63*	.78*	.66*	.78*	.70*	.82*			
20 Sup good for me	.43*	.64*	.68*	.69*	.51*	.41*	.73*	.57*	.54*	.62*	.48*	.67*	.40*	.68*	.67*	.59*	.63*	.65*	.72*		
21 I felt good for Sup	.44*	.59*	.60*	.60*	.47*	.51*	.66*	.61*	.53*	.67*	.49*	.68*	.29*	.70*	.62*	.74*	.57*	.78*	.72*	.70*	
22 Total Emot Value	.59*	.83*	.75*	.76*	.66*	.72*	.89*	.76*	.81*	.81*	.63*	.81*	.57*	.85*	.83*	.86*	.80*	.85*	.90*	.79*	.81*

Note: $N = 52$

* $p < .05$

Table 10

Correlations of Feedback Value with Affective Variables and Total Affective Value for the Interpersonal Condition

Affective Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1 Feedback Value																					
2 Me feel good	.62*																				
3 Sup feel good	.26	.32*																			
4 Comf for me	.48*	.60*	.24*																		
5 Comf for Sup	.39*	.36*	.48*	.55*																	
6 Good for perform	.48*	.60*	.15*	.64*	.30*																
7 Ref pos on me	.50*	.68*	.45*	.62*	.52*	.75*															
8 Ref pos on Sup	.42*	.62*	.45*	.43*	.39*	.52*	.69*														
9 I was encouraged	.50*	.65*	.47*	.64*	.50*	.61*	.74-	.58*													
10 Sup was encour	.36*	.42*	.61*	.34*	.59*	.37*	.58-	.59*	.57*												
11 I was inspired	.48*	.57*	.35*	.52*	.50*	.48*	.63*	.49*	.74*	.56*											
12 Sup was inpsired	.14	.42*	.39*	.27*	.20	.28*	.49*	.50*	.59*	.65*	.57*										
13 I was motivated	.28*	.50*	.04	.52*	.21	.54*	.53*	.33*	.60*	.27*	.66*	.41*									
14 I felt proud	.61*	.75*	.45*	.66*	.38*	.55*	.78*	.63*	.66*	.65*	.61*	.49*	.44*								
15 Sup felt proud	.40*	.51*	.53*	.38*	.11	.48*	.58*	.47*	.47*	.74*	.38*	.55*	.25	.67*							
16 I felt uplifted	.46*	.63*	.55*	.48*	.45*	.46*	.66*	.53*	.72*	.71*	.63*	.49*	.32*	.72*	.65*						
17 Sup felt uplifted	.33*	.36*	.53*	.32*	.27*	.31*	.48*	.54*	.50*	.75*	.39*	.48*	.17	.56*	.76*	.67*					

Table 10 Continued

Affective Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
18 I felt productive	.57*	.67*	.35*	.55*	.38*	.58*	.79*	.58*	.61*	.56*	.56*	.38*	.31*	.85*	.55*	.69*	.42*				
19 I felt good for me	.51*	.77*	.38*	.56*	.25*	.59*	.70*	.60*	.62*	.64*	.53*	.43*	.38*	.88*	.67*	.77*	.52*	.76*			
20 Sup good for me	.44*	.52*	.37*	.52*	.18	.39*	.44*	.41*	.38*	.60*	.30*	.40*	.22	.64*	.63*	.56*	.67*	.47*	.69*		
21 I felt good for Sup	.41*	.48*	.48*	.49*	.28	.43*	.55*	.59*	.56*	.73*	.44*	.50*	.22	.65*	.60*	.66*	.73*	.53*	.66*	.69*	
22 Total Emot Value	.60*	.79*	.56*	.72*	.52*	.70*	.87*	.74*	.84*	.78*	.76*	.63*	.56*	.90*	.73*	.84*	.68*	.81*	.85*	.66*	.75*

Note: $N = 50$

* $p < .05$

Table 11

Correlations of Feedback Value with Affective Variables and Total Affective Value for the Task Condition

Affective Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1 Feedback Value																					
2 Me feel good	.48*																				
3 Sup feel good	.09	.30*																			
4 Comf for me	.39*	.53*	.27																		
5 Comf for Sup	.02	.26	.54*	.56*																	
6 Good for perform	.32*	.37*	.24	.57*	.52*																
7 Ref pos on me	.45*	.61*	.36*	.70*	.54*	.75*															
8 Ref pos on Sup	.14	.23	.40*	.54*	.66*	.61*	.66														
9 I was encouraged	.36	.44*	.32*	.58*	.52*	.63*	.49*	.62*													
10 Sup was encour	.02	.25	.59*	.37*	.44*	.33*	.57*	.52*	.58*												
11 I was inspired	.16	.30*	.12	.48*	.42*	.62*	.59*	.41*	.63*	.35*											
12 Sup was inpsired	.09	.24	.47*	.36*	.44*	.27	.44*	.42*	.48*	.73*	.47*										
13 I was motivated	.08	.06	.06	.18	.29*	.47*	.31*	.31*	.48*	.11	.57*	.17									
14 I felt proud	.51*	.63*	.25	.69*	.36*	.45*	.71*	.52*	.72*	.37*	.55*	.41*	.39*								
15 Sup felt proud	.17	.29*	.57*	.35*	.49*	.34*	.44*	.51*	.49*	.50*	.45*	.66*	.37*	.61*							
16 I felt uplifted	.32*	.38*	.40*	.63*	.41*	.52*	.6*	.49*	.67-	.48*	.58*	.56*	.44*	.76*	.63*						
17 Sup felt uplifted	.17	.25	.53*	.24	.39*	.19	.41*	.44*	.44*	.60*	.49*	.76*	.20	.50*	84*	.64*					

Table 11 Continued

Affective Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
18 I felt productive	.41*	.22	.14	.58*	.34*	.58*	.60*	.53*	.57*	.29*	.55*	.34*	.42*	.61*	.49*	.66*	.40*				
19 I felt good for me	.4.	.50*	.27	.51*	.41*	.50*	.57*	.50*	.56*	.39*	.39*	.36*	.34*	.70*	.59*	.63*	.52*	.59*			
20 Sup good for me	.26	.28*	.48*	.32*	.47*	.43*	.48*	.45*	.50*	.51*	.47*	.58*	.43*	.53*	.77*	.64*	.69*	.54*	.67*		
21 I felt good for Sup	.27	.16	.23	.35*	.46*	.41*	.44*	.60*	.46*	.28*	.50*	.42*	.33*	.55*	.62*	.46*	.56*	.62*	.55*	.63*	
22 Total Emot Value	.38*	.53*	.50*	.71*	.69*	.71*	.84*	.80*	.83*	.62*	.72*	.65*	.51*	.82*	.76*	.84*	.68*	.74*	.77*	.75*	.73*

Note: $N = 50$

* $p < .05$

Table 12

Correlations of Feedback Value with Post-Feedback Mood Across Conditions

Affective Variable	1	2	3	4	5	6	7	8	9	10
1 Feedback Value										
2 Total Happiness	.18*									
3 Joy	.11	.86*								
4 Happy	.13	.80*	.75*							
5 Affectionate	-.03	.77*	.52*	.42*						
6 Proud	.36*	.81*	.58*	.48*	.53*					
7 Total Sadness	-.28*	-.29*	-.30*	-.40*	-.03	-.23*				
8 Sad	-.19*	-.16	-.18*	-.33*	-.09	-.13	.78*			
9 Worried	-.16	-.19*	-.22	-.24*	-.07	-.10	.82*	.53*		
10 Guilty	-.14	-.12	-.36*	-.24*	.07	-.11	.71*	.43*	.49*	
11 Irritated	-.35*	-.38*	-.36*	-.41*	-.15	-.34*	.81*	.48*	.50*	.43*

Note: *N* = 142

* *p* < .05

Table 13

Correlations of Feedback Value with Post-Feedback Mood for the Affective Condition

Affective Variable	1	2	3	4	5	6	7	8	9	10
1 Feedback Value										
2 Total Happiness	.25									
3 Joy	.17	.88*								
4 Happy	.13	.74*	.74*							
5 Affectionate	.01	.76*	.51*	.31*						
6 Proud	.45*	.83*	.62*	.41*	.54*					
7 Total Sadness	-.44*	-.37*	-.31*	-.47*	-.06	-.35*				
8 Sad	-.44*	-.17	-.14	-.31*	.12	-.24	.84*			
9 Worried	-.31*	-.29*	-.20	-.41*	-.10	-.24	.86*	.64*		
10 Guilty	-.14	-.25	-.17	-.34*	-.08	-.23	.71*	.45*	.53*	
11 Irritated	-.48*	-.45*	-.44*	-.47*	-.14	-.42*	.85*	.65*	.59*	.46*

Note: *N* = 47

* *p* < .05

Table 14

Correlations of Feedback Value with Post-Feedback Mood for the Interpersonal Condition

Affective Variable	1	*2*	3	4	5	6	7	8	9	10
1 Feedback Value										
2 Total Happiness	.24									
3 Joy	.09	.87*								
4 Happy	.14	.84*	.88*							
5 Affectionate	.12	.75*	.46*	.39*						
6 Proud	.44*	.75*	.46*	.45*	.52*					
7 Total Sadness	-.38*	-.19	-.27*	-.36*	.10	-.08				
8 Sad	-.16	-.15	-.29*	-.38*	.16	.01	.80*			
9 Worried	-.30*	-.14	-.26	-.24	.06	-.03	.86*	.59*		
10 Guilty	-.24	.04	-.02	-.14	.24	.02	.76*	.55*	.62*	
11 Irritated	-.46*	-.28	-.26	-.34*	-.08	-.23	.77*	.43*	.55*	.35*

Note: *N* = 49

* *p* < .05

Table 15

Correlations of Feedback Value with Post-Feedback Mood for the Task Condition

Affective Variable	1	2	3	4	5	6	7	8	9	10
1 Feedback Value										
2 Total Happiness	.09									
3 Joy	.07	.87*								
4 Happy	.18	.82*	.62*							
5 Affectionate	-.17	.80*	.60*	.55*						
6 Proud	.25	.86*	.72*	.62*	.52*					
7 Total Sadness	.07	-.33*	-.34*	-.38*	-.17	-.24				
8 Sad	.09	-.15	-.08	-.27	-.01	-.16	.64*			
9 Worried	.23	-.13	-.20	-.07	-.20	.00	.69*	.32*		
10 Guilty	-.05	-.14	-.21	-.23	.05	-.11	.66*	.23*	.27	
11 Irritated	-.06	-.43*	-.41*	-.46*	-.24	-.36*	.81*	.33*	.33*	.49*

Note: $N = 46$

* $p < .05$

147

Table 16

Preference to Receive Negative Feedback

Ranking	Source					
	Boss: Face-to-Face	the Work	Boss: Phone	Boss: E-mail	Peer/Co-worker	Subordinate
1	50%	17%	3%	7%	19%	5%
2	16%	22%	26%	10%	17%	8%
3	9%	19%	27%	22%	11%	12%
4	5%	19%	23%	27%	13%	14%
5	7%	13%	19%	17%	29%	15%
6	14%	10%	3%	16%	11%	45%
1 or 2	66%	39%	28%	17%	36%	13%
2 or 3	25%	41%	52%	33%	29%	20%
3 or 4	14%	38%	50%	49%	24%	26%
4 or 5	12%	31%	42%	44%	42%	30%
5 or 6	21%	23%	21%	33%	40%	61%

N = 183

Table 17

Preference for Subordinates to Receive Negative Feedback

Ranking	Boss: Face-to-Face	the Work	Boss: Phone	Boss: E-mail	Peer/Co-worker	Subordinate
1	68%	15%	1%	8%	4%	4%
2	14%	24%	37%	11%	11%	3%
3	7%	16%	28%	29%	14%	7%
4	2%	25%	18%	26%	14%	15%
5	2%	11%	16%	12%	42%	16%
6	8%	8%	1%	14%	15%	55%
1 or 2	82%	39%	38%	18%	15%	7%
2 or 3	21%	41%	64%	40%	24%	10%
3 or 4	9%	42%	45%	55%	28%	22%
4 or 5	3%	37%	34%	38%	56%	31%
5 or 6	9%	19%	17%	26%	57%	71%

N = 185

Appendix A

4-Block Map
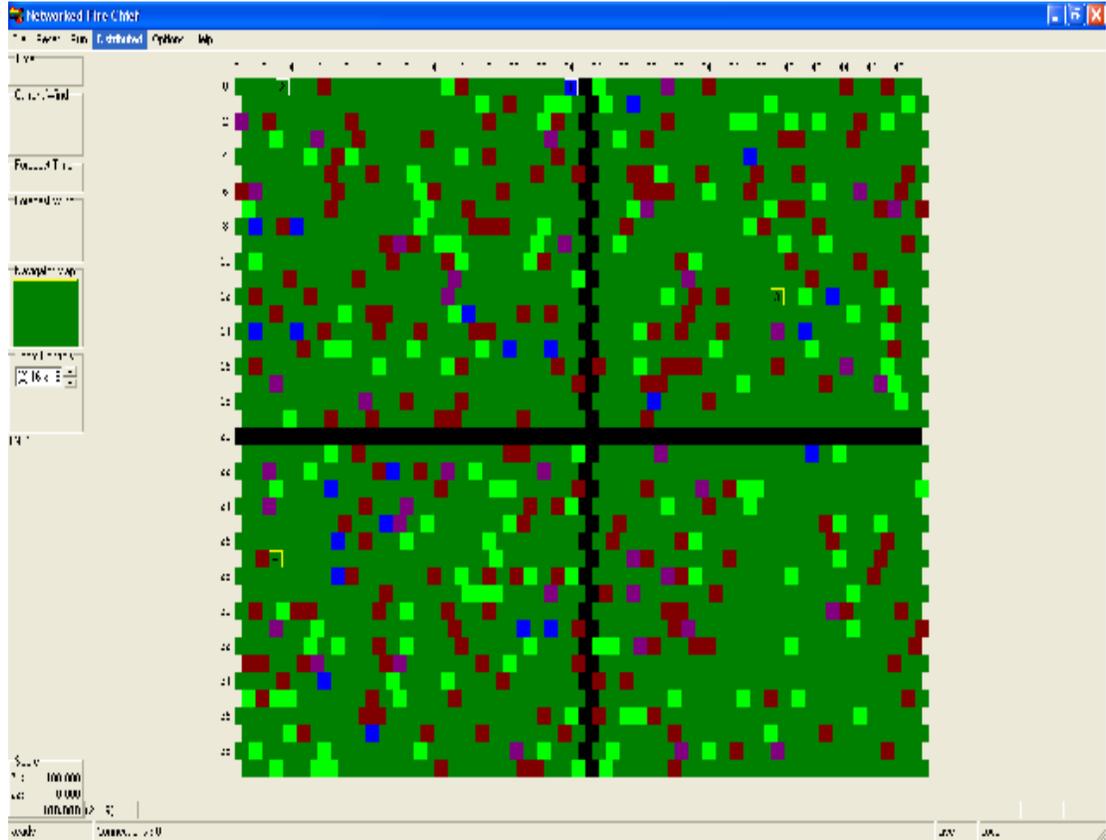
Appendix B

Individual Sector Map
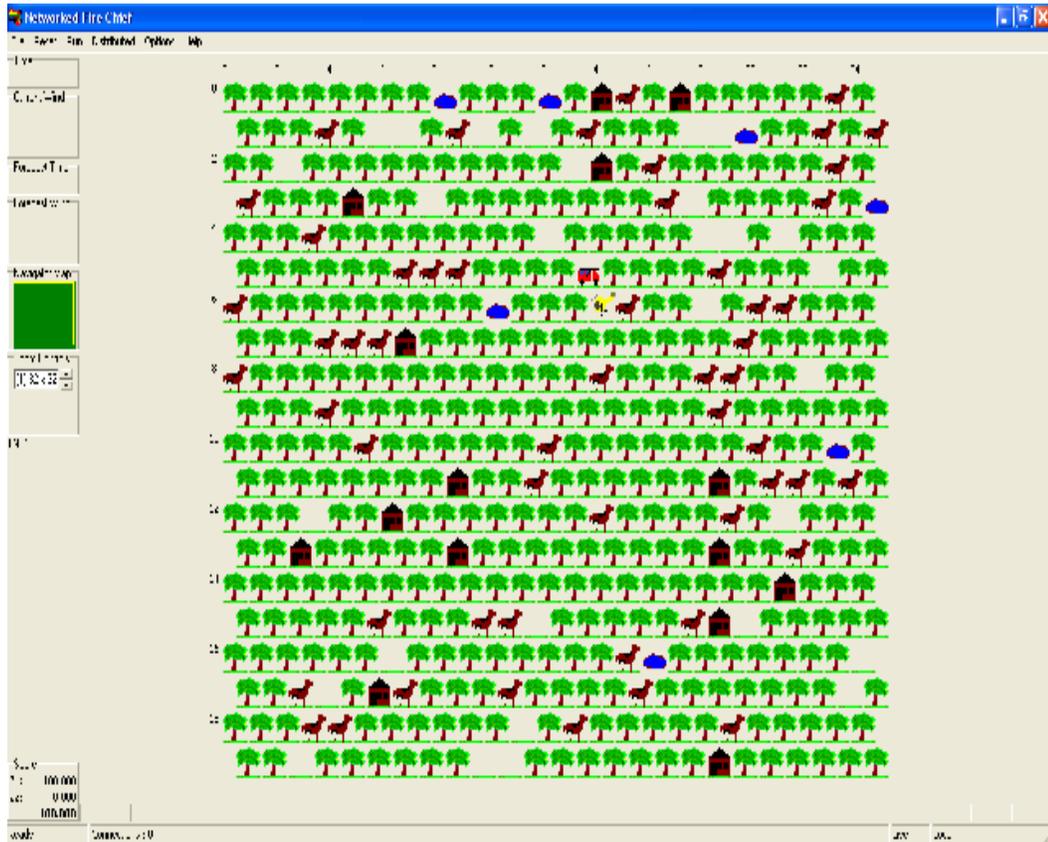
Appendix C

Directions
(Read by Participants)

Instructions:

You are playing the role of a Fire Chief. You are responsible for protecting the lives and property of those in your sector. As fires randomly generate, you are able to move vehicles around in your individual sector. A red boundary separates your sectors from those of the other Fire Chiefs. Do not cross beyond the red line.

To protect and conserve these resources, you have at your disposal two fire-fighting vehicles, both able to extinguish approximately 5 fires before needing to refuel. They are:

One helicopter – This is your fastest moving vehicle and is capable of fighting larger fires.

One fire truck – This is slower than your helicopter and is capable of fighting smaller fires than the helicopter. The fire truck is also capable of treating resources. Treating a resource protects it from catching fire. **DO NOT TREAT HOUSES**; this will burn the house.

Operating Directions

To <u>Move</u> the vehicle: **Click + Drag**

To put out <u>one fire at a time</u>: When the vehicle has come to a ***complete stop***, place the mouse over the vehicle and **Click the LEFT mouse button**.

To <u>Auto Extinguish</u>: When the vehicle has come to a ***complete stop***, place the mouse over the vehicle and **Click the RIGHT mouse button**. The vehicle will continue to put out adjacent fires until it runs out of water. It will fight fires of most value first. **Once the vehicle is in auto fight mode, it will not stop until it runs out of adjacent fires or water.**
Fire Truck Only:
To **Treat** an area: Press **Control** then **Click + Drag**. Treating an area stops a fire from burning there. The fire truck will treat **a straight line** between where the truck starts and where you placed it to end**. You cannot take it out of this mode until it has completed the line of treatment**. Use this tool to protect areas of high value. **DO NOT TREAT HOUSES**. Treating houses will set them on fire. Also, you cannot treat landscape while it is burning.

* To refill your vehicles with water, you must move them over a body of water.
** Both vehicles **CAN** be in motion at the same time. You **DO NOT** have to wait for one to stop before moving the other.

You will be evaluated based on how many resources you have unburned at the end of each session.

The resources are valued as:
1.) Houses   15 points
2.) Animals   3 points
3.) Forest   2 points
4.) Grass   1 point

*** Those who meet the goal at the end of the 2nd trial will be entered into a cash drawing!!

Appendix D

Pilot Survey

Please circle your response for the option that best matches your answer to the following questions and reply to 'age' in years.

1. Classification
   a. Freshman
   b. Sophomore
   c. Junior
   d. Senior
   e. 5th year senior
   f. Other

2. Age _____

3. Gender
   a. Male
   b. Female

4. Race
   a. Black/African American
   b. White
   c. Hispanic
   d. Asian
   e. Native American
   f. Other

5. How much experience do you have with modern video games
   a. Much experience
   b. Some experience
   c. Little experience
   d. No experience

6. How much experience do you have with modern PC games
   a. Much experience
   b. Some experience
   c. Little experience
   d. No experience

Please use the space below to add any comments about the instructions or the task itself:

Appendix E

Pre- & Post-feedback Mood

Using the following scale, please mark the degree to which you are feeling each of the following emotions:

0 = Not at All to **6 = Maximum Intensity**

1. Joyful _____

2. Happy _____

3. Affectionate _____

4. Proud _____

5. Sad _____

6. Worried _____

7. Guilty _____

8. Irritated _____

Appendix F

No Feedback Fire Chief Survey

Please circle your response to the option that best matches your answer to the following questions and reply to 'age' in years.

I. How do you expect to perform on this task?
    a. Far exceed the goal
    b. Exceed the goal
    c. Meet the goal
    d. Fall below the goal
    e. Fall far below the goal

1. Classification
    a. Freshman
    b. Sophomore
    c. Junior
    d. Senior
    e. 5th year senior
    f. Other

2. Age _____

3. Gender
    a. Male
    b. Female

4. Race
    a. Black/African American
    b. White
    c. Hispanic
    d. Asian
    e. Native American
    f. Other

5. How much experience do you have with modern video games?
    a. Much experience
    b. Little experience
    c. Some experience
    d. No experience

6. How much experience do you have with computer games?
    a. Much experience
    b. Little experience
    c. Some experience

d. No experience

7. After the 1st Trial, how do you feel you performed?
   a. Far exceeded the goal
   b. Met the goal
   c. Fell below the goal
   d. Fell far below the goal

8. After the 2nd Trial, how do you feel you performed?
   a. Far exceeded the goal
   b. Exceeded the goal
   c. Met the goal
   d. Fell below the goal
   e. Fell far below the goal

9. Generally speaking, what are your feelings toward GIVING *negative* feedback?
   a. Dislike it very much
   b. Dislike it somewhat
   c. Neutral
   d. Like it somewhat
   e. Like it very much

10. Generally speaking, what are your feelings toward GIVING *positive* feedback?
    a. Dislike it very much
    b. Dislike it somewhat
    c. Neutral
    d. Like it somewhat
    e. Like it very much

11. Generally speaking, what are your feelings toward RECEIVING *negative* feedback?
    a. Dislike it very much
    b. Dislike it somewhat
    c. Neutral
    d. Like it somewhat
    e. Like it very much

12. Generally speaking, what are your feelings toward RECEIVING *positive* feedback?
    a. Dislike it very much
    b. Dislike it somewhat
    c. Neutral
    d. Like it somewhat
    e. Like it very much

13. Please rank order how you would prefer to receive negative feedback: 1 = Most Preferred; 6 = Least Preferred
    _____ Directly from your work

_____ From your boss (face-to-face)
_____ From your boss via e-mail
_____ From your boss via telephone
_____ From a co-worker or peer
_____ From someone who reports to you (your subordinate)

14. Please rank order how you would prefer for someone who reports to you to receive negative feedback: 1 = Most Preferred; 6 = Least Preferred
_____ Directly from their work
_____ From you (face-to-face)
_____ From you via e-mail
_____ From you via telephone
_____ From a co-worker or peer
_____ From someone who reports to them (their subordinate)

15. Please rate the following sources on ACCURACY: 1 = Most Accurate; 6 = Least Accurate
_____ Feedback from the work
_____ Face-to-face feedback from a boss
_____ Feedback from a boss over e-mail
_____ Feedback from a boss over the telephone
_____ Feedback from a co-worker or peer
_____ Feedback from someone who reports to you

16. Please rate the following sources on CREDIBILITY: 1 = Most Credible; 6 = Least Credible
_____ Feedback from the work
_____ Face-to-face feedback from a boss
_____ Feedback from a boss over e-mail
_____ Feedback from a boss over the telephone
_____ Feedback from a co-worker or peer
_____ Feedback from someone who reports to you

17. Please rate the following sources on OBJECTIVITY: (Objectivity is the extent to which information is based on verifiable facts rather than opinion) 1 = Most Objective; 6 = Least Objective
_____ Feedback from the work
_____ Face-to-face feedback from a boss
_____ Feedback from a boss over e-mail
_____ Feedback from a boss over the telephone
_____ Feedback from a co-worker or peer
_____ Feedback from someone who reports to you

Please respond to the following statement by circling the phrase that best matches your feelings:

I was motivated by:

18. the prize
    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree

19. being the best of my group
    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree

20. not looking bad
    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree

21. doing my best
    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree

22. not being the worst
    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree

23. pride
    a. Strongly Agree
    a. Agree
    c. Neutral
    a. Disagree
    b. Strongly Disagree

24. making the experimenter happy
    a. Strongly Agree

b. Agree
b. Neutral
c. Disagree
d. Strongly Disagree

Appendix G

Feedback Effectiveness Survey

Please circle your response to the option that best matches your answer to the following questions and reply to 'age' in years.

Are you color blind?
    Yes
    No

I. How do you expect to perform on this task?
    a. Far exceed the goal
    b. Exceed the goal
    c. Meet the goal
    d. Fall below the goal
    e. Fall far below the goal

1. Classification
    a. Freshman
    b. Sophomore
    c. Junior
    d. Senior
    e. 5th year senior
    f. Other

2. Age _____

3. Gender
    a. Male
    b. Female

4. Race
    a. Black/African American
    b. White
    c. Hispanic
    d. Asian
    e. Native American
    f. Other

5. How much experience do you have with modern video games?
    a. Much experience
    b. Little experience
    c. Some experience
    d. No experience

6. How much experience do you have with computer games?
   a. Much experience
   b. Little experience
   c. Some experience
   d. No experience

7. After the 1st Trial, how do you feel you performed?
   a. Far exceeded the goal
   b. Exceeded the goal
   c. Met the goal
   d. Fell below the goal
   e. Fell far below the goal

8. After the 2nd Trial, how do you feel you performed?
   a. Far exceeded the goal
   b. Exceeded the goal
   c. Met the goal
   d. Fell below the goal
   e. Fell far below the goal

9. Regarding your performance, how beneficial was the feedback you received?
   a. Very Beneficial
   b. Somewhat Beneficial
   c. Neutral
   d. Somewhat Negative
   e. Very Negative

10. How credible was the feedback you received?
    a. Very Credible
    b. Somewhat Credible
    c. Not Very Credible

11. How objective was the feedback you received? (Objectivity is the extent to which the information is based on verifiable facts rather than opinion)
    c. Very Objective
    d. Somewhat Objective
    e. Not Very Objective

12. Generally speaking, the feedback you received was:
    a. Very Positive
    b. Positive
    c. Neutral
    d. Negative
    e. Very Negative

13. Generally speaking, what are your feelings toward GIVING *negative* feedback?

a. Dislike it very much
b. Dislike it somewhat
c. Neutral
d. Like it somewhat
e. Like it very much

14. Generally speaking, what are your feelings toward GIVING *positive* feedback?
    a. Dislike it very much
    b. Dislike it somewhat
    c. Neutral
    d. Like it somewhat
    e. Like it very much

15. Generally speaking, what are your feelings toward RECEIVING *negative* feedback?
    a. Dislike it very much
    b. Dislike it somewhat
    c. Neutral
    d. Like it somewhat
    e. Like it very much

17. Generally speaking, what are your feelings toward RECEIVING *positive* feedback?
    a. Dislike it very much
    b. Dislike it somewhat
    c. Neutral
    d. Like it somewhat
    e. Like it very much

18. For each feeling and emotion below, please circle the level along the continuum representing your feelings regarding the feedback you received during the break.

1	2	3	4	5
It made me feel good		Neutral	It made me feel bad	

....

1	2	3	4	5
It made my Supervisor feel good		Neutral	It made my Supervisor feel bad	

....

1	2	3	4	5
It was comfortable uncomfortable for my Supervisor Supervisor		Neutral	It was for my	

....

1	2	3	4	5
It was comfortable for me		Neutral	It was uncomfortable for me	

....
| 1 | 2 | 3 | 4 | 5 |

It was good for my
performance
                            Neutral   It was bad for my
performance

....
| 1 | 2 | 3 | 4 | 5 |

It reflected positively
poorly
   on me   Neutral   It reflected

on me

....
| 1 | 2 | 3 | 4 | 5 |

It reflected positively
poorly
on my Supervisor   Neutral   It reflected

on my Supervisor

....
| 1 | 2 | 3 | 4 | 5 |

My Supervisor
 was encouraged   Neutral   My Supervisor
discouraged   was

....
| 1 | 2 | 3 | 4 | 5 |

I was encouraged   Neutral   I was discouraged

....
| 1 | 2 | 3 | 4 | 5 |

My Supervisor
 was inspired   Neutral   My Supervisor
was uninspired

....
| 1 | 2 | 3 | 4 | 5 |

I was inspired   Neutral   I was uninspired

....
| 1 | 2 | 3 | 4 | 5 |

I was motivated   Neutral   I was
unmotivated

....
| 1 | 2 | 3 | 4 | 5 |

My Supervisor
 felt proud   Neutral   My Supervisor
felt embarrassed

....
| 1 | 2 | 3 | 4 | 5 |

I felt proud   Neutral   I felt embarrassed

....
| 1 | 2 | 3 | 4 | 5 |

My Supervisor
 felt uplifted   Neutral   My Supervisor
felt depressed

....
| 1 | 2 | 3 | 4 | 5 |

I felt uplifted		Neutral		I felt depressed
....				
1	2	3	4	5
I felt productive		Neutral		I felt unproductive
....				
1	2	3	4	5
My Supervisor felt good for me		Neutral		My Supervisor felt bad for me
....				
1	2	3	4	5
I felt good for me		Neutral		I felt bad for me
....				
1	2	3	4	5
I felt good for my Supervisor		Neutral		I felt bad for my Supervisor

19. Please rank order how you would prefer to receive negative feedback: 1 = Most Preferred; 6 = Least Preferred
    _____ Directly from your work
    _____ From your boss (face-to-face)
    _____ From your boss via e-mail
    _____ From your boss via telephone
    _____ From a co-worker or peer
    _____ From someone who reports to you (your subordinate)

20. Please rank order how you would prefer for someone who reports to you to receive negative feedback: 1 = Most Preferred; 6 = Least Preferred
    _____ Directly from their work
    _____ From you (face-to-face)
    _____ From you via e-mail
    _____ From you via telephone
    _____ From a co-worker or peer
    _____ From someone who reports to them (their subordinate)

21. Please rank the following sources on ACCURACY: 1 = Most Accurate; 6 = Least Accurate
    _____ Feedback from the work
    _____ Face-to-face feedback from a boss
    _____ Feedback from a boss over e-mail
    _____ Feedback from a boss over the telephone
    _____ Feedback from a co-worker or peer
    _____ Feedback from someone who reports to you

22. Please rank the following sources on CREDIBILITY: 1 = Most Credible; 6 = Least Credible

    ____ Feedback from the work
    ____ Face-to-face feedback from a boss
    ____ Feedback from a boss over e-mail
    ____ Feedback from a boss over the telephone
    ____ Feedback from a co-worker or peer
    ____ Feedback from someone who reports to you

23. Please rank the following sources on OBJECTIVITY: (Objectivity is the extent to which information is based on verifiable facts rather than opinion) 1 = Most Objective; 6 = Least Objective
    ____ Feedback from the work
    ____ Face-to-face feedback from a boss
    ____ Feedback from a boss over e-mail
    ____ Feedback from a boss over the telephone
    ____ Feedback from a co-worker or peer
    ____ Feedback from someone who reports to you

Please circle the response that best matches your level of agreement to the following statements.

24. The feedback I received was a true reflection of my performance.
    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree

After the feedback, I was motivated by:

25. the prize
    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree

26. being the best of my group
    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree

27. not looking bad
    a. Strongly Agree
    b. Agree

    c. Neutral
    d. Disagree
    e. Strongly Disagree

28. helping my leader win
    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree

29. doing my best
    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree

30. not being the worst
    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree

31. pride
    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree

32. making my leader happy
    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree

33. making the experimenter happy
    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree

Appendix H

Debriefing

Thank you for participating in this study. The purpose of this study was to examine the effects of different sources of feedback on motivation, performance, and emotion. You happened to be in the Task/Interpersonal/Affective/No Feedback Condition. Task: When you were asked to look at your score under the paper during the break, you were receiving a form of task feedback. This is information received directly from the computer. Interpersonal: When the Supervisor came around during the break and told you your score, he was providing you with a form of interpersonal feedback. Affective: When the Supervisor came around during the break and told you your score, he was providing you with a form of interpersonal feedback. He also included an emotional component that was intended to make you feel either good or bad. No Feedback: You guys happened to be in the no feedback condition. This is why you did not receive any information regarding your performance.

The goal was intended to be a little challenging so that not everyone makes it. We did have 0/1/2/3/4 of you make it, congratulations. I will let you know if you were selected for the drawing within a few weeks. Do any of you have any questions for me?

You are finished with the study. Thank you again and have a great day/evening.

Appendix I

Introductory Instructions

(Read to Participants)

Thank you for your participation. In this study, you will be participating in a computer simulation involving putting out fires as they develop. You will play the role of the fire chief for your district and I am your supervisor. As you encounter a fire, you will need to put it out as quickly as possible. You have access to a water truck and helicopter to assist you. You will be given 10 minutes to practice and become familiar with the tools. After your initial practice session, you will engage in two additional seven-minute fire-fighting sessions. There will be brief pauses at two and four minutes. At this time, I will be getting your information off of the computer. After the first seven minute trial, you will have a brief break. You will then continue with a second seven-minute session.

You have been provided with some goals. These goals were set based on research done on Kansas State students. If you reach these goals by the end of the second session, you will be placed in a drawing for $200. These goals have been posted on each of the walls to serve as a reminder. Even though there are four of you here at the same time, you will be working individually. Your score does not affect the score of others. My performance, though, is based on your individual performance.

Throughout the entire study, we ask that you not talk to each other. It is very important that you do not share information, discuss your performance, or look at the performance of others as it could affect the results of the study. Are there any questions?