DISSERTATION

EFFECTS OF FEEDBACK FORMAT ON SELF-EFFICACY AND SUBSEQUENT PERFORMANCE: A COMPARISON OF ATTRIBUTE-BASED AND SITUATION-BASED DEVELOPMENTAL FEEDBACK

Submitted by

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In partial fulfillment of the requirements

For the degree of Doctor of Philosophy

Colorado State University

Fort Collins, Colorado

Fall, 2000

COLORADO STATE UNIVERSITY

October 25, 2000

WE HEREBY RECOMMEND THAT THE DISSERTATION PREPARED UNDER OUR SUPERVISION BY SUZANNE LARSH ENTITLED EFFECTS OF FEEDBACK FORMAT ON SELF-EFFICACY AND SUBSEQUENT PERFORMANCE: A COMPARISON OF ATTRIBUTE-BASED AND SITUATION-BASED DEVELOPMENTAL FEEDBACK BE ACCEPTYED AS FULFILLING IN PART REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

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ABSTRACT OF DISSERTATION

EFFECTS OF FEEDBACK FORMAT ON SELF-EFFICACY AND SUBSEQUENT PERFORMANCE: A COMPARISON OF ATTRIBUTE-BASED AND SITUATION-BASED DEVELOPMENTAL FEEDBACK

This study investigated changes in self-efficacy to perform in a managerial assessment center as reported by 80 undergraduate management students after receiving either attribute-based or situation-based performance feedback. Changes in subsequent performance were also studied. Explorations of the moderating influence of pre-assessment self-efficacy on the relationship between feedback format and post-feedback self-efficacy, and the mediating influence of self-efficacy in the relationship between feedback format and subsequent performance were also conducted. Self-efficacy measured just prior to the assessment exercises was found to be positively correlated with performance, $r = .20$ and $r = .25$ in the first and second assessment centers, respectively. Subjects in the situation-based and in the attribute-based feedback conditions experienced increases in performance, $t\ (39) = -2.81$ and $- 2.78$, $p < .05$; and although the situation-based feedback group performed significantly better than the attribute-based group in the second assessment center, $t\ (78) = - 2.15$, $p < .05$), this difference was due to group differences in initial performance. When differences in initial performances were controlled for, the relationship of feedback format

to performance was not mediated by post-feedback self-efficacy. Pre-assessment self-efficacy did not moderate the relationship between feedback-format and post-feedback self-efficacy. Situation-based feedback recipients showed significant changes in self-efficacy after receiving feedback while subjects in the attribute condition did not. Practical implications for employee performance evaluations are discussed, as are future research directions.

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ACKNOWLEDGEMENTS

I would like to extend my thanks to Dr. George C. Thornton, III for his guidance throughout this project, as well as to Dr. Russell Cropanzano for serving as a graduate committee member. Dr. Paul Bell, Dr. Vicki Kaman, and Dr. Raymond Hogler all served as committee members; additional thanks are extended to Dr. Kaman and to Dr. Hogler for their service as graduate committee members and for providing access to their undergraduate students as subjects.

I would also like to thank the following research assistants for their dedication and hard work on the project: Laura Bishop, Susan Blackburn, Johnna Brammer, Jennifer Coulter, Kim Dazey, Cass Dunlap, John Ford, Jamie Geppert, April Hepner, Kimberly Lucas, Allison Matthews, Wendy Morgan, Alissa Navarro, Hilarie O'Kane, Jeff Olofson, Carrie Pressett, Kelly Price, Zack Shipley and Chad Thompson. Thanks to the following actors for their enthusiasm and commitment: Matt Bustamonte, Denis Casey, Dawn Charles, Whitney Fuller, Lane Herron, Lea Hutcheson, Dani Mullins, Katie Pinson and Tara Sikora. Additional thanks to Rose Hanson and Robyn Gentry for their expert advice and assistance.

Special thanks to my family and friends for their continual encouragement and support.

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CHAPTER I

Introduction

While many (Prichard, Jones, Roth, Stuebing, & Ekeberg, 1998) would assert that feedback has positive effects on subsequent performance, other research (Kluger & DiNisi, 1996) has clearly demonstrated that feedback interventions including performance appraisal, developmental feedback, training interventions, and knowledge of results have inconsistent effects on subsequent performance. Efforts to understand the feedback-performance relationship and to maximize the positive potential of feedback interventions have focused on the effects of goal-setting and motivation on feedback outcomes. However, little research has examined the effects of feedback format on reactions to feedback interventions and subsequent performance. The current study proposes a situation-based feedback presentation format as an alternative to traditional attribute-based feedback presentation.

The relationship of feedback format to subsequent performance may be a function of individuals' self-efficacy beliefs. Research has demonstrated that individuals who perceive themselves as efficacious initiate coping behaviors, expend task-related effort, and sustain effort despite setbacks (Bandura, 1977). Self-efficacy is related to such work-performance measures as coping with career-related events (Stumpf, Brief, & Hartman, 1987), managerial performance (Wood, Bandura, & Bailey, 1990), and skill acquisition (Mitchell, Hopper, Daniels, George-Falvy, & James, 1994), among others. Despite this research demonstrating the link between self-efficacy and performance, no study has investigated the relationship between feedback format and self-efficacy. Two mechanisms are proposed which may account for the role of self-efficacy beliefs. Self-efficacy may act as a mediator or moderator

of the effects of feedback on performance. To explore if self-efficacy is a mediator, it is hypothesized that the situation-based format will positively affect self-efficacy, and that such feedback-induced self-efficacy increases will in turn enhance performance. By building on self-efficacy, cognitive, and feedback intervention research, this study attempts to enhance our understanding of the feedback-performance relationship by examining the influence of feedback format on self-efficacy.

This study also investigates the degree to which initial self-efficacy moderates the relationship between feedback format and post-feedback self-efficacy. The strength of initial or pre-feedback self-efficacy may greatly attenuate the effects of feedback format on post-feedback self-efficacy levels.

First, this paper reviews the relevant feedback intervention literature and the issue of inconsistent effects of feedback interventions on future performance. Second, the literature regarding the effects of self-efficacy on work-related performance is reviewed. Third, the practice of using trait- or attribute-based feedback interventions is described and the effects of an alternative to attribute-based feedback format on self-efficacy and performance is discussed. Fourth, an empirical study is presented that compares the moderating influence of pre-treatment self-efficacy on the relationship between feedback format and post-treatment self-efficacy, and the mediating relationship of self-efficacy on the feedback format— performance relationship. Lastly, the implications of these findings for feedback interventions are discussed.

Effects of Feedback Interventions

In contrast to the well-documented relationship between self-efficacy and work-related performance, the connection between feedback interventions and performance is more mixed. A discussion about the effects of feedback interventions can only begin by

recognizing that, despite the good intentions of organizations, feedback interventions do not always result in better performance. Inconsistencies in the effect of feedback interventions have frequently been noted, but often ignored. As early as 1905 Judd (as cited in Kluger & DiNisi, 1996) found that knowledge of results, following practice without knowledge of results, actually increased performance errors immediately following the manipulation. Inconsistent results were found by Waters (as cited in Kluger & DiNisi, 1996), reporting that knowledge of results increased performance in a time estimation task, but made no difference in a distance estimation task. Deputy and Ross (as cited in Kluger & DiNisi, 1996) found that knowledge of classroom progress did not affect motivation. And while Mace (1935) summarized that knowledge of previous performance may decrease improvement, many others studies (Brown, 1932; Crafts & Gilbert, 1935; Elwell & Grindley 1938-1939; Manzer, 1935) did not find consistently positive effects, and either minimized the less positive findings in their results or never mentioned inconsistencies. More recently, Ammons' (1956) influential summary of knowledge of performance and knowledge of results studies concluded that knowledge of performance increases learning and motivation, and that knowledge of results affects motivation. He further stated that when there is knowledge of performance, learning is almost universally enhanced. These statements were made without mention of reports such as Pressy's (1950) conclusion that feedback interventions decreased learning of Russian vocabulary, or Crafts and Gilbert's (1935) similar variable results.

These conclusions had a great impact on how future researchers viewed the utility of feedback interventions. Most continued to believe that feedback interventions improved performance (Ashford & Cummings, 1993) or made statements such as "the positive effect

of feedback interventions on performance has become one of the most accepted principles in psychology" (Prichard, Jones, Roth, Stuebing, & Ekeberg, 1998).

Current meta-analytic evidence exploring the feedback-performance relationship also shows variable results of feedback interventions. Harris and Rosenthal (1985) reported that the amount of feedback has a limited effect on performance (r= .07) and Fried and Ferris (1987) found the perceived knowledge of results had only a weak relationship with performance (r= .09). Kluger and DiNisi (1996) found that feedback interventions decreased performance in over 1/3 of the published reports included in their meta-analysis. Their findings could not be explained by sampling error or by feedback sign (positive or negative).

These mixed findings suggest that there may be some moderating or mediating variable that explains the connection between feedback and subsequent performance. Self-efficacy beliefs may be the variable linking feedback interventions and subsequent work-related performance.

Self-efficacy and Work-related Performance

Unless people believe they can produce desired effects by their actions, they have little incentive to act (Bandura, 1997). Perceived self-efficacy refers to beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments. This efficacy belief affects motivation level, affective states, and actions. Such beliefs influence the actions people choose to pursue, how much effort they put forth, how long they persevere in the face of difficulties, whether thought patterns are self-hindering or self-aiding, how much stress and depression they experience, and the level of accomplishments they attain. In addition to the diverse effects of beliefs of personal efficacy on interpersonal relationships and on biological and mental health, self-efficacious beliefs

have a profound effect on workplace behavior. People who judge themselves as more efficacious in coping with an activity confront challenges, persist despite setbacks, and are less anxious when threatened. Thus they are more able to execute behaviors that foster success (Cervone & Scott, 1995). People with a stronger sense of self-efficacy set higher goals (Bandura & Cervone, 1986; Earley & Lituchy, 1991) and remain more committed to achieving them. These higher goals contribute positively to performance on both effort-based and cognitively complex tasks (Bandura & Cervone, 1986; Earley & Lituchy, 1991; Wood & Bandura, 1989). In a recent meta-analysis of the relationship of self-efficacy and work-related performance, Stajkovic and Luthans (1998) found a significant weighted average correlation of $G(r_+) = .38$ between perceived self-efficacy and work-related outcomes.

In the current study self-efficacy was expected to be a predictor of performance. Thus, confirmation of the self-efficacy— performance relationship was expected, leading to the first two hypotheses:

H1a: Participants' performance in the first assessment center will be positively correlated with their pre-assessment self-efficacy.

H1b: Participants' performance in a second assessment center will be positively correlated with their post-feedback self-efficacy (self-efficacy reported after receiving feedback after the first assessment center).

Feedback Intervention Theory

Kluger and DiNisi (1996) propose a feedback intervention theory to explain the discrepant effects of feedback on performance. Their theory is comprised of five interdependent arguments: (1) behavior is regulated by comparisons of feedback to goals or standards; (2) goals or standards are organized hierarchically; (3) attention is limited and therefore only feedback-standard gaps that receive attention actively participate in behavior regulation; (4) attention is normally directed to a moderate level of the hierarchy; and (5) feedback interventions change the locus of attention and therefore affect behavior. The first argument assumes that behavior is regulated through feedback-standard comparisons and the reduction of discrepancies between goals and performance. This argument is primarily based upon Goal Setting Theory (Latham & Locke, 1991) and Control Theory (Carver & Scheier, 1981) which explain some of the reactions to feedback, but fail to address the problems of multiple standards, detrimental feedback intervention effects of learning, or the effects of feedback intervention-induced affect. The second argument provided by Action Identification Theory (Vallacher & Wagner, 1987) proposed that people think about their actions at various levels of meaning, from a lower task level to a higher self-related level. A research technician may think about a routine task as "filling a test tube" and also as "furthering my scientific career." The third argument assumes that people have a limited attention capacity and tend to focus on one level of the hierarchy at a time. Argument four assumes that people normally direct attention to a moderate level of the hierarchy, somewhere in between the lofty goals of the self and the detail of any single activity. People do not like to direct attention to the self (Wicklund, 1975); nor do normal activities require full attention to task details (Carver & Scheier, 1981). The fifth assumption-- a new argument added by Kluger and DiNisi-- suggests that feedback interventions receive

considerable attention because they have potentially serious implications for the self, and thus have the capacity to alter the locus of attention to one of three levels of linked processes involved in task performance regulation: meta-task processes which involve the self, task motivation processes involving the focal task, and task learning processes involving details of the focal task. Meta-task processes link the focal task to higher-order goals such as the implication of task performance for the self. These meta-task processes have considerable effects on performance, caused by increased attention to the self and lowered affect. Meta-task processes are differentiated from traditional feedback-intervention induced task related motivation and learning processes; they are instead non-task-related.

Feedback that directs the individual toward meta-task processes diverts attention from the task and instead focuses attention on the self, such as evaluations of how task performance may reflect on the self. Attention to the self is known to diminish performance on non-dominant tasks (Wicklund, 1975) such as those which are difficult to perform, complex, or unfamiliar -- all characteristics of the types of tasks managers face and which they are likely to receive feedback about. Both negative and positive feedback information has been implicated in shifting attention to the self. Negative feedback interventions increased self-focused cognition and debilitated performance on a task requiring many memory cues (Mikulincer, Glaubman, Ben-Artzi & Grossman, 1991), and praise increased self-attention but impaired the performance of a cognitively demanding task (Baumeister, Hutton, & Kenneth, 1990).

In addition to attention diversions from tasks to the self resulting from meta-task processes, cognitive resources that should be directed toward the task are instead used in attending to the self, and attention to the self may activate affective reactions (such as anxiety) which in turn influence how available resources are used. Even if the feedback

recipient is able to shift attention back down the hierarchy to task learning or motivation processes, performance may be affected by the previous attention to the self, cognitive resource depletion, or affective reactions which alter cognitive processing.

Cues provided by the feedback message will determine which level of the hierarchy receives the most attention. Cues that direct attention to meta-task processes shift attention toward goals of the self, and may debilitate performance. Koestner, Zuckerman, and Koestner (1987) found that when ego involvement was elicited from feedback, negative effects on intrinsic motivation and performance resulted, and feedback organized around personal attributes was found to decrease performance in a managerial assessment center (Larsh, 1996). Feedback interventions perceived as controlling were also found to reduce intrinsic motivation (Ryan, 1982). These feedback interventions, even when feedback sign was positive, attracted attention to negatively signed meta-task goals, such as self-protection. Disengagement from the task and subsequent performance decreases were the result. Feedback cues that direct attention to meta-task processes include those that threaten the self or that discourage or praise the person.

One of the purposes of the current study was to compare the effects of a traditional attribute-based feedback format which provides cues directing attention to the self (and consequently to meta-task processes) with situation-based feedback, which directs cognitive resources toward the task. Decreases in performance would be due to increased attention to the self under the traditional attribute-based feedback condition, while increases in performance would result from situation-based feedback, presumably because cognitive resources would remain focused on task requirements. Thus, hypotheses 2a through 2d were tested. A representation of the conceptual model can be found in Figure 1.

H2a: Participants receiving situation-based feedback will experience a significant increase in performance between the first and second assessment centers.

H2b: Participants receiving attribute-based feedback will experience a significant decrease in performance between the first and second assessment centers.

H2c: Performance in the second assessment center will be significantly greater for participants receiving situation-based feedback as compared to those receiving attribute-based feedback.

H2d: The relationship of feedback to performance in the second assessment center will be mediated by post-feedback self-efficacy.

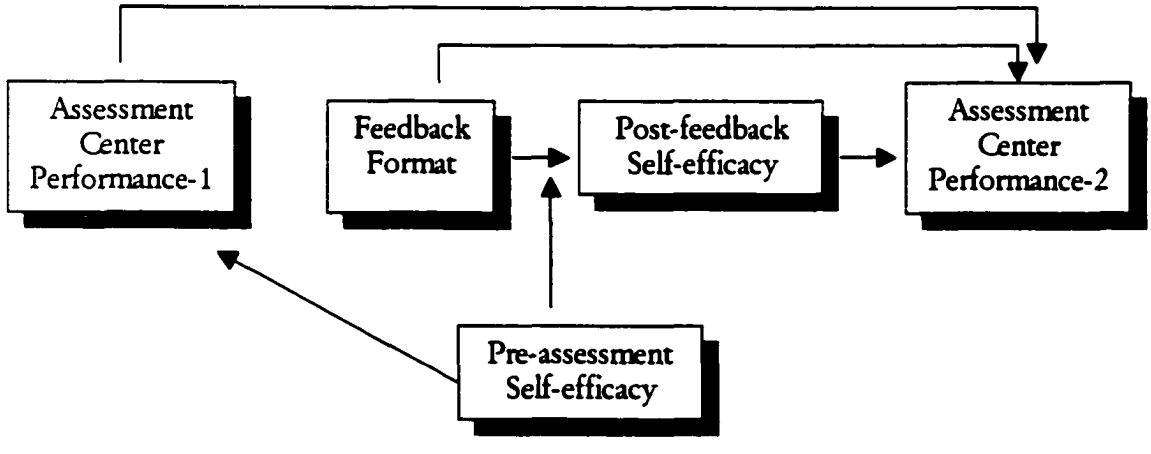

Figure 1 Conceptual model illustrating effects of feedback format and self-efficacy on performance

Characteristics of Feedback Interventions Resulting in Meta-task Processing

What aspects of feedback interventions direct attention to meta-task processes? The answer may lie in the way in which feedback information is communicated. The communication method or feedback format is not often specified in feedback intervention research or discussed in the professional literature. It is assumed that feedback is organized around personal attributes or skill categories thought to be important to successful work performance. This feedback information is then expressed in trait- or attribute-based terms, (e.g., Initiative, Leadership, Interpersonal Skills, Communication Skills).

However, one of the reasons for the variable relationship between feedback interventions and performance may be this attribute-based feedback terminology. Trait-laden terminology is likely to lead feedback recipients to focus on the self, rather than the tasks in which behavior was observed.

The focus of this research now turns to the question of how this commonly accepted methodology came about. The following discussion begins by exploring the history and practice of using personality trait based terminology. To illustrate, two important workplace feedback interventions are described: formal performance appraisals and developmental assessment centers. The discussion continues by explaining the differences between how actors and observers interpret behavior. The potential consequences of causal judgments made by attribute-based feedback recipients are described. Finally, an alternative to trait-based feedback is described.

Trait-based performance appraisal. Despite the evolution of behavioral and results-oriented methodologies, the more traditional attribute or "trait"-rating scales are still prevalent in the practice of performance appraisal (De Vries, Morrison, Shullman, & Gerlach, 1986). Such appraisal instruments categorize important work behaviors into such

dimensions as "Communications," "Interpersonal Relations," "Management," and "Planning, Organizing, and Coordinating."

Use of trait-based appraisal and development tools may be due to the availability of information contained in existing job descriptions. Often organizations have access to written job specifications or descriptions used for recruitment or selection purposes. These descriptions usually contain information about the knowledge, skills, and abilities necessary for job success. Since the information is readily available, it is relatively easy to translate job specifications into performance appraisal instruments with the trait-based characteristics of the job description transferred to the performance appraisal forms.

The prevalence of trait-based appraisal systems can also be traced from the historical use of rating forms based on trait psychology (Scott, Clothier, & Spriegel, 1941) through more current systems formalized due to the passage of the 1964 Civil Rights Act and the 1966 and 1970 Equal Employment Opportunity Commission guidelines for regulation of selection procedures and related employment practices. Judicial interpretations have held that job relatedness is the key element in demonstrating that employment practices (including performance appraisal) are related to successful job performance. When demonstrating the job relatedness of performance appraisal or other feedback interventions that may impact job status, job analysis data are used. Job analysis data for the purpose of performance appraisal or for determining the suitability of assessment center exercises is usually derived from job dimensions that describe jobs in terms of general constructs. Job dimensions are then (usually) described as worker traits necessary for successful job performance, or (less frequently) job tasks are described or critical incident data are used to define performance standards. However, even when a task-oriented approach is used the tasks are still organized under duty categories such as "Writing; keeping reports" or

"Recordkeeping." Subject matter experts group critical incidents, once collected, into clusters to form appraisal dimensions such as "Preparing for Duty."

Despite (or perhaps because of) all these good reasons for using trait-based terminology for organizing job-related performance categories, the value of using these same descriptive categories when communicating performance information to the employee has never been questioned. This practice, however, may contribute to the disappointing outcomes experienced by organizational performance feedback efforts.

Trait-based dimensions in assessment centers. The value of assessment centers as tools to help human resource managers perform such functions as personnel selection, placement, training and development, performance appraisal, and a variety of other functions lies in their ability to accurately diagnose individual strengths and weaknesses, and to predict overall potential. Fundamental to good prediction are the principles of reliability and validity. Assessment centers typically diagnose behaviors that are likely to remain relatively stable over time, and the assessment procedure must measure its targeted concepts in a way that will contribute relevant information to the decisions to be made. Such diagnosis requires clear and discrete measurements of separate characteristics (Wiggins, 1973).

In an assessment center context these characteristics are known as dimensions or attributes, and are defined as clusters of specific behaviors which can be observed with some consistency (Thornton & Byham, 1982). The dimensions or human attributes utilized in an assessment center can range from stable, consistent, and deeply ingrained traits, aptitudes, or values in an individual (e.g., Judgment) to more specific, changeable attributes such as skills or specialized knowledge (e.g., Sales Ability). Depending upon the purpose of the assessment center, attributes are selected which match the decision-making needs of the

organization. The broader, more consistent or global attributes such as "Judgment" and "Creativity" are used if selection is the goal; such attributes may be indicators of success in a wide range of managerial functions, for example. Attributes such as "Knowledge of Safety Regulations" or "Crane Operation" relevant to a specific job such as fire fighter, may be used in a skills analysis center. A set of attributes in the middle of the specificity continuum are known as competencies (Fleishman & Quaintance, 1984). These attributes are relatively stable over time, may be learned or amenable to training, and apply to a well-defined area of work, but are not as specific as skills. Examples such as "Leadership," "Oral Communication," or "Tenacity" may be conceptualized as specific techniques or as general abilities. The popularity of such attributes which are mid-way on the continuum of specificity and stability is due in part to this conceptual flexibility. In fact, Hampson, John, and Goldberg (1986), in their research concerning the level of abstraction of dimensions, found that the broad levels ("Creativity") are too abstract for most purposes, and the most precise level ("Crane Operation") too specific. The middle level (involving concepts such as "Energy Level," "Sociability," and "Assertiveness") seemed to be the most useful, and assessment center dimensions used tend to fall into this middle level of abstraction. Use of these mid-continuum attributes may also be due, in part, to the inability of assessors to distinguish between more than five to seven dimensions (Gaugler & Thornton, 1989), therefore eliminating the use of a greater number of more precise attributes. Assessment center feedback is thus arranged around a fairly low number of general personal attributes.

These trait (i.e., attribute) observations in an assessment setting have been found to promote a strong evaluative connotation (Hoffman, Mischel, & Mazze, 1991), and thus may lead assessors to form overall evaluation of a given participant; the overall evaluation is then used to make trait inferences (Wyer & Gordon, 1984). Such inferences are useful if

information is to be used for selection or promotion purposes. Stable indications of candidates' potential to learn job relevant duties (general problem solving skills and interpersonal relations) are necessary, and specific results need not be (and usually are not) communicated to the applicant. However, in a diagnostic or developmental situation, in which most feedback interventions take place, the goal or purpose is to identify those managerial skills in need of improvement that can be changed by appropriate training. Such information *is* communicated to the participant, in the same trait- or attribute-based format used to categorize behaviors.

Differences in cognitive processes and behavioral attribution of observers and actors. The research relating to cognitive processes adds supporting information to the historical bases for using trait-based feedback terminology. In their studies of cognitive-based information processing Feldman (1981) and Ilgen and Feldman (1983) have noted the tendency of raters to categorize a multitude of performance-related information into dimensions. Raters simplify the overwhelming quantity of performance observation information by categorizing it into dimensions that represent in relatively simple form the complexity of the behavior that was actually observed. When work-related information about the ratee is to be recalled, often the category is brought up rather than specific behavior. Ilgen and Feldman are primarily concerned with "naturally" occurring categories (e.g., hardworking, slacking off), but this tendency to categorize is augmented by pre-fabricated appraisal forms that have work factors or dimensions already provided.

Individuals (also known as "actors" in an observer-active participant dyad), however, tend not to categorize their own behavior in such a way. This difference in how own behavior versus others' behavior is viewed is explained by the extensive work conducted in the area of attribution theory. Briefly, the preponderance of studies confirm that actors

(feedback recipients, in this case) tend to make more *situational* attributions about their own performance, especially negative performance, and observers of others' performance more *dispositional* ones (Jones & Regan, 1974). A person's positive behavior has potential for enhancement of self esteem if he or she is causally responsible for it. This motivation for self-enhancement results in a tendency toward self-attribution of positive behavior. Negative behavior, however, may have negative implications for self-regard unless causal responsibility can be attributed externally. This tendency serves a self-protective function. However, the self-protective tendency may be stronger than the self-enhancement one; generally, research supports the theory that own outcomes (compared to others' outcomes) are attributed more to situational factors regardless of whether the outcome was success or failure (Ender & Bohart, 1974; Ruble, Feldman, Higgins, Karlovac, 1979). Consequently, the tendency may be for supervisors/observers to consider trait or dispositional (internal) causes for behavior, while employees/actors are much more willing to consider situational causes for at least some of their work performance outcomes.

Other studies conducted within the attributional framework (Frieze, 1980; Weiner, 1986) examine how causal judgments affect performance. Three dimensions of outcome causality are identified: locus of the causes, outcome stability, and perceived controllability. Ability is regarded as a stable internal cause and task difficulty as a stable external cause; effort is thought of as an unstable internal cause and luck as an unstable external factor. Controllability refers to the extent to which outcomes are perceived to be under volitional control. Retrospective judgments of the causes of one's performance have motivational effects. People who credit their successes to personal capabilities and their failures to inadequate effort will undertake difficult tasks and persist in the face of difficulties; outcomes are influenceable by how much effort they expend. Conversely, those who ascribe

their failures to deficiencies in ability and their successes to situational factors will set lower goals and give up under adverse conditions; outcomes are viewed as contingent on ability. Under attribute-based feedback conditions, effective and ineffective behaviors are described as samples of the attribute under discussion. Individuals are told that they have shown some level of an ability like "Leadership," and even if training opportunities are offered to develop deficiencies in "Leadership" the employee is still cued to think of this attribute as something he or she has a certain amount of.

Anyone who has ever undergone a performance evaluation knows that the negative information is often more salient than the positive information. Even if the feedback recipient is showered with praise, the few comments about areas needing improvement will receive considerable attention. These "failures," when delivered in an attribute-based format, sound like judgments about inherent ability because the situation under which the behavior occurred is not taken into account. Acceptance of feedback is clearly influenced by the causal implications made; feedback information implying external causes has been rated more positively than information implying internal causes (Liden & Mitchell, 1985). Kluger and DiNisi (1996) theorize that feedback interventions changing the locus of attention from task learning or task motivation to meta-task processes (e.g., higher order goals, such as the evaluation of the implications of task performance for the self, including reflections on inherent ability or stable personality attributes) may contribute to the poor outcomes of many feedback interventions.

Another framework in which to view the contrasts between observers' and actors' attributions is to compare the similarities between observers' conceptions of behavior with the traditional trait approach to explaining personality coherence, and the actors' conceptions with the social-cognitive approach. Trait approaches (McCrae & Costa, 1996)

tend to account for personality coherence by using a "top-down" approach; seeking high-level personality constructs that organize diverse acts and systematize individual differences (e.g., conscientiousness; extraversion; agreeableness) (Cervone, 1997). Observers of others' actions, as described previously, tend to take the same approach. In contrast, social-cognitive approaches tend to use a more "bottom up" analytic strategy which concentrates upon causal processes and structures that seek to uncover the underlying mechanisms that produce the behavior in question. Actors use this approach when explaining their own behavior, tending to attribute behavior not to high-level personality characteristics (usually), but to other, underlying factors of the situation (e.g., difficulty of task, good or bad luck).

To summarize, supervisors and feedback recipients are communicating about work performance in an incongruous way. The supervisor wants the recipient to accept the feedback message, but is communicating the information in a way that is foreign to how the recipient interprets his or her behavior. Concurrently, the attribute format of the feedback message cues the recipient to make stable, internal attributions for the behavior and to consider the implications of the feedback to the self (Kluger and DiNisi's meta-task processing). Such a stable, internal cause of behavior is seen as unamenable to change; and self-efficacy to successfully perform similar tasks in the future is lowered. Such lowered self-efficacy and meta-task processing will presumably have detrimental effects on future performance.

Consequences of Using Trait-based Feedback Terminology

Attributes, dimensions, tasks, and critical incidents are meant to clarify the job-relatedness of the performance appraisal rating form to the employee or assessment center observations to the participant, to justify dimension ratings in terms of actual job behaviors, and for purposes of employee development. The trait-based classification system used in

feedback interventions comes as no surprise to employees; the psychological constructs of personality and personality traits are seen by the public as the most crucial and interesting areas of psychology (Kagan, 1988). Lay persons and psychologists alike believe that people can be characterized in terms of stable and enduring dimensions of individual differences in social behavior (Hogan, 1992).

Due to popular acceptance of the "personality" construct, descriptions of workplace performance organized around attributes or dimensions may be seen not as an objective description of behavior, but as a description of the structure, dynamics, and processes inside a person that explains *why* he or she behaves in a characteristic way. Thus, behavioral examples about performance in the area of "Initiative" may quite logically be interpreted by the employee as a confirmation of his or her inherent amount of initiative. A sort of circular reasoning comes into play, in which a supervisor's comment "You have shown a lot of initiative" is interpreted as "you have shown initiative because you *have* initiative." Even more treacherous may be the interpretation of negative feedback. A comment like "We have not seen you take initiative" may be interpreted as "we have not seen initiative because you don't have it." Because trait-based terminology is used, the employees' efficacy to change such an immutable personality characteristic may be diminished, and such lowered self-efficacy will in turn negatively affect performance.

To illustrate, consider the similarities between the following lists of personality traits and terms, common performance appraisal terms, and assessment center dimensions:

Personality Traits/Terms	Performance Appraisal Terms	Assessment Dimensions
Extraverted; Outgoing	Initiative; Supervision and Leadwork	Sociability; Initiative; Assertiveness; Impact; Leadership
Agreeable; Kind, Easy to get along with	Interpersonal Skills; Communications	Interpersonal Sensitivity; Customer Service Motivation; Teamwork
Intelligent; Imaginative; Open	Problem Analysis and Decision Making	Problem Solving; Creativity; Flexibility
Conscientious; Precise; Organized	Planning and Organizing	Planning and Organizing; Will to Achieve; Tenacity; Conformity to Organizational Values

Given the similarities between the terms used to describe stable personality traits and the use of such trait-loaded terms to describe workplace behavior, it is perhaps inevitable that attribute-based feedback interventions provide cues that a stable, internal quality is under discussion, regardless of the label it is given (work factor, attribute, or dimension). Consequently, even if training opportunities or other developmental experiences are carefully explained by a supervisor in a performance appraisal session or other feedback intervention situation, the employee is likely to walk away form the feedback session thinking about his or her deficiencies or abilities in the stable personal attribute or trait areas discussed. Granted the similarities between personality trait terminology and common terms used in feedback interventions, it seemed reasonable to assume that these feedback interventions cue stable, internal attributions for performance, induce meta-task processing and subsequent decreases in self-efficacy and work performance.

An Alternative: Situation-based Feedback

An alternative feedback format, one which does not provide internal, stable causal attribution cues should keep the recipients' attention focused at a task motivation or task learning level of processing, avoiding the ascent to meta-task contemplations about the self and the implications of the feedback to one's self. Such a format alternative would cue the recipients to focus instead upon the situational characteristics of workplace tasks, enabling recipients to attribute the cause for their behavior to external sources, or at least not encourage them to attribute causes to internal characteristics. Recipients of feedback that emphasizes the situational circumstances, and the effects of action on that situation (instead of the personal attributes of the actor which caused such actions to occur) will cause attention to focus on the tasks and activities involved, instead of personal characteristics or the lack of important personal abilities. Attribution to situational causes is more congruous with how individuals interpret their own behavior; and situations may seem more amenable to control and change than personality traits. Beliefs about the amount of control one has over actions, or self-efficacy to perform successfully in future similar situations will be increased, because performance has not been attributed to inherent attributes of the person.

A feedback format based upon situational aspects of behavior has shown some positive effects on performance and on self-efficacy to perform managerial tasks. Larsh (1996) found that assessment center participants receiving situation-based feedback performed significantly better on subsequent managerial tasks when compared with recipients of attribute-based feedback.

To summarize, a situation-based feedback format (Larsh, 1996) should minimize meta-task processing (Kluger & DiNisi, 1996) which influences performance by increasing

attention to the self, and depleting cognitive resources for both task learning and task motivation processes. Situation-based feedback should also raise self-efficacy to perform managerial functions by eliminating self-referent failure attributions; such increased efficacy should lead to a corresponding increase in performance (Bandura, 1977). However, feedback format almost certainly does not account for all of the variance in subsequent performance. One important moderator of the feedback— performance relationship is initial, or pre-feedback self-efficacy.

Self-efficacy as a Moderator.

Feedback format could, perhaps, have a direct effect on post-feedback self-efficacy. Alternatively, the effect of feedback format on post-feedback efficacy may be partially dependent upon participants' pre-assessment self-efficacy. Self-efficacy operates within an interdependent causal structure involving triadic reciprocal causation (Bandura, 1986). The three classes of determinants include behavior, internal personal factors (including self-efficacy), and the external environment. These factors operate as interacting determinants that influence one another bidirectionally. Efficacious people are quick to take advantage of opportunity and figure out ways to circumvent or change constraints. Inefficacious people are less likely to take advantage of opportunities and are easily discouraged by obstructions. Thus, initial or pre-feedback self-efficacy can influence the relationship between feedback (a social evaluation component of the external environment) and future self-efficacy. In the current study, initial self-efficacy is believed to have a moderating influence on the relationship between feedback format and post-feedback self-efficacy.

H3: Pre-assessment self-efficacy will moderate the relationship between feedback format and post-feedback self-efficacy such that participants with low initial self-efficacy will

experience an increase in post-feedback self-efficacy, and participants with high initial self-efficacy will experience a decrease in post-feedback self-efficacy.

Generally, feedback influences self-efficacy such that negative feedback or perceived failure experiences tend to lower self-efficacy whereas positive feedback or perceived success experiences tend to increase self-efficacy (Bandura, 1986). In the current study, highly self-efficacious participants were expected to view their assessment ratings and "needs improvement" feedback as indications of failure, at least to some extent. These highly self-efficacious individuals, expecting to do quite well on the tasks, might perceive an experience in which they receive lower ratings than expected and negative feedback as a negative or failure experience, even when they receive an abundance of positive feedback as well. Thus, participants' level of initial self-efficacy should moderate the effect of feedback format on subsequent self-efficacy. The discrepancy between expectations and actual results should lead to a decrease in post-feedback self-efficacy for these participants with initially high self-efficacy.

Individuals with high self-efficacy have been found to be less accepting of negative feedback than are low self-efficacy individuals (Nease, Mudgett & Quinones, 1997). This suggests that highly self-efficacious persons may doubt the feedback accuracy and consequently disregard suggestions for improvement or further training. Nease et al. (1997) also found evidence to suggest that individuals' self-efficacy judgments interacted with feedback sign and feedback acceptance in their prediction of self-efficacy for future performance. A decrease in self-efficacy was found by Larsh (1999) in high self-efficacy participants after they had received a combination of positive and negative feedback.

Attribute-based feedback. In the attribute-based feedback condition participants will be cued to attribute their positive performance to personal characteristics, skill, or intrinsic attributes, but high self-efficacy participants will also be cued to attribute their unanticipated "needs improvement" feedback to internal attributes. Their expected drop in post-feedback self-efficacy due to feedback format will be exacerbated by their initial high efficacy and high expectations.

Conversely, study participants with initially low self-efficacy to perform in the assessment center will probably receive ratings somewhat higher than expected, and will certainly receive an unanticipated amount of positive feedback. Consequently, they will regard the assessment experience as a success, and experience an increase in self-efficacy. In support of the well established relationship between success experiences and increased self-efficacy, Larsh (1999) found that participants in a managerial assessment center reporting initially low self-efficacy experienced an increase in self-efficacy after receiving a combination of positive and "needs improvement" feedback. For low self-efficacious participants in the current study, increased post-feedback self-efficacy is expected to be moderated by the powerful effects of initial self-efficacy.

Situation-based feedback. In the situation-based feedback condition participants will be cued to attribute their performance to aspects of the situation, or perhaps more importantly, to *not* attribute performance to personal characteristics, skill, or intrinsic attributes. These cues to attribute performance to situational characteristics may have a direct effect on post-feedback self-efficacy though, as in the case of attribute-based feedback, the effect of feedback format on post-feedback efficacy is expected to be partially dependent upon their pre-assessment expectations of success or failure, (i.e., their pre-assessment self-efficacy).

Highly self-efficacious individuals receiving situation-based feedback are not cued to attribute their perceived failures to personal characteristics. Rather, they are referred to aspects of the situation that call for particular actions. However, given the findings of Bandura (1986) regarding negative feedback in general and Nease et al. (1997) regarding nonacceptance of negative feedback for high self-efficacious individuals, the effects of a situation-based feedback format may be minimized. In addition, a significant decrease in self-efficacy to perform in a managerial assessment center was found by Larsh (1999) for high self-efficacy individuals receiving situation-based feedback. In the current study, cues to attribute perceived performance failures to aspects of the situation may not be powerful enough to significantly overcome the general tendency of high self-efficacious individuals to report a decrease in self-efficacy after receiving negative feedback.

As previously established, low self-efficacious participants will be expected to report an increase in post-feedback self-efficacy. However, this increase should be significant for those participants receiving situation-based feedback because, in addition to the positive effects of situation-based feedback, they are cued to attribute the small amount of "needs improvement" feedback they receive to aspects of the situation instead of to personal qualities, skills, or characteristics. Thus, the hypothesis regarding the moderating effects of initial self-efficacy on the relationship between feedback format and post-feedback self-efficacy is proposed.

The current study sought to determine the extent to which performance is predicted by feedback format, and to what extent the relationship is mediated by post-feedback self-efficacy. Additionally, the effects of initial, or pre-feedback self-efficacy in moderating the feedback-type— self-efficacy relationship were explored. Analysis of variance, t-tests and regression techniques were used.

CHAPTER II

Method

Overview

Eighty students enrolled at a large university participated in two assessment centers designed to evaluate managerial skills. Teams of assessors observed participants' behavior during the assessment exercises. Behavioral observations were integrated into final performance ratings and developmental feedback reports for each participant. Thus, each participant received feedback about performance after each of two separate assessment centers. Performance ratings and feedback information were organized by traditional personal attributes across exercises for half of the participants; ratings and feedback for the other half were organized within exercises and reflected performance and behaviors observed within each simulated situation.

Participants received feedback about their performance in the first assessment center in one-on-one sessions with an assessor who had observed them in the assessment center and who had helped develop the feedback report for that individual. Copies of the individualized feedback information were provided to the participants after the feedback session. Feedback about performance in the second assessment center was provided in written form, without the one-on-one verbal session with an assessor. Feedback reports included observations about both strengths and areas needing improvement, comments about why certain behaviors were beneficial or detrimental to the goals of the assessment exercise, and suggestions about appropriate alternate behaviors.

Measures of students' self-efficacy to perform in the assessment center were taken prior to participation in the study. These initial reports were compared with measures of self-efficacy to perform in the second, parallel assessment center taken immediately prior to the commencement of the second assessment center.

Performance measures were based upon ratings developed by the assessor teams for each participant. An overall performance rating was given to each participant for performance in the first assessment center, and another rating for performance in the second center.

Participants

The data for this study were obtained from 80 undergraduate students enrolled in business courses at a large university. Students received course project credit for participation; an alternate project was offered to students unable to participate in the assessment center project. Although three additional subjects completed the project, data for these three was discarded. One person had a learning disability that appreciably affected her ability to read the exercise instructions quickly enough to understand and consequently to perform well in the assessment centers. Two others displayed marked reluctance to exert a minimal amount of effort during the second assessment center and did not demonstrate enough behaviors in the situations for the assessors to accurately evaluate their ability. Therefore, although these three participants completed the exercises and surveys, their performance levels were thought to be atypical, and their results were eliminated from the study.

Ninety-six percent of the study participants were between the ages of 18 to 29; 48 percent were male; 71 of the 80 participants were white, and all of the participants were either juniors or seniors. Ninety-six percent of the study participants were students in the

university College of Business with a variety of departments represented (e.g., Management, Accounting, Quality and Productivity Improvement, Computer Information Systems, Finance, Marketing). Fifty-six percent of the students reported no managerial experience (defined as jobs in which they had formal authority over other employees, programs, and projects); 11 percent reported one to six months of managerial experience; 18 percent reported seven months to one year; 13 percent reported one year to 3 years of experience, and 3 percent reported over three years of managerial experience.

Assessor Training

Nineteen research assistants (hereafter referred to as assessors) were trained to observe and rate participants' behavior in situational exercises and to conduct feedback sessions. Each assessor received 25 hours of training including assigned readings, lectures and discussion sessions about assessment center history and methodology, videotape of assessment center exercises in progress, practice sessions in observing and recording behavior using videotapes and observations of co-assessors participating in demonstrations of the exercises used in the actual assessment centers. Assessors practiced coding behaviors into behavioral attributes, and practiced assigning ratings to behaviors, participating in integration discussions, the correct use of observation checklists, and delivering feedback information. Required reading material for the assessors included information on situational testing, assessment centers, performance appraisal, and ethical guidelines for psychologists.

After initial training, the assessors were divided into a group of nine who received instruction on the situation-based rating system and feedback procedure and a group of ten who were instructed on the attribute-based procedures. The situation-based assessors were instructed to emphasize the situational characteristics and to eliminate discussion of attribute characteristics in their feedback reports; the attribute-based assessors were instructed to

make attributional inferences salient in their written and verbal feedback reports. Thus, a participant assigned to the attribute-based feedback group who had initiated and led the meeting in the Group Discussion exercise would receive the following feedback: "You behaved like a leader when you initiated and led the discussion in your group. Other participants recognized your leadership and followed your suggestions." A participant assigned to the situation-based feedback group who demonstrated the same behavior would receive this feedback: "In the Group Discussion, you initiated the conversation and led the group with your suggestions. This provided guidance and helped the discussion group reach its goals."

The rating scale used for both conditions was based on a five-level scale ranging from "Scholar" to "Skilled" (Appendix A). Assessors were not aware of the hypotheses guiding the research study, but were aware of the rating and feedback methodology used by the other group of assessors. Assessors in both groups practiced writing feedback reports and conducting verbal feedback sessions. Role-playing involving difficult feedback scenarios (i.e., emotional or unresponsive participants) was also part of the feedback training.

Assessment Procedure

Groups of eight participants (four assigned to the situation condition; four to the attribute condition) were first briefed about the assessment center schedule and reminded of the feedback sessions which would be held several weeks after the first assessment center. Subjects were then given a written and verbal description of the simulated organization upon which the assessment exercises were based. For the first assessment center this organization was a simulated retail sporting goods company; each participant was to assume he or she was a shop manager for this company through the three assessment center exercises. The organization for the second assessment center was a large hotel. In both cases a description

of the organization and the job duties of managers were provided to the participants prior to beginning on the assessment exercises. Next, written and verbal descriptions of the assessment exercises, the rating scale, and the attributes that would be considered by the assessors in making evaluations were provided. Immediately prior to the second assessment center, each participant was instructed to review a copy of his or her individualized feedback report and performance ratings received after the first assessment center. Following this introduction, participants were asked to complete a background questionnaire (Appendix B) and a survey entitled the "Pre-assessment Survey" which was a 15-item self-efficacy survey (Appendix C).

Participants then began the assessment center exercises. Each exercise started with a written introduction explaining the situation, describing the exercise goals, and stating the time limit for exercise completion. Each exercise was also verbally explained by an administrator. The first exercise for both the first and second assessment centers was an In-basket. This exercise included information about company history, an organizational chart, and internal and external memos and letters addressed to the manager. Participants were given 75 minutes to complete this In-basket.

The eight participants were then divided into two groups of four, each of which was guided through the remaining two assessment exercises by a separate administrator. One administrator led his or her group through the Leaderless Group Discussion followed by the Interview; the other administrator started with the Interview and ended with the Group Discussion. Group (attribute or situation), administrators, and rooms were counter-rotated to eliminate potential order or administration effects.

Leaderless group discussion exercises. In the Leaderless Group Discussion for the first assessment center participants were provided with job descriptions and applicant

information for a series of job openings at a proposed new sports shop. Job requirements were specified and all applicants were qualified; however, the number of applicants exceeded the available number of jobs. Participants were instructed to arrive at consensus decisions regarding the best applicant for the job, and the best "fit" between applicants within the 50 minutes allowed for the discussion. Following the discussion, the administrator acting as the company owner questioned the group about their decisions.

In the second assessment center, Group Discussion participants were to each represent a company employee who had been nominated for a one-time merit bonus. Each participant had more information about their nominee than about the other nominees, and was instructed to be an advocate for their nominee and to obtain for them as much of the limited pool of available money for merit increases as possible.

Interview exercises. In the first assessment center, the Interview was between the participant acting as a supervisor and a problem employee (a subordinate). Each participant was given 20 minutes to individually review written information about a problem employee, "B.J.," in order to prepare for a performance discussion with that employee. The information described B.J.'s employment history with the company, a description of four specific work performance problems, steps that the shop manager had taken in the recent past to resolve problems, and a written description from a former supervisor of the reasons B.J. was transferred to his current position. Participants were instructed to resolve the work performance issues with this employee.

Following the preparation period, each participant met one-on-one with B.J. for 20 minutes. The roles of B.J. were played by one of a group of actors rehearsed to act the role of a passive, discouraged employee who's primary objective was to avoid responsibility for his work performance shortcomings. Following the conversation with B.J., participants met

with the observing assessor and responded to a series of questions about the interview goals, outcomes, follow-up recommendations, and a self-analysis of what, retrospectively, could have been done differently in the Interview to better achieve initial goals.

In the second assessment center, the Interview was between the participant acting as a supervisor and a competitive and manipulative colleague (a peer). Participants were instructed to work collaboratively with the colleague in dividing work responsibilities for an upcoming project. Each participant was given 20 minutes to individually review written information about the project and the problem colleague, "Lane," in order to prepare for the meeting with Lane. The information described the manager's and Lane's employment history with the company, a description of the project requirements, and details about several specific uncooperative, competitive, or manipulative actions Lane had taken in the recent past.

Following the preparation period, each participant met one-on-one with Lane for 20 minutes. The roles of Lane were played by one of a group of actors rehearsed to act the role of a competitive, treacherous, aggressive co-manager who's primary objectives were to obtain the most recognition from the company owner and to rise within the company to a position of greater leadership. Actor-participant dyads were paired such that participants would not encounter the same actor playing the role of Lane that they had worked with in the "B.J." role-play. Following the meeting with Lane, participants met with the observing assessor and responded to a series of questions about the interview goals, outcomes, follow-up recommendations, and a self-analysis of what, retrospectively, they could have done differently in the Interview to be more effective.

Feedback Procedure

After the first assessment center exercises were completed, participants answered a survey about their perceptions of the assessment center (Appendix D) and scheduled their feedback session. Written feedback reports were developed for individual participants by teams of assessors immediately after each assessment center. Feedback sessions for the first assessment center began the day after all participants had completed the first assessment center, with all participants receiving their feedback within two weeks of the assessment center in which they participated. Feedback sessions were conducted by the assessors in one-on-one private sessions with the participants. The participant was given verbal and written descriptions of the behavioral observations made by assessors who had observed them in the assessment exercises. Descriptions of behaviors that indicated strengths or effective behavior were given first, followed by descriptions of ineffective behaviors indicating areas needing improvement.

Ratings were given following feedback about performance in each exercise for the situation-based feedback condition (or following feedback about performance on each attribute for the attribute condition) and an "Overall" rating was given at the end of each feedback report. Participants were provided with a written copy of their feedback report. Finally, participants completed a feedback survey about their perceptions of the feedback they had just received (Appendix E).

Participants were also provided with written feedback reports of their performance in the second assessment center. The feedback format and quantity remained consistent with that given after the first assessment center. Finally, participants were given a written debriefing about the research hypotheses and study design.

Attribute-based Assessment and Feedback

Three personal attributes were chosen for the attribute-based assessment and feedback manipulation. Attributes were chosen based upon the factor analysis studies of Schmidt (1977), Sackett and Hakel (1979), and Russell (1985). These factor analyses of managerial characteristics identified three primary personal attributes, which are an administrative or decision-making factor, an activity/forcefulness factor, and an interpersonal factor. For the purposes of this study, these factors were labeled Problem Solving, Leadership/Influence, and Teamwork/Interpersonal Sensitivity, respectively.

Problem Solving behaviors included accurate problem analysis, securing relevant information, identifying cause effect-relationships, developing alternative courses of action, and deciding upon a course of action based upon consideration of relevant facts. Specific activities include fact finding, analyzing, visualizing problems and opportunities, comparing, judging, innovating, risk-taking, and decision making. Leadership/Influence behaviors included guiding and motivating individuals toward goal achievement; influencing organizational values, systems, and individual and group goals; using an appropriate interpersonal style to gain acceptance of an idea or plan, and effectively exploring alternatives to reach outcomes that gain support and acceptance of all persons involved. Specific Leadership/Influence activities include determining long-term objectives, planning and organizing, developing subordinates' skills, clarifying work assignments, monitoring, coaching, persuading, negotiating and facilitating. Teamwork/Interpersonal Sensitivity behaviors included participation in group activities, facilitation of team effectiveness, showing consideration of the feelings and needs of others, demonstrating an understanding of the feeling underlying communication content, showing an awareness of the effect of one's behavior on others, willingness to share decision-making, and facilitating team

cohesiveness. Specific activities include perceiving, supporting, motivating, cooperating, and collaborating. The attributes were further clarified for each exercise based upon both positive and negative behavioral examples of each attribute that might occur during the exercise.

Ten assessors were trained to use an attribute-based method of developing performance ratings and the content of feedback reports for participants in the attribute condition. A team of four attribute assessors worked during each assessment center. Assessor observation assignments were rotated such that each of the four assessors observed a different participant in one of the three assessment exercises. The following procedure was used to obtain assessor ratings for the attribute-based method. First, assessors observed the participants in the exercises and recorded their observations. In the case of the In-basket exercise, "observation" meant reading the participant's In-basket responses. Second, the recorded observations for each participant were categorized into one of three attributes—Problem Solving, Leadership/Influence, or Teamwork/Interpersonal Sensitivity. Third, each assessor rated the participant on the three attributes for the exercises for which they were the assigned assessor. These ratings were determined by referring to a five-level rating scale ranging from the lowest level "Scholar" to the highest level, "Skilled". Fourth, the assessment team met to discuss each participants' behavior. For example, if the "Red" participant was to be discussed first, the assessor who read and rated Red's In-basket work would describe Red's Problem Solving behaviors as evidenced by his In-basket responses. Another assessor would describe Red's Problem Solving behaviors as observed during the Leaderless Group Discussion, and a third assessor would discuss Red's Problem Solving behaviors as observed during the Interview. After discussing the Problem Solving behaviors and the ratings given by each assessor the team would come to a consensus decision about

the final Problem Solving rating for Red. The team then discussed Red's Leadership/ Influence behaviors and Teamwork/Interpersonal Sensitivity behaviors and decided upon ratings for each. Finally, the assessors would decide upon an Overall assessment rating for Red based upon the combined behaviors.

After each participant had been discussed and assigned ratings, the four assessors prepared written feedback reports for the participants. These reports were presented during individual feedback sessions held with the participants within several weeks of the first assessment center sessions, and in written form after the second assessment center. During the feedback sessions and in the feedback reports attribute-based assessors emphasized how specific behavioral observations were effective or ineffective behavioral examples of the attributes under discussion.

Situation-based Assessment and Feedback

The situation-based assessment and feedback manipulation focused upon the three situations simulated by the assessment exercises. The In-basket was a simulation of a manager's written work responsibilities, the Leaderless Group Discussion simulated a meeting held between managers, and the Interview represented a one-on-one discussion held between a manager and co-worker. Assessment in the situation condition was founded upon evaluations of the same behavioral attributes used by the attribute-based assessor group; however, ratings were based upon behaviors observed *within* each exercise rather than *across* exercises as was done in the attribute condition. Situation-based feedback information concentrated upon how the observed behaviors contributed to (or detracted from) success in each situation rather than successful (or unsuccessful) demonstration of the attributes. Table 1 shows examples of typical participant behaviors and a comparison of sample feedback comments made under each feedback condition.

Table 1

Comparison of Feedback Information in Attribute and Situation Conditions

Behavioral Observation	Attribute-based Feedback	Situation-based Feedback
Clearly delegates the decision about the scheduling issue to Jay.	You showed Leadership when you clearly delegated the scheduling problem to your employee, Jay. Your employees would not be in any doubt about who the leader was or what your instructions were.	In the In-Basket, you provided guidance for your employees when you delegated the scheduling problem to Jay. In a written situation it is important to give clear instructions.
Does not offer supporting information to justify opinions. You stated "I think Kevin is the best person for the job." without explaining why he was better than the other applicants.	When offering ideas, you neglected to offer supporting information to justify or explain your opinions. This is an important facet of Problem Solving ability that needs improvement. In order for your problem solution to be implemented, it helps to mention examples, evidence, or reasons for your ideas.	In the Group Discussion you neglected to offer supporting information to justify or explain your opinions. This needs improvement because, when working in a group others need to understand your ideas in order to "buy into" them. It helps to mention examples, evidence, or reasons for your ideas
Explained the impact of B.J's work performance on the other team members: "What you do affects the other employees on your shift and on the next shift."	You demonstrated Teamwork when you commented on B.J.'s impact on other employees. Your comment showed that you are aware of the part that each employee plays in helping the work team reach its goals, and that your concerns about B.J. were professionally motivated.	In the one-on-one situation, you commented on B.J.'s impact on other employees. This showed B.J. that you are aware of the part that each employee plays in helping the work team reach its goals, and that your concerns about B.J. were professionally motivated

A pool of nine assessors was trained to use the situation-based method of rating and writing feedback reports for participants in the situation condition. As in the attribute-condition, four assessors worked during each assessment center session and observation assignments were rotated such that each participant was observed by a different assessor in each of the three exercises. After making behavioral observations, each assessor reviewed his or her notes and rated participants on the exercise in which he or she had been the observer. The assessor team met to discuss behavioral observations and to generate an overall assessment rating for each participant.

As in the attribute condition, ratings were determined by referring to the five-level scale ranging from "Scholar" to "Skilled." In the situation-based discussions, salient differences in performance *between* exercises were concentrated upon. For example, if the "Blue" participant did extremely well in the written situation and in the one-on-one situation but did poorly in the group situation, behavioral examples would be discussed by the assessor group until it was clear which behaviors helped or hindered Blue's performance the most. These important behaviors formed the basis of the feedback reports for participants in the situation-based condition. Situation-based feedback reports were presented during individual feedback sessions in the same manner as attribute-based feedback reports were given. Situation-based feedback sessions and written reports emphasized how specific behavioral observations were effective or ineffective within the context of the situation in which they occurred.

Manipulation Check

Prepared scripts were used by the assessors in order to standardize verbal presentations for the post-assessment feedback sessions. The scripts contained identical introductions describing the procedures used by the assessors to develop feedback for the

project participants. Participants were then told (depending upon the experimental group in which they had been placed) that their feedback had been developed across the three assessment situations and organized around attributes, or that their feedback had been organized within the three assessment situations. Following the introductory remarks, participants in the situation-based feedback condition were given behavioral examples of their assessment center performance and developmental suggestions relative to the three situations— In-Basket, Group Discussion, and Interview— in which they had participated. Subjects in the attribute-based condition received descriptions of behavioral examples and developmental information relative to three attributes— Leadership/Influence, Problem Solving, and Teamwork/Interpersonal Sensitivity.

As a means of verifying that feedback scripts were clear as to whether information was situation-based or attribute-based, a manipulation check was performed. After feedback information (behavioral examples, developmental suggestions, and ratings) was delivered, participants were asked to complete a Feedback Survey (Appendix E). In addition to assessing reactions to the feedback, this survey contained a write-in question about how the feedback information was organized. Specifically, the participants were asked "Your feedback was organized into three subgroups. What were they?" and were provided with three blank lines in which to respond. Attribute-based feedback recipients were expected to write in "Leadership/Influence," "Problem Solving," and "Teamwork/Interpersonal Sensitivity." Situation-based feedback recipients were expected to write in "In-Basket," "Group Discussion," and "One-on-one Interview."

Results from the manipulation check indicated that most of the participants in each condition clearly understood how their feedback was organized. Thirty-one of the forty participants in the attribute condition correctly identified the three attributes around which

their feedback was organized. Six of the forty participants correctly identified two of the attributes correctly. One person answered "teamwork and interpersonal skill." And only one participant was under the impression that performance had been discussed based on an assessment situation as indicated by his "leadership, teamwork, and group discussion" response. Thirty-six of the situation-based feedback recipients correctly identified the three situations as the organizing features of their feedback reports. Three responded with some variation on the feedback structure, e.g., "effective, ineffective, feedback on how to do better." One person reported her ratings, i.e., "scholar, satisfactory, scholar." Based upon the high rate of correct responses to the manipulation check question, it was determined that the participants clearly understood the format that had been used to deliver their developmental feedback.

Measures

Self-efficacy to perform effectively in the managerial assessment centers was measured using the eleven-item Pre-assessment Survey (Appendix C). The first ten items related to perceived confidence, control over stressful or challenging events, recovery from failure, overcoming difficulties, degree of perceived threat, comfort level, ability to remain focused and degree of motivation (Bandura, 1997). These items were scored using a standard seven-level Likert-type scale (1 = Strongly Disagree to 7 = Strongly Agree) using the precedent set by Maurer and Pierce (1998). Item numbers two, six, and ten were reverse scored. Points from the first ten items were summed (assigned point values corresponded to the seven levels of the scale) and added to the value obtained from the item eleven score, as described below.

The eleventh item consisted of a five-part series of questions asking how confident the participant was in being rated at one of the five different performance levels of the

Assessment Rating Scale. Question eleven was scored by combining point values assigned to each response (*a* through *e*) to arrive at a total performance level/confidence score. Point values were assigned as follows: 1) the level of expected performance was assigned a value of one for the lowest level (Scholar) through five for the highest level (Skilled), 2) the strength of the participant's confidence in attaining that level was assigned a value of zero for Strongly Disagreeing with being able to attain that level to a value of six for Strongly Agreeing that he or she would attain that level. A value for each of the five questions in the series was obtained by multiplying the level value for that question by the confidence value indicated by the participant. Thus, a response for each skill level regarding the level of performance and the confidence in attaining that level was gathered. For example, if a subject answered Strongly Agree (a confidence value of six) to the Scholar skill level (the level to which a factor of one had been assigned), her score for part *a* of question eleven would be six (6 x 1 = 6). If she answered Strongly Agree to the following skill levels of Satisfactory and Competent, her scores for *b* and *c* would be 12 and 18, respectively (6 x 2 = 12 and 6 x 3 = 18). If she then answered Somewhat Disagree and Strongly Disagree to the Proficient and Skilled questions, her scores for *d* and *e* would be eight and zero, respectively (2 x 4 = 8 and 0 x 5 = 0). Finally the resulting five products were summed to obtain a total performance level/confidence score. In this example, the total performance level/confidence score would be forty-four (6 + 12 + 18 + 8 + 0 = 44).

The first ten questions of the self-efficacy survey related to self-efficacy regarding the assessment center activities in general; the eleventh question specifically referred to a social evaluation component of self-efficacy. As these conceptions of self-efficacy were somewhat different; a test of internal consistency was needed to justify combining the eleven questions into a total self-efficacy score. This test was performed by examining the correlation

between the first part consisting of questions one through ten, and the second part, question 11. The relationship between the two parts was found to be moderate for the first pre-assessment self-efficacy survey, $\underline{r} = .48$, as well as the survey administered prior to the second assessment center, $\underline{r} = .52$. These relationships between the different components of self-efficacy were thought to be strong enough to combine the components of the survey into a total self-efficacy score, yet not so high that they are totally redundant.

Performance measures were based on the previously mentioned five-point rating scale (1 = Scholar to 5 = Skilled) for both groups of participants (Appendix A). A rating for each of the three attributes (Leadership/Influence, Problem Solving, and Teamwork/ Interpersonal Sensitivity) or the three situations (In-Basket, Group Discussion, and One-on-one Interview) was communicated to the participants during their feedback sessions. Participants were also given an Overall assessment rating using the same scale and based upon the consensus opinion of the assessor team. Overall assessment ratings were used to analyze the hypotheses.

The Assessment Center Survey (Appendix D) was used to evaluate perceptions of the assessment center process. This survey consisted of five Likert-type items (1 = Strongly Disagree to 7 = Strongly Agree) relating to the perceived fairness, understandability, realism, and degree of challenge experienced by the subjects as they participated in the assessment exercises.

Perceptions of feedback were measured using a using the same Likert type scale. (Appendix E). This eight-item Feedback Survey asked about feedback understandability, usefulness, accuracy and the clarity of feedback suggestions.

CHAPTER III

Results

Preliminary Analyses

Between group comparisons on pre-assessment self-efficacy, performance in the first assessment center, and perceptions of the assessment center process were made to verify that the Situation and Attribute groups were initially similar in self-efficacy and ability and had experienced the assessment center in a similar way. Data from the Pre-Assessment Survey (Appendix C) were used to test the similarity between groups on pre-assessment self-efficacy (Table 2).

Table 2

Means, Standard Deviations, and t-values for Group Comparisons of Participants' Pre-assessment Self-efficacy

Group	n	Mean	SD	df	t-value
Attribute	40	100.68	18.63		
Situation	40	102.61	22.51		
Independent t-test				78	-.42

Note. Observed self-report ratings range from 49 to 148.

No significant differences were found between the Situation and Attribute groups in mean initial self-efficacy, t (78) = -.42, $p > .05$.

Data from overall performance ratings from the first assessment center were used to test the similarity between groups before feedback had been delivered (Table 3). No

significant differences in ability were found between the Situation and Attribute groups in mean performance, t (78) = -1.65, $p > .05$.

Table 3

Means, Standard Deviations, and t-values for Group Comparisons of Participants' Performance on First Assessment Center

Group	n	Mean	SD	df	t-value
Attribute	40	1.71	.68		
Situation	40	1.98	.79		
Independent t-test				78	-1.65

Note. Performance ratings range from 1=Scholar through 5=Skilled

Perceived similarity of the assessment center process was determined by comparing responses to assessment questionnaires administered immediately after the first assessment center exercises had been completed. Between-group comparisons were made using a t-test for independent samples (Table 4). No significant group differences were found in perceptions of fairness, understandability of tasks or situations, realism, or degree of challenge experienced. From these preliminary analyses it was concluded that both groups not only had similar levels of initial self-efficacy to perform managerial tasks, but also performed equally well in the first assessment center, and perceived the experience in a similar way.

Additional analyses compared mean responses between groups on each of the questions from the Feedback Survey (Appendix E). This survey was administered after the

participants had received developmental feedback about their performance in the first assessment center. Both attribute- and situation-based feedback groups reported

Table 4

Means, Standard Deviations, and t-values for Group Comparisons of Perceptions of the First Assessment Center

Items	Group: Attribute n = 40 M (SD)	Group: Situation n =40 M (SD)	2-tailed t-test
1. None of the participants in the assessment center had an unfair advantage.	6.27 (1.00)	6.17 (1.02)	.44
2. I understood the situation that was presented to me in each of the three exercises.	6.27 (.71)	6.12 (.81)	.87
3. I understood the tasks that were assigned to me during the assessment center.	6.34 (.62)	6.27 (.78)	.47
4. The situations seemed realistic (i.e., I could see a manager performing duties like these.)	5.78 (1.10)	6.00 (.96)	-.98
5. The assessment center was challenging.	5.98 (.82)	6.00 (1.00)	-.12

Note. a 1 = Strongly Disagree to 7 = Strongly Agree Likert-type scale was used.

positive perceptions of feedback understandability, clarity of suggestions, usefulness, and accuracy. Table 5 shows that significant differences were not found between groups on any of the post-feedback questions, suggesting that subsequent changes in performance and self-

efficacy to perform managerial tasks were due to feedback format differences, and not to differences in reactions to the *content* of the feedback reports.

Analyses of intercorrelations between model components (see Figure 1) were conducted. The correlations are presented in Table 6. As is evident from this table, situation-based feedback format was significantly related to post-feedback self-efficacy and to performance in the second assessment center. Performance scores were related to the measures of self-efficacy in the expected direction. In addition, scatterplots were generated relating self-efficacy scores to performance scores. No curvilinear relationships were revealed in this visual inspection of the data.

Table 5

Means, Standard Deviations, and t-values for Group Comparisons of Perceptions of Feedback

	Items	Group: Attribute n =40 M (SD)	Group: Situation n = 40 M (SD)	2-tailed t-test
1.	Feedback about my *effective* performance (the things that I did well) during the assessment center was understandable.	6.39(.54)	6.32(.57)	.60
2.	Feedback about my *ineffective* performance (areas in which improvements can be made) during the assessment center was understandable.	6.24(.58)	6.00(1.10)	1.30
3.	Suggestions for improvement made during my feedback session were clear.	6.27(.67)	6.27(.55)	.00
4.	The feedback I received will be useful as I prepare for a career.	5.98(.99)	6.07(.82)	- .49
5.	Feedback about my *effective* performance (the things I did well) was accurate.	6.07(.61)	6.17(.67)	- .69
6.	Feedback about my *ineffective* performance (areas in which improvements can be made) was accurate.	5.85(.82)	6.10(.86)	-1.31
7.	The assessment center feedback I just received will be useful in my current job or personal life.	5.73(1.55)	5.98(.94)	-1.40

Note. A 1 = Strongly Disagree to 7 = Strongly Agree Likert-type scale was used.

Table 6

Correlations Among Self-efficacy, Feedback Format and Performance

	Performance 1	Feedback Format[a]	Pre-assessment Self-efficacy	Post-feedback Self-efficacy	Performance 2
Performance-1	--	.16	.20*	.48***	.50***
Feedback Format[a]	--	--	.05	.17*	.23**
Pre-assessment Self-efficacy	--	--	--	.44***	.19*
Post-feedback Self-efficacy	--	--	--	--	.25**
Performance-2	--	--	--	--	--

[a] Feedback format is dummy coded as 0 = attribute-based feedback, 1 = situation-based feedback. N=80.

* $p \leq .10$

** $p < .05$

*** $p < .001$

Hypotheses 1a and 1b

Hypothesis 1a states that participants' performance in the first assessment center will be positively correlated with their initial self-efficacy. Hypothesis 1b states that participants' performance in a second assessment center will be positively correlated with post-feedback self-efficacy (self-efficacy reported after receiving feedback about performance in the first assessment center). Data from the first and second administration of the Pre-assessment Survey and overall performance ratings from the first and second assessment centers were used to test Hypotheses 1a and 1b, respectively. Participants with higher self-efficacy were expected to perform better in the assessment centers. Hypothesis 1a was supported—

participants with higher pre-assessment self-efficacy did tend to score higher in the first assessment center, r = .20. Hypothesis 1b was also supported; a positive relationship was found between post-feedback self-efficacy (measured just prior to the second assessment center) and performance in the second assessment center, r = .25. Table 6 shows these and other model intercorrelations.

Hypotheses 2a and 2b

Hypothesis 2a states that participants receiving situation-based feedback will experience a significant increase in performance between the first and second assessment centers. Hypothesis 2b states that participants receiving attribute-based feedback will experience a significant decrease in performance between the first and second assessment centers. Hypothesis 2c states that performance in the second assessment center will be significantly greater for participants receiving situation-based feedback as compared to those receiving attribute-based feedback. Three approaches were used to test these hypotheses. First, a 2 x 2 mixed ANOVA was conducted to test for main effects and interactions. Next, a one-way analysis of co-variance (ANCOVA) was conducted to determine if the main effect for time, i.e., performance between the first and second assessment centers could be accounted for by initial performance (performance in the first assessment center). Finally, because of the a priori specific hypotheses comparing specific mean levels of performance, a series of t tests were conducted.

The mixed ANOVA, a test in which assessment center performance is a repeated measures within-subjects independent variable (i.e., time of assessment), and feedback format is a between-subjects independent variable (i.e., feedback format) was conducted. The results showed a significant main effect for time of assessment, i.e., performance increased from the first to the second assessment centers, F (1,78) = 14.47, $p < .001$. Eta

squared, the estimated size of this effect was .17. There was also a main effect for the type of feedback format, i.e., differences were found between the groups, $F(1, 78) = 4.37$, $p < .05$ with the situation group performing better at both times as indicated by the performance means shown in Table 7. Eta squared of this effect was .13. There was no interaction, which will be discussed below, under Hypothesis 2c.

A one-way ANCOVA was then performed. This is a test in which feedback format was the independent variable; performance in the second assessment center the dependent variable, and performance in the first assessment center the covariate. First, an analysis of variance was conducted to determine if participants receiving situation-based feedback had significantly higher performance scores in the second assessment center. This was verified, $F(1, 78) = 3.94$, $p = .05$. Eta squared, an index of the size of this effect, was estimated to be .05. Next, performance in the first assessment center was entered as a covariate. This covariate was found to have a significant effect on performance in the second assessment center, $F(1, 77) = 22.94$, $p < .001$. Eta squared for this effect was estimated to be .23. Further, when the covariate was considered, the effect of group assignment (feedback format) was no longer significant, $F(1, 77) = 1.76$, $p > .05$. Thus, the higher levels of performance in the second assessment center reached by participants receiving situation-based feedback were due to differences in initial performance.

Based on the a priori hypotheses, other analyses were conducted to further test Hypotheses 2a and 2b. These analyses compared overall performance ratings from both assessment centers to test the hypotheses that the mean performance level of the situation group would increase and that the mean performance level of the attribute group would decrease. Using these analyses, Hypothesis 2a was supported; a paired sample t-test comparing performance means (Table 7) within the situation-based feedback group showed

a significant increase in performance, t (39) = -2.81, $p < .05$. The magnitude of this effect was assessed by the estimate of omega-squared, ω^2, a ratio of treatment variance to the sum of treatment and error variances. The value of ω^2 for Hypothesis 2a was .10.

Table 7

Means, Standard Deviations, and t-values for Overall Performance

Group	Assessment 1 Mean (SD) n = 40	Assessment 2 Mean (SD) n = 40	paired t-test
Situation	1.98 (.79)	2.29 (.72)	-2.81**
Attribute	1.71 (.68)	2.00 (.50)	-2.78**

Note. Performance scores range from 1 = Scholar to 5 = Skilled
**$p < .05$

A paired sample t-test comparing performance means (Table 7) within the attribute-based feedback group also showed a significant increase in performance for this feedback condition, t (39) = -2.78, $p < .05$. Hypothesis 2b was disconfirmed; like the situation-based feedback recipients, participants in the attribute-based feedback condition experienced an increase in performance across assessment centers. The estimated magnitude of this effect was $\omega^2 = .12$.

Hypothesis 2c

An independent t-test comparing means between the two feedback conditions for performance in the second assessment center was significant, t (78) = -2.15, $p < .05$, as shown in Table 8. However, as indicated above, results from the mixed analysis of variance disconfirmed the hypothesis that performance for participants receiving situation-based feedback would increase and that for those receiving attribute-based feedback would

decrease. A significant interaction between feedback format and performance was not found, F (1,78) = .000, ns. An interaction was not found because the group differences in performance were present before the feedback was presented. That is, performance differences were due entirely to initial differences between groups in performance.

In summary, although the a priori test of mean differences at time two is significant (Table 8), the 2 x 2 analysis shows no interaction effect between feedback format and performance, and the ANCOVA indicates that performance differences in the second assessment center are entirely due to initial differences in performance. Although there were statistically significant differences between the groups in initial performance (see Table 3), the initial level of difference in means probably explains the lack of an interaction and the lack of an effect for feedback type.

Table 8

Means, Standard Deviations, and t-values for Group Comparisons of Participants' Performance in the Second Assessment Center

Group	n	Mean	SD	df	t-value
Situation	40	2.29	.72		
Attribute	40	2.00	.50		
Independent t-test				78	-2.15**

Note. Performance scores range from 1 = Scholar to 5 = Skilled.
**p <.05

Hypothesis 2d

Hypothesis 2d states that the relationship of feedback format to performance in the second assessment center will be mediated by self-efficacy. Data from the second

administration of the Pre-assessment Survey and overall performance scores from the first and second assessment centers was used to test Hypothesis 2d.

In Figure 1, the conceptual model schematically depicts both direct and indirect effects of feedback format on managerial assessment center performance (Performance-2). The indirect effect is mediated by post-feedback self-efficacy. As delineated by Baron and Kenny (1996), to support the conceptual model (a) post-feedback self-efficacy must predict Performance-2, (b) feedback format must predict post-feedback self-efficacy, and (c) prediction of Performance-2 by feedback format must be attenuated when post-feedback self-efficacy is entered first in a regression equation.

However, given the effects of initial performance on performance in the second assessment center as shown in Hypotheses 2a, 2b, and 2c, the effects of initial performance were entered into the regression analyses first, to control for the effects of initial performance on the hypothesized mediated relationship between feedback format and performance.

To summarize the results of the tests for Hypothesis 2d, the three conditions which must be met to show a mediated relationship between feedback format and performance were not supported when performance-1 was taken into account. Although post-feedback self-efficacy predicted performance in the second assessment center, the relationship between feedback format and post-feedback self-efficacy was weak, and there was no support for an indirect effect of feedback format mediated by post-feedback self-efficacy.

Specifically, in the test of the first condition (condition "a" as outlined by Baron and Kenny (1996), results revealed that post-feedback self-efficacy accounted for 6% of the variance in Performance-2. This partially supports the first assumption of the mediation analysis; self-efficacy helps to predict performance in the second assessment center.

Next, the second condition (noted as "b", above) was tested. Feedback format was expected to predict post-feedback self-efficacy. In this test, feedback format was found to account for 3% of the variance in post-feedback self-efficacy. Although this non-significant relationship (F (1, 78) = 2.23, ns.) contravenes the second assumption of mediation analysis, the correlation between feedback format and post-feedback self-efficacy, r = .17, p < .10 was thought to be high enough to justify continuing the analysis, especially in the light of the variable effects of pre-assessment self-efficacy on the feedback format— post feedback self-efficacy relationship. Supplementary analyses of the relationship between feedback format and pre-assessment self-efficacy revealed significant differences for participants with high and low pre-assessment levels of self-efficacy, accounting for the low main effects of feedback format on post feedback self-efficacy. These mixed findings for the sub-groups of high and low self-efficacy participants thus contributed to the decision to examine the mediated relationship (see Supplementary Analyses).

To examine the third (part "c" above) condition, Performance-2 was regressed on Performance-1 in the first step of the hierarchical regression, to reveal that 25% of the variance in Performance-2 was accounted for by Performance-1. In the second step of the regression analysis, Performance-2 was regressed on post-feedback self-efficacy by adding it to the model that already took Performance-1 into account. There was no significant change in the amount of explained Performance-2 variance when post-feedback self-efficacy was added to the prediction equation, the change in R^2 = .00, ns. In the third step, Performance-2 was added to the prediction model (which already contained Performance-1 and post-feedback self-efficacy) and regressed on feedback format. There was no significant change in the amount of Performance-2 variance accounted for when feedback format was added to the regression equation, the change in R^2 = .02, ns.

To summarize, when feedback format was entered into the regression equation, controlling both for Performance-1 and for post-feedback self-efficacy, the percentage of variance accounted for by feedback format did not significantly decrease, (R^2 = .00, ns. to R^2 = .02, ns.). This lack of attenuation in the magnitude of the association between feedback format and Performance-2 (when Performance-1 and post-feedback self efficacy are controlled) does not support the hypothesis that the association between feedback format and Performance is mediated or accounted for by post-feedback self-efficacy (Table 9).

Table 9

Hierarchical Regression Analysis of Performance-2 on Feedback Format

Variable	R	R^2	R^2-change	F of R^2-change	β
Step1					
Performance-1	.50	.25	.25	25.96***	.50[a]
Step 2					
Post-feedback Self-efficacy	.50	.25	.00	.00	.01[b]
Step 3					
Feedback Format	.52	.27	.02	1.74	.13[c]

[a] t = 5.10
[b] t = .06
[c] t = 1.32
*** p < .001

Hypothesis 3

Hypothesis 3 states that pre-assessment self-efficacy will moderate the relationship between feedback format and post-feedback self-efficacy such that participants with low initial self-efficacy will experience an increase in post-feedback self-efficacy, and participants with high initial self-efficacy will experience a decease in post-feedback self-efficacy. As

suggested by Cohen and Wills (1985), adequate tests of main and moderating effects of pre-assessment self-efficacy require that the feedback format and pre-assessment self-efficacy are non-overlapping. Confounding of these variables may lead to overestimations of moderating effects (Thoits, 1982). The correlational results (see Table 6) indicated that feedback format and pre-assessment self-efficacy were not highly correlated, and therefore not confounded. Another methodological requirement for testing a moderator model is a significant relationship between feedback format and the outcome variable. Such an effect indicates that the measurement and range of scores on these variables are adequate (Cohen and Wills, 1985). The intercorrelation matrix in Table 6 shows a significant ($p \leq .10$) positive correlation between feedback format and post-feedback self-efficacy.

According to Hypothesis 3, pre-assessment self-efficacy was expected to moderate the effect of feedback format on post-feedback self-efficacy. In order to test this hypothesis, a hierarchical multiple regression analysis was conducted. First, feedback format was entered, in Step 2 pre-assessment self-efficacy was entered. The interaction term was entered on the third step.

As shown in Table 10, the interaction term did not contribute significantly to the prediction of post-feedback self-efficacy; thus, Hypothesis 3 was not supported. In contrast, a significant direct effect was found for pre-assessment self-efficacy, accounting for a significant portion of the variance in post-feedback self-efficacy (21%), controlling for the effect of feedback format.

Table 10

Hierarchical Regression Analysis of Post-feedback Self-efficacy on Feedback Format and Pre-assessment Self-efficacy

Predictors	R	R^2	R^2-change	F of R^2-change	β
Step1					
Feedback Format	.17	.03			.17[a]
Step 2					
Pre-assessment Self-efficacy	.46	.21	.19	18.15***	.43[b]
Step 3					
Pre-assessment Self-efficacy × Feedback Format	.47	.22	.01	.61	.44[c]

[a]t = 1.49
[b]t = 4.26
[c]t = .78
***p < .001

Supplementary Analyses

Although pre-assessment self-efficacy did not moderate the relationship between feedback format and post-feedback self-efficacy, data from the self-efficacy measures were used to further explore the relationships between feedback format and changes in self-efficacy. Paired t-tests comparing pre-assessment and post-feedback self-efficacy means for recipients of situation-based feedback showed significant changes (Table 11) in self-efficacy for both the sub-set of that group reporting low pre-assessment self-efficacy and for those reporting high pre-assessment self-efficacy. The sub-set of participants with initially low self-efficacy experienced a significant increase, $t(19) = -2.86$, $p < .05$, in their self-efficacy; the sub-set with pre-assessment high self-efficacy experienced a significant decrease, $t(19) = 2.68$, $p < .05$. The estimated effect sizes for these results are $\omega^2 = .22$ for the pre-assessment low self-efficacy group, and $\omega^2 = .19$ for the pre-assessment high self-efficacy group.

Table 11

Means, Standard Deviations, and t-values for Pre-assessment and Post-feedback Self-efficacy Reports: Situation-based Feedback Recipients

Pre-assessment Self-efficacy	Pre-assessment Mean (SD) n = 20	Post-feedback Mean (SD) n = 20	paired t-test
Low	84.55 (10.71)	94.85 (17.59)	-2.86**
High	118.50 (11.74)	108.35 (19.78)	2.68**

Note. Observed self-efficacy scores range from 49 to 148.
**p < .05

Table 12 shows the results of paired t-tests comparing pre-assessment and post-feedback self-efficacy means for recipients of attribute-based feedback. A non-significant increase was experienced by the sub-set with low initial self-efficacy, t (19) = .45, p > .05, whereas a non-significant decrease in self-efficacy was found for participants with high

Table 12

Means, Standard Deviations, and t-values for Pre-assessment and Post-feedback Self-efficacy Reports: Attribute-based Feedback Recipients

Pre-assessment Self-efficacy	Pre-assessment Mean (SD) N = 20	Post-feedback Mean (SD) N = 20	paired t-test
Low	85.80 (10.71)	87.20 (18.49)	.45
High	114.10 (9.78)	102.45 (20.66)	2.01

Note. Observed self-efficacy scores range from 49 to 148.

initial self-efficacy, t (19) = 2.01, p > .05, Thus, in contrast to the significant changes in self-efficacy found for participants receiving situation-based feedback, self-efficacy changes were not observed for those receiving attribute-based feedback.

Data from the performance results were used to further explore the relationships between feedback format, pre-assessment self-efficacy, and changes in performance (Table 13). Paired t-tests comparing performance in the two assessment centers for recipients of situation-based feedback showed significant changes in performance for both the sub-set of that group reporting low pre-assessment self-efficacy, t (19) = -2.88, $p < .05$, and for those reporting high pre-assessment self-efficacy, t (19) = -2.37, $p < .05$. The estimated magnitude of these effects were $\omega^2 = .12$ for both sub-groups.

Table 13

Means, Standard Deviations, and t-values for Paired Comparisons of Participants' Performance for High and Low Pre-assessment Self-efficacy Levels

Feedback Type Pre-assessment Self-efficacy	Performance-1 Mean (SD) N = 20	Performance-2 Mean (SD) N = 20	paired t-test
Attribute			
Low	1.60 (.60)	2.05 (.51)	3.33**
High	1.80 (.77)	1.95 (.51)	-.90
Situation			
Low	1.85 (.89)	2.25 (.69)	2.88**
High	2.10 (.72)	2.50 (.69)	2.37**

Note. Performance scores range from 1 = Scholar to 5 = Skilled.
**p < .05

Similar tests comparing performance means for subjects receiving attribute-based feedback found significant performance changes for the pre-assessment low self-efficacy sub-set of that group, t (19) = -3.33, $p < .05$, (the ω^2 value was .31. accounting for 31% of the variance in performance), but a non-significant increase for those with high pre-assessment self-efficacy, t (19) = -.90, ns.

CHAPTER IV

Discussion

Only one of the hypotheses of interest in the current study was supported. In general the results support previous research in the areas of performance and self-efficacy and confirm that self-efficacy is associated with successful performance of managerial activities.

Main Effects of Self-efficacy

First, the study hypothesized that self-efficacy would be correlated with performance. Self-reports of self-efficacy taken just prior to participation in the first and second assessment centers were strongly associated with performance in the assessment exercises. These results are consistent with the findings of Cervone and Scott (1995) regarding the relationship between self-efficacy and the execution of success behaviors, with the links between self-efficacy and commitment and goal-setting behavior found by Bandura and Cervone (1986), and Earley and Lituchy (1991), and with the meta-analytic work of Stajkovic and Luthans (1998) concerning the relationship of self-efficacy and work-related performance.

Main Effects of Feedback Format

The second set of hypotheses stated that performance in the second phase of assessment exercises would increase for the situation-based feedback group and decrease for the attribute-based feedback group. These expectations were partially met; although there was a direct positive effect of situation-based feedback on performance in the second assessment center, participants in the attribute-based feedback condition also experienced an

increase in performance. These increases in performance for both groups were not consistent with the hypothesized direction of performance results, nor were they consistent with Larsh's (1996) findings in which attribute-based feedback recipients experienced a non-significant decrease in performance while situation-based feedback recipients' performance increased. In the current study performance differences between groups in the second assessment center were entirely due to initial differences in performance.

Indirect Effects of Feedback Format

The results of this study do not provide support for the conceptual mediation model. As depicted in Figure 1, it was hypothesized that the effects of feedback format on subsequent performance are partially mediated by post-feedback self-efficacy. Inconsistent with previous outcomes (Larsh, 1996), the present study found that situation-based feedback was not significantly positively correlated with performance results, nor did feedback format influence post-feedback self-efficacy. Using a hierarchical regression technique, feedback format did not statistically predict post-feedback self-efficacy; post-feedback self-efficacy was not shown to mediate the feedback format— performance relationship.

Situation-based feedback recipients were cued to focus upon the situational demands of managerial tasks and therefore were expected to reduce distracting meta-task processing (Kluger & DiNisi 1996). This focus was intended to create a setting in which these participants would improve their managerial skill performance; however, changes in performance by this group were entirely attributable to initial performance. Conversely, recipients of attribute-based feedback were cued to focus upon personal attributes and presumably were less able to focus on situational demands. Although these participants did not fare as well in subsequent performance exercises when compared with the situation-

based feedback recipients, their performance in the second assessment center was also shown to be entirely attributable to initial performance.

Indirect Effects of Pre-assessment Self-efficacy

In regard to the moderating effects of pre-assessment self-efficacy on the relationship between feedback format and post-feedback self-efficacy, no evidence of moderating effects were found for pre-assessment self-efficacy, although a significant main effect was found for pre-assessment self-efficacy. The lack of a moderating effect was due in part to the weak relationship between feedback format and post-feedback self-efficacy. However, supplementary analysis of the mean differences in post-feedback self-efficacy between participants with initially high or low self-efficacy in the two treatment conditions revealed some variable effects of feedback format on post-feedback self-efficacy. When treatment groups were divided into sub-sets of individuals reporting either high or low initial self-efficacy, both feedback formats were found to have variable effects on post-feedback self-efficacy such that those reporting initial high self-efficacy experienced a subsequent decline and those reporting initial low self efficacy reported an increase in self efficacy regardless of the format in which they received feedback.

A partial explanation is that both groups may have reverted toward the middle of the post-feedback self-efficacy survey due to factors other than feedback format (i.e., familiarity with the assessment center process or knowledge of exercise difficulty). This regression to the self-efficacy scale mean may explain some of the variability in response between initial self-efficacy and post-feedback self-efficacy for both the high and low groups. Regression to the mean aside, the first major conclusion is that both types of feedback format have variable effects on self efficacy and that the relationship between feedback format and post-feedback self-efficacy is determined, at least in part, by initial self-efficacy.

Effect of Initial Self-efficacy

Support was found for the proposition that low self-efficacy subjects would report significantly higher self-efficacy after receiving feedback. An increase occurred for both groups, although the increase was not statistically significant for recipients of attribute-based feedback.

Individuals who initially reported high self-efficacy to perform the managerial tasks were expected to experience post-feedback decreases in self-efficacy. As predicted, a post-feedback decrease in self-efficacy occurred for both feedback treatment groups although, again, the decrease was not significant for those receiving attribute feedback.

Changes in Self-efficacy Related to Feedback Format

Finally, the effects of feedback format irrespective of initial self-efficacy must be considered. Although the combination of feedback format and initial self-efficacy generated variable effects on post-feedback self-efficacy for both groups, the situation-based feedback treatment produced statistically significant changes in self-efficacy whereas the attribute-based feedback treatment did not, as shown in Tables 11 and 12. To reiterate these changes described in the previous section, the situation-based treatment resulted in a significant decrease in self-efficacy for those participants with initially high self-efficacy, and a significant increase in self-efficacy for those with initially low self-efficacy. Thus, there were changes for people receiving this feedback treatment, although the changes were in differing directions. Recipients of attribute-based feedback experienced non-significant self-efficacy changes. Those participants with initially high self-efficacy experienced a non-significant decrease in self-efficacy; participants with initially low self-efficacy experienced a non-significant increase in self-efficacy.

These findings are important in light of the strong relationship between self-efficacy and performance; it is possible that in order for feedback to ultimately result in better performance it must first influence self-efficacy. Since the attribute group reported no significant influence on self-efficacy as a result of their performance feedback, it would be reasonable to expect that performance changes would be unlikely for this group. And, although the decrease in self-efficacy experienced by the situation-based feedback group would be of concern in an organizational setting, the fact that this feedback created a change in self-efficacy is encouraging. This group of participants was clearly affected by their feedback information. If, as conjectured, they initially had unrealistically high perceptions of their managerial ability, this perceived comeuppance may have served a useful purpose. Although this group may have reacted poorly from a self-efficacy standpoint to the feedback, they may benefit from at least acknowledging that the picture of their managerial abilities is not as rosy as initially predicted. They may be more receptive to the feedback information and suggestions for improvement than the attribute-based feedback recipients, who experienced no change in self-efficacy, and perhaps were engaging in subconscious efforts to ignore the feedback. From an organizational training perspective, it may be easier to effectively train people who believe they need better skills than to train those who do not acknowledge the need to improve.

The supplementary analyses of performance differences between high and low self-efficacy subsets of participants revealed some interesting outcomes. As a group, participants receiving situation-based feedback— regardless of their pre-assessment self-efficacy levels— achieved significant increases in performance. Significant performance increases were also observed for the pre-assessment low self-efficacy participants receiving attribute-based feedback.

The feedback intervention did not have a statistically significant impact on the high initial efficacy participants who had received attribute-based feedback. This subset of participants had experienced a non-significant decrease in self-efficacy, followed by a non-significant performance increase. Performance feedback had no effect on their beliefs about their efficacy to perform managerial tasks, and little change in performance was accomplished. It can be conjectured that they simply ignored or blocked out the unexpectedly negative attribute-based feedback; or perhaps preserved some of their original sense of efficacy but were distracted by meta-task processing while working through the second set of performance exercises.

A more surprising sequence of events was observed for the high pre-assessment self-efficacy subjects in the situation-based feedback group. They showed a significant decrease in self-efficacy but were still able to significantly increase their performance in the second series of assessment exercises. Although this result runs counter to the strong self-efficacy— performance link it is a promising outcome for organizations faced with giving performance feedback to strongly self-efficacious or expert employees. It seems that it is possible to give balanced feedback to highly self-efficacious individuals, to have them pay enough attention to the feedback to revise their opinions of their abilities, and yet to improve their performance in subsequent work situations. These individuals were presumably not bothered by meta-task processing while involved in the second set of performance exercises.

Implications

Results of this study suggest several implications for organizations and for future research in the areas of feedback interventions and the feedback-performance relationship. The results are especially important for organizations that routinely conduct employee

performance appraisals, although the results of this developmental feedback study can be generalized to other feedback interventions as well. Two issues for organizations that provide both positive and "needs improvement" feedback to employees are evident. First, traditional attribute-based developmental feedback has been shown by Larsh (1999) and in the present study to have little effect on self-efficacy. Given the strong relationship between self-efficacy and performance, attribute-based feedback interventions that cause little change in efficacy should be replaced by more effective situation-based feedback intervention formats.

Given the outcomes of the present study it isn't necessary for supervisors to know anything specific about their employees' levels of self-efficacy before choosing a feedback format. Feedback recipients pay attention to situation-based feedback, as evidenced by the changes in self-efficacy found in this study. Attribute based feedback is, essentially, ignored. Because of the attention paid to situation-based feedback, performance changes for recipients of situation-based feedback may be more likely to occur. This is the case even for highly self-efficacious individuals; their subsequent performance significantly increased even given the observed post-feedback decrease in self-efficacy.

The results suggest several interesting ideas for future research. The current study was limited to the effects of a single feedback format (attribute- or situation-based) used to deliver both positive and "needs improvement" information. The results show that both feedback formats had variable effects on self-efficacy, and it was reasoned that these effects may have been partly due to the different attributions people make for their success or failure outcomes. Perhaps the most effective feedback delivery mechanism for both high and low efficacious individuals would be a mixed-format in which positive perceived success

information is attributed to stable, internal attributes and "needs improvement" or perceived failure information is attributed to aspects of the situation.

Future research might also explore the effects of situation-based feedback in a workplace performance appraisal context rather than in the assessment center context where feedback was primarily intended as developmental information. In addition to confirming the generalizability of the current findings in a field setting, a workplace study might also explore the effects of the two feedback formats on the purveyor of the feedback information. Manager-raters showing high levels of discomfort or low levels of confidence in the appraisal system have been found to provide unusually high performance ratings or ratings which do not discriminate well among ratees and/or dimensions (Tziner & Murphy, 1999). Managers or supervisors conveying performance appraisal information might perhaps react more favorably to giving situation-based feedback for similar reasons that recipients react more favorably to getting it.

Limitations

A limitation to this study should be noted. Research participants were restricted within a narrow age and experience range; more experienced managers may have different efficacy and performance reactions to developmental feedback information. The generalizability of study results should be interpreted in this light.

Conclusions

In conclusion, significant contributions of this study to the literature are the development of an alternative to attribute-based feedback interventions and the measurement of a potentially important mediating variable derived from self-efficacy and social-cognitive theories. This study provides a partial explanation for why past feedback interventions had their often disappointing effects on performance. Thus, progress was

made in understanding how developmental feedback formats actually influence self-efficacy, and how they might potentially affect performance outcomes.

References

Ammons, R. B. (1956). Effects of knowledge of performance: A survey and tentative theoretical formulation. Journal of General Psychology, 73, 87-95.

Ashford, S. J., & Cummings, L. L. (1993). Feedback as an individual resource: Personal strategies of creating information. Organizational Behavior and Human Performance, 32, 370-389.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. Psychological Review, 84, 191-215.

Bandura, A. (1997). Self-efficacy: the exercise of control. New York: W. H. Freeman and Company.

Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory. Englewood Cliffs, N.J.: Prentice Hall.

Bandura, A., & Cervone, D. (1986). Differential engagement of self-reactive influences in cognitive motivation. Organizational Behavior and Human Decision Processes, 38, 92-113.

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic and statistical considerations. Journal of Personality and Social Psychology, 51, 1173-1182.

Baumeister, R. F., Hutton, D. G., & Cairns, K.J. (1990). Negative effects of praise on skilled performance. Basic and Applied Social Psychology, 11, 131-148.

Brown, F. J. (1932). Knowledge of results as an incentive in schoolroom practice. Journal of Educational Psychology, 23, 532-552.

Carver, C. S., & Scheier, M. F. (1981). Attention and self regulation: A control theory to human behavior. New York; Springer-Verlag.

Cervone, D. (1997). Social-cognitive mechanisms and personality coherence: Self-knowledge, situational beliefs, and cross-situational coherence in perceived self-efficacy. Psychological Science, 8 (1), 43-50.

Cervone, D. & Scott, W. (1995). Self-efficacy theory of behavioral change. In W. O'Donohue & L. Krasner (Eds.), Theories of behavior therapy (pp. 349-383). Washington, DC: American Psychological Association.

Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. Psychological Bulletin, 98, 310-357.

Crafts, L. W., & Gilbert, R. W. (1935). The effect of knowledge of results on maze learning and retention. Journal of Educational Psychology, 26, 177-187.

De Vries, D. L., Morrison, A. M., Shullman, S. L., & Gerlach, M. L. (1986). Performance appraisal on the line. Greensboro, NC: Center for Creative Leadership.

Earley, P. C., & Lituchy, T. R. (1991). Delineating goal and efficacy effects: A test of three models. Journal of Applied Psychology, 76, 81-98.

Elwell, J. L., & Grindley, G. C. (1938-1939). The effect of knowledge of results on learning and performance. British Journal of Psychology, 39, 39-54.

Ender, P. B., & Bohart, A. C. (1974). Attributions of success and failure. Psychological Reports, 35, 275-278.

Feldman, J. M. (1981). Beyond attribution theory: Cognitive processes in performance appraisal. Journal of Applied Psychology, 66, 127-148.

Fleishman, E. A., & Quaintance, M. K. (1984). Taxonomies of human performance: The description of human tasks. Orlando, FL: Academic Press.

Fried, Y., & Ferris, G. R. (1987). The validity of the job characteristics model: A review and meta-analysis. Personnel Psychology, 40, 287-322.

Frieze, I. H., & Bar-Tal, D. (1980). Developmental trends in cue utilization for attributional judgments. Journal of Applied Developmental Psychology, 1, 83-94.

Gaugler, B. B., & Thornton, G. C. III (1989). Number of assessment center dimensions as a determinant of assessor accuracy. Journal of Applied Psychology, 74, 611-618.

Hampson, S. E., John, O. P., & Goldberg, L. R. (1986). Category breadth and hierarchical structure of personality: Studies of asymmetries in judgments of trait implications. Journal of Personality and Social Psychology, 51, 37-54.

Harris, M. J., & Rosenthal, R., (1985). Mediation of interpersonal expectancies effects: 31 meta-analyses. Psychological Bulletin, 97, 363-386.

Hoffman, C., Mischel, W., & Mazze, K. (1991). The role of purpose in the organization of information about behavior: Trait-based versus goal-based categories in person cognition. Journal of Personality and Social Psychology, 40, 211-225.

Hogan, R. T. (1992). Personality and personality measurement. In M. D. Dunnette & L. M. Hough (Eds.), Handbook of industrial & organizational psychology, Vol. 2., 873-919. Palo Alto, CA: Consulting Psychologists Press, Inc.

Ilgen, D. R., & Feldman, J. M. (1983). Performance appraisal: A process focus. In L. Cummings & B. Staw (Eds.), Research in organizational behavior (pp. 141-197). Greenwich, CT: JAI Press.

Jones, S. C., & Regan, D. T. (1974). Ability evaluation through social comparison. Journal of Experimental Social Psychology, 10, 133-146.

Kagan, J. (1988). The meaning of personality predicates. American Psychologist, 43, 115-129.

Kluger, A. N., & DiNisi, A. (1996). The effects of feedback interventions on performance: A historical review, a meta-analysis and a preliminary feedback intervention theory. Psychological Bulletin, 119, 254-284.

Koestner, R., Zuckerman, M., & Koestner, J. (1987). Praise, involvement, and intrinsic motivation. Journal of Personality and Social Psychology, 53, 383-390.

Larsh, S. L. (1996). Reactions to attribute- versus exercise-based feedback: A developmental assessment center study. Unpublished master's thesis, Colorado State University, Fort Collins.

Larsh, S. L. (1999). A comparison of attribute-based and situation-based performance feedback: Effects of feedback format on self-efficacy. Unpublished manuscript, Colorado State University, Fort Collins.

Latham, G. P., & Locke, E. A. (1991). Self-regulation through goal setting. Organizational Behavior & Human Decision Processes, 50, 212-247.

Liden, R.C., & Mitchell, T. R. (1985). Reactions to feedback: The role of attributions. Academy of Management Journal, 28, 291-308.

Mace, C. A. (1935). Incentives: Some experimental studies (Medical Research Council, Industrial Health Research Board, Rep. No. 72). London: Her Majesty's Stationary Office.

Manzer, C. W. (1935). The effect of knowledge of output on muscular work. Journal of Experimental Psychology, 8, 80-90.

Maurer, T. J., & Pierce, H. R. (1998). A comparison of Likert scale and traditional measures of self-efficacy. Journal of Applied Psychology, 83, 324-329.

McCrae, R. R., & Costa, P. T., Jr. (1996). Toward a new generation of personality theories: Theoretical contexts for the five-factor model. In J. S. Wiggins (Ed.), The five-factor model of personality: Theoretical perspectives (pp. 51-87). New York: Guilford Press.

Mikulincer, M., Glaubman, H., Ben-Artzi, E., & Grossman, S. (1991). The cognitive specificity of learned helplessness and depression deficits: The role of self-focused cognitions. Anxiety Research, 3, 273-290.

Mitchell, T. R., Hopper, H., Daniels, D., George-Falvy, J., & James, L. R. (1994). Predicting self-efficacy and performance during skill acquisition. Journal of Applied Psychology, 79, 506-517.

Nease, A. A., Mudgett, B., & Quinones, M. A. (1997, April). Effects of feedback sign and self-efficacy on acceptance of feedback. Poster session presented at the 12th annual conference of the Society for Industrial/Organizational Psychology, St. Louis.

Pressy, S. L. (1950). Development and appraisal of devices providing immediate automatic scoring of objective tests and concomitant self-instruction. Journal of Psychology, 29, 417-447.

Prichard, R. D., Jones, S. D., Roth, P. L., Stuebing, K. K., & Ekeberg, S. E. (1996). Effects of group feedback, goal setting, and incentives on organizational productivity [Monograph]. Journal of Applied Psychology, 73, 337-358.

Ruble, D. N., Feldman, N. S., Higgins, E. T., & Karlovac, M. (1979). Locus of causality and the use of information in the development of causal attributions. Journal of Personality, 47, 595-614.

Russell, C. J. (1985). Individual decision processes in an assessment center. Journal of Applied Psychology, 70, 737-746.

Ryan, R. M. (1982). Control and information in the intrapersonal spheres: An extension of cognitive evaluation theory. Journal of Personality and Social Psychology, 43, 450-461.

Sackett, P. R., & Hakel, M. D. (1979). Temporal stability and individual differences in using assessment information to form overall ratings. Organizational Behavior and Human Performance, 23, 120-137.

Schmidt, N. (1977). Interrater agreement in dimensionality and combination of assessment center judgments. Journal of Applied Psychology, 62, 171-176.

Stajkovic, A. D., & Luthans, F. (1998). Self-efficacy and work-related performance: A meta-analysis. Psychological Bulletin, 124 (2), 240-261.

Stumpf, S. A., Brief, A. P., & Hartman, K. (1987). Self-efficacy expectations and coping with career related events. Journal of Vocational Behavior, 31, 91-108.

Thoits, P. A. (1982). Conceptual, methodological and theoretical problems in studying social support as a buffer against life stress. Journal of Health and Social Behavior, 23, 145-159.

Thornton, G. C. III, & Byham, W. C. (1982). Assessment centers and managerial performance. New York: Academic Press.

Tziner, A., Murphy, K. R. (1999). Additional evidence of attitudinal influences in performance appraisal. Journal of Business and Psychology, 13, 407-419.

Vallacher, R. R., & Wagner, D. M. (1987). What do people think they're doing? Action identification and human behavior. Psychological Review, 94, 3-15.

Weiner, B. (1986). Attribution, emotion and action. In R. M. Sorrentino & T. Higgins (Eds.), Handbook of motivation and cognition: Foundations of social behavior (pp. 281-3120). New York, NY: Guilford Press.

Wicklund R. A. (1975). Objective self-awareness. In L. Berkowitz (Ed.), Advances in experimental social psychology (Vol. 8, pp. 233-237). New York: Academic Press.

Wiggins, J. S. (1973). Personality and prediction: Principles of personality assessment. Reading, MA: Addison-Wesley.

Wood, R. E., & Bandura, A. (1989). Impact of conceptions of ability on self-regulatory mechanisms and complex decision making. Journal of Personality and Social Psychology, 56, 407-415.

Wood, R. E., Bandura, A., & Bailey, T. (1990). Mechanisms governing organizational performance in complex decision-making environments. Organizational Behavior and Human Decision Processes, 46, 181-201.

Wyer, R. S., Jr., & Gordon, S. E. (1984). The cognitive representation of social information. In R. S. Wyer, Jr. & T. K. Srull (Eds.), Handbook of social cognition (Vol. 2, pp. 73-151). Hillsdale, NJ: Erlbaum.

Appendix A

RATING SCALE

Skilled Experienced and accomplished at performing managerial tasks; efficient, professional, poised, and thorough. Almost equally effective in routine and unique managerial situations. Is well-organized and often has developed contingency plans as well as inceptive plans. Ready for full leadership position in the organization. Managerial skills and techniques show creativity and refinement. Innovative and sophisticated solutions and ideas show thorough comprehension of organizational values and goals. Task and interpersonal goals consistently well-integrated. Coaching seldom sought; ready to coach others.

Proficient Adept at performing most managerial tasks; shows effects of practical experience. Finds most activities routine and copes skillfully with them. Effectively manages day-to-day activities; is organized and well-prepared. Proficient managers are assured enough to meet non-routine or unique activities in a businesslike manner. Managerial skills and techniques well developed and executed easily. Ideas and actions show acceptance and understanding of organizational values and goals. Task goals and interpersonal goals usually well-integrated. Uses coaching to corroborate ideas.

Competent Capable of performing most managerial tasks well; moderately experienced. Adequately copes with routine tasks; is usually well-organized and well-prepared. Finds most managerial duties challenging enough to be interesting. Challenged by unique situations in managerial job and usually copes adequately with them. Work is consistently acceptable. Managerial skills and techniques show some refinement; decisions reflect awareness of organizational values and goals. Task goals and interpersonal goals regularly integrated. Seeks coaching regularly; especially for non-routine activities.

Satisfactory Somewhat experienced at performing various managerial tasks. Has skills or experience allowing effective participation in non-threatening or routine managerial tasks, although quite challenged by novel or unique situations. Is reasonably organized and prepared. Work is usually adequate. Has fundamental grasp of managerial techniques; has occasional unpolished moments but usually composed. Actions respond to situational needs and reflect growing awareness of organizational values and goals. Task goals and interpersonal goals often integrated. Seeks coaching often.

Scholar Limited experience at performing managerial tasks; although may be well-versed in management theory. Skills or experience allow moderately effective participation in routine managerial tasks. Scholars find managerial work very challenging; many situations present unforeseen problems. Is occasionally disorganized or ill-prepared. Managerial techniques undeveloped; work and demeanor may lack professionalism. Infrequently demonstrates actions that integrate immediate situational needs with long-term organizational values and goals. Intermittently integrates task and interpersonal goals. Finds frequent coaching very useful.

Appendix B

Background Information

Please answer the following questions and the attached survey. *The information on this page will be used to prepare aggregate statistical reports only.*

Gender:
1. ____ male
2. ____ female

Age:
1. ____ 18 - 23
2. ____ 24 - 29
3. ____ 30 or older

Ethnic identity:
1. ____ American Indian
2. ____ Asian or Pacific Islander
3. ____ Hispanic
4. ____ Black
5. ____ White
6. ____ Other (please specify) _____

Year in school:
1. ____ Freshman
2. ____ Sophomore
3. ____ Junior
4. ____ Senior
5. ____ Other (please specify) _____

Major: _____

Cumulative Grade Point Average
1. ____ 3.5 - 4.0
2. ____ 3.0 - 3.49
3. ____ 2.5 - 2.99
4. ____ 2.0 - 2.49
5. ____ 1.5 - 1.99
6. ____ 1.0 - 1.49

Managerial experience— jobs in which you had formal authority over other employees and programs.
1. ____ None
2. ____ 1 month to 6 months
3. ____ 7 months to 1 year
4. ____ 1 year to 3 years
5. ____ Over 3 years

Appendix C

PRE-ASSESSMENT SURVEY

Circle your level of agreement with the following statements:

1. I will feel confident working on the assessment exercises.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

2. I won't have much control over difficult or stressful situations during the assessment center.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

3. I can perform well even if the assessment activities are challenging.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

4. I can recover from failure or frustration experienced during the assessment center and persist in doing my personal best.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

5. I can overcome difficulties experienced during the assessment center.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

6. I view the assessment center experience as somewhat threatening.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

7. I can remain task-focused in the face of difficulties experienced during the assessment center.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

8. I will feel comfortable with the assessment activities.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

9. I view the assessment center exercises as challenges to be mastered.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

10. I am not very motivated to perform well on the assessment exercises.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

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Question # 11: Circle your level of agreement about how well you believe you will perform in the assessment center. Use the Rating Scale as a reference.

a. I can perform at the "Scholar" level *or better*.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

b. I can perform at the "Satisfactory" level *or better*.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

c. I can perform at the "Competent" level *or better*.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

d. I can perform at the "Proficient" level *or better*.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

e. I can perform at the "Skilled" level.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

Appendix D

ASSESSMENT CENTER SURVEY

Indicate your level of agreement with each of the following statements:

1. None of the participants in the assessment center had an unfair advantage over other participants.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

2. I understood the situation that was presented to me in each of the three exercises.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

3. I understood the tasks that were assigned to me during the assessment center.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

4. The situations seemed realistic (i.e., I could see a manager performing duties like these on the job).

Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

5. The assessment center was challenging.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

Appendix E

FEEDBACK SURVEY

Please answer these questions about the feedback you just received:

1. Feedback about my *effective* performance (the things that I did well) during the assessment center was understandable.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

2. Feedback about my *ineffective* performance (areas in which improvements can be made) during the assessment center was understandable.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

3. Suggestions for improvement made during my feedback session were clear.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

4. The feedback I received will be useful as I prepare for a career.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

5. Feedback about my *effective* performance (the things I did well) was accurate.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

6. Feedback about my *ineffective* performance (areas in which improvements can be made) was accurate.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

7. The assessment center feedback I just received will be useful in my current job or personal life.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree

8. Your feedback was organized into three subgroups. What were they?

_____

_____

_____