

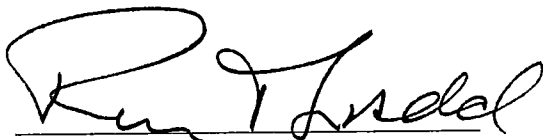
To the Graduate Council

I am submitting herewith a dissertation written by Steven Michael Barnard entitled "Leader Decision Making Quality and Subordinate Performance" I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Industrial/Organizational Psychology

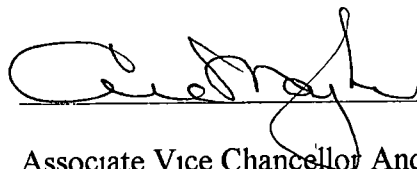


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We have read this dissertation and recommend its acceptance



Accepted for the Council



Associate Vice Chancellor And

Dean of the Graduate School

LEADER DECISION MAKING QUALITY AND SUBORDINATE PERFORMANCE

A Dissertation Presented for the
Doctor of Philosophy Degree
The University of Tennessee, Knoxville

Steven M Barnard

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Although words can not express the gratitude I have for the many people who have encouraged me and contributed to my efforts, I would like to at least acknowledge some of them here

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ABSTRACT

In the recent past, the study of transformational leaders has been the most predominant leadership research conducted. There have been strong linkages found between these behaviors and subordinate outcomes such as motivation and performance. For this reason, it was used as a base comparison for the addition of manager decision making quality. It was hypothesized that managers who make higher quality decisions will be able to guide subordinates in a more strategic fashion, ultimately increasing their motivation and performance. In addition, it was hypothesized that this effect of better decisions would be over and above that associated with transformational leader behavior.

One hundred and nine managers and two of their subordinates were surveyed to assess the managers' behaviors and one of the subordinates' motivation and performance. Results indicated that decision making quality did not have a direct relationship with subordinate outcomes while in line with other studies, a significant relationship was found for transformational leadership with subordinate outcomes.

The pattern of correlations suggest that decision making quality may still be an important factor, most probably as a predictor of transformational leadership. Other possibilities are proposed as well as limitations, implications and suggestions for future research.

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CHAPTER I

INTRODUCTION

Leadership effectiveness has been a formal area of inquiry for decades. In the early 1920's, researchers set out to identify those Army personnel who could effectively command troops during World War I (e.g., Nutting, 1923). These studies sought to identify a set of traits that could be used to effectively select and train future leaders. Since then, researchers have developed numerous theories in an attempt to describe how effective leaders interact with subordinates. For many years, most of these studies revolved around the belief that effective leadership was derived from some combination of direction and support which leaders provided to followers. This is evident in the Ohio State Leadership Studies and many of the studies that followed, which focused on the impact of leader initiating structure and consideration (Fleishman, 1973). In the 1970's, a major shift took place that favored looking at leadership as an exchange between leaders and subordinates. Path-goal (House & Mitchell, 1974), substitutes for leadership (Kerr & Jermier, 1978), leader-member exchange (Dienesch & Liden, 1986, Scandura, Graen, & Novak, 1986), situational leadership (Hersey & Blanchard, 1988), and operant and reward theories (Komaki, Zlotnick, and Jensen, 1986, Podsakoff & Todor, 1985), all represent transactional leadership models where leaders and subordinates are said to be mutually dependent on one another. In other words, transactional leaders enter into an exchange relationship with subordinates where both parties provide for each other's wants and needs (Yukl, 1994). Typically, leaders offer such things as role clarification, support, feedback, specification of rewards and the contingencies under which they will be distributed. In return, followers are then expected to have the tools to work more

effectively and also as a result, be more satisfied with their work. Thus, under the transactional model, "effective leadership is contingent on the leaders' abilities to meet and respond to the reactions and changing expectations of their followers" (Kuhnert & Lewis, 1987)

In 1978, James Montgomery Burns published his seminal book on leadership in which he introduced the concept of charismatic leadership. This work marked another shift in the conceptualization of effective leadership. In contrast to the exchanges that transactional leaders rely on, transformational or charismatic¹ leaders affect followers through their ability to communicate their values to and inspire a vision of the future for followers. Transformational leaders are reportedly capable of engaging the value systems of followers and "who by force of their personal abilities are capable of having a profound and extraordinary effect on followers" (p. 189). Since its introduction, many researchers have readily embraced this new leadership concept which has resulted in a proliferation of conceptual pieces and empirical studies (cf., Bass, 1990). Reasons for its acceptance can be traced to its practical appeal and the recurring significant effects which have been found between transformational leader behavior and subordinate performance (e.g., Hater & Bass, 1988, Howell & Avolio, 1993, Waldman, Bass, & Einstien, 1987) and satisfaction (e.g., Komives, 1991, Waldman, Bass, & Einstein, 1987).

While many of the transactional theories are beneficial with respect to providing insight into the phenomenon of leadership, some researchers have voiced disenchantment with our inability to make definitive statements about the exact processes that define

¹ Although Charismatic leadership is often viewed as an individual leadership theory, it represents a central component of Transformational leadership. Therefore, the latter will be used to refer to both Charismatic and Transformational theories.

leadership and associated levels of effectiveness (cf , Campbell, 1977, Greene, 1977)

Although the recent emphasis on transformational leadership has enriched and broadened views of effective leadership, all of these perspectives have largely overlooked other relevant facets of the leader-follower dynamic. In fact, the current focus on transformational leadership seems to embody wholeheartedly what the field has embraced in the past. Namely, transformational as well as other perspectives have focused exclusively on “how” leaders react to and interact with followers. “How” refers to the social/interpersonal dynamic that occurs between supervisors and their subordinates. Several examples of this stance exist. Borrowing from the behavioral approach, one of the two predominant variables, consideration, addresses how considerate leaders behave toward their subordinates (e g , Fleishman & Peters, 1962). Similarly, those advocating the leader-member-exchange model focus on the quality of the interaction (e g , negotiating latitude) between leaders and followers when assessing the potential impact of leadership (e g , Dienesch & Liden, 1986). When discussing the tenets of transformational leadership, attention is given to variables such as individual consideration, charisma, and inspiration (cf , Bass, 1985), each of which points to “how” potential leaders interact with followers. Furthermore, such familiar leadership concepts as encouragement, consideration, level of autonomy, reward equity, concern for others, and recognition are all examples of the interactional style occurring within the leader-subordinate dyad. In sum, these perspectives represent the interpersonal aspects of the leader-subordinate relationship.

While there is little doubt that “how” leaders react to and interact with subordinates matters with respect to the quality of leadership received by subordinates, it

should also be important “what” leaders say and convey to followers. The “what” signifies the content of communications that are directed at followers. Hence, in addition to interactional style, it is suggested that leader behaviors also contain a message content component that is relevant to the leadership dynamic. This distinction can be illustrated with an example borrowed from a military setting. The captain, as the leader of a naval ship, has the ultimate choice regarding whether to engage the enemy or not. The final decision to engage the enemy can be communicated to the crew in several different ways, by delivering it in an inspirational speech, threatening to punish those who do not comply, and pleading with the crew. Each of these represents a different style that the captain may use. The style the captain employs represents “how” the captain delivers his decision. In contrast, the decisional choice itself (e.g., “Attack the enemy”), regardless of how it is obtained or delivered, represents the content of the message.

Message content is a distinct aspect of leadership and is separate from the style in which it is delivered. Traditionally, theories focusing on the social/interpersonal dynamics of leadership have ignored how the content of communications influences the leadership process (e.g., Leader-member exchange, Dienesch & Liden, 1986). Admittedly, there may not always be a clear distinction between the “what” and “how” components of a message, but they are each always present. In some instances, message content may have very little impact on subordinates because it is presented in such a convincing way. In other instances, the most charismatic appeal may not override a fundamental flaw in the logic behind the appeal. Regardless of the circumstances of any given decision, the general distinction between stylistic and content issues appears to have theoretical importance.

Specifically, the distinction between style and content suggests that there may be independent effects on subordinates' behavior. To the extent that message content has an effect on followers it becomes a relevant and important area of study with respect to understanding the leadership process. Typically, leadership processes are described with respect to leader behaviors (Stogdill, 1974). Although message content is a product of the decision making process and not itself a leader behavior it still has the potential to affect subordinates. Described effects are often in the form of subordinate satisfaction, performance, comfort, and amount of work. In any leader decision-making opportunity where the decision is communicated to subordinates, the choice represents the content of the message and thus has the potential to impact subordinates. In other words, any time a leader makes a decision, subordinates can be affected by the choice. Examples of decisions range from the mundane (what kind of stationary to use) to the significant (strategic direction of the department), each of which is likely to have an effect on subordinates. Furthermore, subordinates are not always affected in a positive fashion. Depending on the quality of leader decisions, effects could be either positive or negative. The evaluation of decision quality depends on the perceived match between actual outcomes of the decision and those that are desired. Thus, leaders make decisions, the quality of which will determine whether the outcomes are positive or negative.

This brief discussion serves to introduce a conceptually different way to view the leadership process. Instead of focusing on the social/interactional dynamic between leaders and followers, an equally important question has been raised, "Does leader decision-making quality affect subordinates?" In the military example, the decision to engage the enemy is obviously relevant to the outcomes of the whole group. If

outnumbered, it matters little how motivated the crew is in as much as they are still likely be defeated. In this instance, the quality of leader decisions is at least as important as the leadership style that is chosen to communicate the choice. As such, this component of leadership may have a significant impact on how effective leadership is defined and understood.

The objectives of the present study are threefold. The first objective is to refine the conceptual distinction between two different facets of the leadership phenomenon: leadership style and leader decision quality. Leadership style is conceptualized as “how” leaders interact with followers, while leader decision quality is viewed as the quality of the direction communicated to subordinates. The second objective is to explore the concept of leader decision quality with respect to the frequency of leader decisions, control over these decisions, and the kind of decisions that affect subordinates. Leader decision quality is only relevant to the extent that leaders frequently have control over decisions that affect subordinates. The third objective is to test the impact of leader decision quality on subordinate outcomes. This last objective becomes more meaningful when tested in conjunction with leadership style (e.g., Transformational Leadership). An effect between leader decision quality and subordinate outcomes by itself is not particularly revealing because as a predictor of subordinate outcomes, it may provide no incremental validity over more established effects such as those from Transformational leadership. Therefore, the expectation is that there will be a distinct and incremental effect for leader decision quality over that of leadership style. It is hoped that by fulfilling these objectives, our understanding and future study of effective leadership will

be enhanced to the extent that the quality of leader decisions helps explain varying levels of subordinate effectiveness

CHAPTER II

LITERATURE REVIEW

In the previous chapter, the notion that subordinates may be affected by the quality of leader decisions was introduced as a new way to view effective leadership, a view that differs from the typical emphasis on interpersonal interactions between leaders and subordinates. In particular, the distinctiveness of the leader decision quality approach lies in the focus on the quality of “what” is being told to subordinates while largely overlooking the interpersonal aspects of interactions. In the past, little attention has been given to this aspect of leader behavior (i.e., decision making). Yukl (1994, p. 3) offered a short discourse on various definitions of leadership. He states that most definitions “reflect the assumption that leadership involves a social influence process whereby intentional influence is exerted by one person over other people to structure the activities and relationships in a group or organization.” The theoretical process surrounding decision making quality does not include this emphasis on social influence processes; this may be one of the reasons why decision making quality has been overlooked in past leadership research. The “theory” behind decision making quality primarily describes the strategic direction of leader decisions and their effects on subordinates. The purpose of this chapter is to introduce leader decision making quality as an important area for leadership research and to outline several hypotheses considered in the current study.

While it may be a different approach to studying leadership, decision making quality in the study of managerial behavior is not new. Decision making has a long and well grounded history in management science as a primary managerial role (e.g.,

Mintzberg, 1973) In order to better understand past work on decision making, a brief review of extant decision making literature will be considered first. The discussion will then move to an introduction to the concept of decision making quality. Leader decision making quality becomes important for leadership research if it is able to explain the mechanisms involved in subordinate influence. In the following section, the possible influencing effects on subordinates will be explored. Next, areas of leadership that incorporate decision making (e.g., participative decision making) will be reviewed. Finally, a framework for the present study will be given with a focus on testing the central hypotheses of this investigation that leader decision making quality is related to subordinate outcomes.

The Role of Decision Making in Managerial Behavior

Although leader decision making is rarely mentioned as a leadership topic, it has a significant presence in investigations of managerial behavior. In order to better define the work that has been conducted on managerial decision making, this section contains a description of the role decision making plays in managerial activities. A review of past research regarding the link between managerial decision making effectiveness and subordinate outcomes will follow as a further foundation for the integration of decision making into a model of leadership.

Decision making can be found as a topic of research in studies involving various aspects of managerial behavior and more specifically in those investigations that attempt to categorize managerial behavior into different roles. Within these categorization models, decision making invariably rises to the surface as a frequent and important managerial activity. Typically, managerial behaviors are assessed with questionnaires,

observation, or interviewing and then listed and categorized into several themes. In one of the most widely known categorizations of managerial behavior, Mintzberg (1973) describes decision making as a superordinate role, made up of four of his ten managerial roles: the entrepreneur, disturbance handler, resource allocator, and negotiator roles. Whether allocating resources among competing interests or initiating controlled change in the work unit, each of these roles includes some form of decision making. Also, leadership is listed as a separate role within the interpersonal cluster and primarily includes behaviors that are intended to influence subordinates and involve interpersonal interactions between leaders and subordinates. Kotter (1982), who is also known for his work on managerial behavior, describes six managerial roles. Of these, two of the roles (i.e., setting basic goals/policies and resource allocation) coincide with a decision making role. Leadership is also present within Kotter's taxonomy, but it is described as a role of motivating subordinates and controlling performance and conflicts. Yukl (1994), in an effort to integrate and summarize these multiple views, offers an analysis of several taxonomies of managerial behavior. He reports that across each of these viewpoints, there exists a distinct leadership/influencer role as well as a decision making/planning role. In addition, Stewart's (1982) work on demands, constraints, and choices is relevant to this discussion. Stewart conceptualizes management as a process in which choices must be made that must satisfy the particular demands of the situation while simultaneously adhering to the constraints of the environment. In other words, the managerial process is largely one of making decisions.

Several well known studies have also recognized the importance of decision making for managers. In a series of seven studies and covering over 10,000 employees at

Control Data Corporation in 1974 (Page, 1985, Page & Tornow, 1987, Tornow & Pinto, 1976) decision making was identified as one of eight factors of managerial work content. In a study of managerial roles, Luthans, Hodgetts, and Rosenkrantz (1988) used an observational approach to place behaviors such as planning, decision making, and controlling into an overall category called traditional management. Their findings indicated that managers spent a significant amount of their time (32%, 11% for decision making) engaging in these traditional management behaviors. What these taxonomies and studies show is the ubiquity of decision making as a recognized managerial activity for which most managers are responsible. In addition, they highlight that decision making is a distinct role and not typically considered part of leadership.

As indicated, managerial decisions can cover a wide array of issues. Because the current study is primarily concerned with the relevance of decision making within leadership, the types of decisions referred to here are those that are relevant to subordinate work activity. Leadership decision making can take several forms depending on the level of authority possessed by the manager and the amount of resources at his/her disposal. These forms include resource allocation, personnel choices, structuring of processes, strategic direction, timing, and general job knowledge (Mintzberg, 1973). These categories cover a wide number of decisions in areas that may have important effects on subordinates. In addition, many of these decision types have little to do with the social interactions between leaders and subordinates. In this section, decision making has been outlined as a common managerial role, one that managers spend a significant amount of time doing. In the following section, managerial decision making will be linked with subordinate outcomes.

Links Between Decision Making and Subordinate Outcomes

To the extent that managerial decision making has effects on subordinates, it becomes an area of interest in leadership research. Very few studies have investigated how traditional managerial roles/behaviors contribute to managerial and organizational effectiveness. In addition, the few that followed this approach have only attempted to describe the relationship between subordinate outcomes and leader decision making frequency. For example, Pavett and Lau (1982) conducted a study in which Mintzberg's roles were measured in terms of frequency and then compared to supervisor evaluations of manager performance. No relationship with performance was found for the decision making roles while a significant relationship was present between the leader role and performance. In contrast, Morse and Wagner (1978) evaluated the concurrent validity of a managerial work survey. Two criteria were obtained, objective end results from each manager's organizational unit and performance rankings from each manager's superior. Morse and Wagner found that a factor labeled strategic problem solving was significantly related to both criteria measures. Luthans, Rosencrantz, and Hennessey (1985) compared top, middle and first level managers and showed that successful managers exhibited more behaviors related to decision making and planning/COORDINATING. Finally, Luthans, Hodgetts, and Rosenkrantz (1988) compared observations of time spent in different managerial activities with an aggregated measure of effectiveness. The aggregated measure consisted of organizational unit effectiveness in terms of quantity and quality of performance, subordinate satisfaction, and subordinate organizational commitment. The largest contributors to managerial effectiveness were routine communication and human resource activities, not traditional management behaviors (e.g., decision making). In

sum, these studies give mixed results regarding the importance of decision making for managerial effectiveness. In some cases, such as in the Pavett and Lau study, no relationship between managerial decision making and subordinate outcomes was found, while in another study, Morse and Wagner found support for this relationship. The absence of more research and the mixed findings in those that have been reported make it difficult to make definitive statements about the effects of managerial decision making on subordinates.

An Introduction to Quality

While past research seems to provide limited support for the linkage from managerial decision making to positive subordinate outcomes, further exploration may reveal a plausible reason for the inconsistent results. Across all of these studies, managerial activities such as decision making were measured according to frequency. That is, the measurement was the amount of time each manager spent engaging in an activity. It may be that the frequency with which a manager engages in a particular activity (e.g., decision making) may have little relevance with respect to managerial effectiveness. An alternative hypothesis is that a more appropriate measure would be the quality of managerial decision making. Although Pavett and Lau (1982) found no relationship between decision making roles and effectiveness, they found that decision making ability is an important skill for managerial effectiveness, suggesting that it might be more important to measure the quality of decisions. Thus, the quality of decision making may be a more appropriate aspect of decision making to consider in studies examining the relationship between manager decision making and subordinate outcomes.

Further support for an emphasis on the quality of managerial decision making can be found outside studies of managerial behavior. In a qualitative study of effective leaders, Bennis and Nanus (1985, p. 173) describe the importance of creating a vision that helps organizations reach challenging goals. In order to create a vision, effective leaders "select, organize, structure, and interpret information about the future in an attempt to construct a viable and credible vision." The process of creating a vision contains many of the same steps as good decision making. Therefore, the success of the vision seems to be dependent on the quality of the decision making process. Bennis and Nanus further suggest that a vision is made of two components, and that the content dimension (i.e., the direction of the vision) is more important than the process dimension (i.e., the leader's personality style) for helping subordinates to reach goals. Content can be interpreted as the strategic direction of the vision and reflects a decision that the manager has publicly communicated to his/her workgroup. Similarly, Kirkpatrick and her colleagues (Kirkpatrick & Locke, 1996; Scully, Kirkpatrick, & Locke, 1995) distinguish between the subordinate effects of cognitive (i.e., decision making) and motivational leadership styles in their studies, indicating that they may have differential effects on subordinates.

The distinction between quantity and quality in decision making is an important issue for the current study. They are two separate dimensions and ways of looking at decision making. Also, there is reason to believe that the quality of managerial decisions is substantially more relevant than the quantity of managerial decision making with respect to studying managerial behavior and the potential effects on subordinates (i.e., leadership effects).

Decision making quality is more difficult to describe and study than decision making frequency because quality is a more subjective concept. "Quality" is not defined by how frequently managers engage in some behavior such as the time managers spend making decisions, the swiftness of decision execution, or the number of alternatives considered. Instead, high quality decision making is described here as the careful analysis of options and assessments of the likelihood that potential options will lead to desirable outcomes. Since the process relies ultimately on what is desirable, the quality of any decision can often be gauged by the desirability of the outcomes. Decision researchers often remark that "good decision making processes tend to lead to more desirable outcomes than do poor decision making processes" (Frisch & Clemen, 1994). For example, if profitability is the goal, a high quality decision will lead to higher sales, which is often used as an index of profitability. Conflicts of interest are also taken into consideration because most decisions have desirable and undesirable consequences (Frisch & Clemen, 1994, McCall, Lombardo, & Morrison, 1988). For example, the desire to reduce human resources costs and the desire to avoid putting anyone out of work are in direct conflict. Subjective expected utility theory (cf., von Neumann & Morgenstern, 1947), one of the most common theories used to explain decision making assessments, suggests that an assessment of the quality of a decision takes all of these competing goals into account and compares them against the sum total (i.e., performance level) of all the outcomes, desirable and undesirable.

Decision Making Quality Effects

The present study attempts to describe and test two different subordinate effects that originate from leader decision making quality. The first is termed a subjective effect

because it is contingent on subordinate perceptions of the quality of leader decisions. Subordinate perceptions of higher quality decisions are considered an impetus for heightened motivation. The second is referred to as an objective effect and originates largely from the absolute quality of leader decisions and is hypothesized to lead directly to higher subordinate performance. In sum, it is proposed that there are two effects of decision making quality on subordinates, a direct effect on subordinate motivation (subjective effect) and a direct effect on subordinate performance (objective effect). These effects will be described in the following two sections.

Subjective Effects of Decision Making Quality

Decision making quality is proposed to have a direct impact on subordinate motivation. This is referred to as a subjective effect because it acts through the subjective perceptions of subordinates. Regardless of the objective appropriateness (absolute quality) of leader decisions, subordinates are likely to have their own subjective opinions about decision quality. When subordinates believe that the decisions are appropriate for reaching goals, they are more motivated to follow. Referring back to the work by Frisch and Clemen (1994), subordinate opinions of the quality of leader decisions are likely to be based on the favorability of expected outcomes. Therefore, perceptions of decision quality should be related to subordinate motivation because of the increased expectancy that goals will be reached. In other words, subordinates are likely to be more motivated to the extent they believe the leader is making decisions that will allow them to accomplish tasks more effectively and as a result reach goals. This is somewhat analogous to the described effects of charismatic leaders (e.g., Shamir, House, & Arthur, 1993), who are said to be able to motivate followers by convincing them that the

direction the leader has set will lead to desirable outcomes for all who follow. As evidence for the subjective effect, Kirkpatrick and Locke (1996) obtained results that suggest motivation will be higher in subordinates who are given cues regarding how to complete their task. One explanation for this is that subordinates recognized the value of the cues and were motivated because they anticipated that performance goals could be more easily attained. The subjective assessment process lies in the evaluation of the value of the cues. This finding provides some support for a subjective effect on subordinate motivation.

The subjective assessment of leader decision quality is proposed to come from at least two sources. First, subordinate opinions about leader decision making abilities may come from an underlying trust in the leader's ability to make high quality decisions. This trust could be a product of past experiences with this manager and/or the manager's reputation for being a good decision maker. Without questioning the rationale of the decisions, subordinates trust and have faith in the direction they are being led and are therefore more likely to be motivated to follow. Similar to this process is the concept of "expert power" which is defined as compliance with manager directives because subordinates believe that the manager has special knowledge about the best way to do something (French & Raven, 1959). In a review of past research on leader power and effects on subordinates, Podsakoff and Schriesheim (1985) found that, in general, effective managers had more expert power than ineffective managers. Yukl and Falbe (1991) found further support stating that expert power was one of the most important reasons for doing what a boss requests. Also, other research suggests that a positive reputation can have an impact on the extent to which subordinates attribute greater expert

power to their managers (Gioia & Sims, 1983) Gioia and Sims also point out that the potency of a reputation is closely akin to implicit theories of leadership (cf, Rush, Thomas, & Lord, 1977). As an example of implicit leadership effects, Puffer (1990) showed that perceptions of leader behavior can be elicited with only the knowledge of other positive behaviors (e g, reputation) Therefore, expectations about manager decision making abilities may have positive subjective effects on subordinates

The second reason subordinates are likely to be motivated by leader decisions is because of a subjective assessment of decision quality Subordinates actively gauge the extent to which they believe leader decisions are taking them in a desirable direction The mechanisms here are similar to those described within the expectancy (Mitchell, 1974) and path-goal theories (House & Mitchell, 1974) House and Mitchell explain that "the implication for leadership is that subordinates are motivated by leader behavior to the extent that this behavior influences expectancies (p 81)" Expectancy is the belief that behaviors will result in reaching performance goals (Vroom, 1964) Subordinates may have their own opinion about what the best course of action is to achieve goals (i e, behaviors that are associated with high expectancy) and the extent to which leader decisions converge with the subordinates', they will be more motivated Convergence is just another way of stating that subordinate expectancies for goal achievement will be higher when leader and subordinate expectancies for reaching goals closely match The underlying assumption is that subordinates will be more motivated if they believe the leader is directing them on an efficient path toward goals

The proposed linkage from decision making quality to subordinate motivation is fundamentally based on the belief that the leader is making choices that will lead to goal

attainment Within the behavioral sciences it has been well established that humans are motivated to engage in behaviors that are anticipated to lead to rewards (cf , Miner, 1980, Vroom, 1964) Since goal attainment is usually accompanied by rewards, it is reasonable to suggest that subordinates will be more eager to follow those directives they believe will lead to goals (Schuler, 1976, Podsakoff, Todor, & Skov, 1982) In sum, evidence would lead one to suspect that there is a positive link between subordinate perceptions of leader decision making quality and subordinate motivation

Objective Effects of Decision Making Quality

In addition to a subjective effect, decision making quality is also likely to have a direct effect on subordinate performance This is referred to here as an objective effect because it is independent of subordinate perceptions and leads directly to performance (i e , motivation does not mediate the relationship) Variations in performance are determined by the actual quality of the decisions, not by whether or not subordinates believe they are high quality decisions Therefore, these effects are separate from those caused by the motivational responses of subordinates (i e , subjective effect) In one of the studies described previously, Kirkpatrick and Locke (1996) found that goals mediated the relationship between leader supplied task cues and subordinate performance In addition to this mediated effect, they also found a direct link between task cues and subordinate performance This finding can be generalized to less structured situations (i e , the task in the study was assembling binders) in organizational settings where managers make decisions and guide the group to higher or lower performance depending on the quality of their decisions

A high quality decision is one that is made by taking all of the available information into consideration, weighing all the outcomes of the options, and then choosing one that is most likely to lead to the desired ends (cf, Frisch & Clemen, 1994, from a leadership perspective, Bennis & Nanus, 1985) The extent to which the options are accurately assessed will largely determine if the desired goals will be reached Therefore, there is likely to be a strong correspondence between making high quality decisions and incurring positive outcomes for subordinates Because it is an objective effect, this relationship should be present even if subordinate motivation does not change (i e, if motivation is held constant), or in other words, there is no subjective effect

Summary of Decision Making Quality

A brief description has been given about the history of decision making as it pertains to the study of managerial behavior What has evolved from this discussion is the notion that a particular dimension of decision making (i e, quality) may be useful for understanding leadership and its potential effects on subordinates In summary, leaders make decisions, and the quality of these decisions is proposed to have two distinct effects on subordinates The first, increased motivation, stems from subordinate beliefs that the leader makes high quality decisions which allow the workgroup to reach important goals (subjective effect) The second effect is a direct reflection of the extent to which leader decisions actually contribute to reaching desired outcomes (objective effect) The result is a direct impact on subordinate performance An illustration of these two types of effects can be found in the Kirkpatrick and Locke (1996) study where leader directives were shown to have direct effects on both subordinate motivation and performance

Decision Making Quality and Leadership

Given the proposition that leader decision quality may have effects on subordinates, it is important to understand the role of decision making within other models of leadership effectiveness. Two examples include investigations of participative decision making (PDM) (cf, Leana, Locke, & Schweiger, 1990) and the Vroom-Yetton model (cf, Vroom & Yetton, 1973). Both of these theories also address leader decision making and subordinate motivation, but instead of addressing how subordinates are affected by the quality of decisions, they focus on decision involvement and its relationship to subordinate motivation. Although they are significantly different from a view of leader decision making quality, there are similarities in how the PDM and Vroom-Yetton models describe effects on subordinate motivation. These similarities are relevant for describing the effects of leader decision making quality.

The underlying hypothesis of PDM theory is that subordinates will be more satisfied (Locke & Schweiger, 1979, Miller & Monge, 1986, Sagie, Elizur, & Koslowsky, 1990) and have higher performance (Bass, Waldman, Avolio, & Bebb, 1989, Kouzes & Posner, 1987) if they are involved/participate in leader decision making (Sagie, 1994). Involvement represents the level of decision influence subordinates are allowed during the decision making process. The extent to which subordinates are included in leader decisions is thought to give subordinates a greater sense of ownership and commitment to the decision (Leana et al, 1990). Participation can be present on many different levels, from no information sharing to complete delegation (Leana, 1987). Optimal levels of participation are dependent on the situation.

The concept of participative decision making is also present in the Vroom-Yetton model. It addresses subordinate participation in decisions by providing a normative model, which determines the optimal level of subordinate participation. The amount of subordinate participation is based on a diagnosis of situational demands (Vroom & Yetton, 1973). There are attributes of the problem and environment that factor into the effectiveness of varying levels of subordinate participation in the decision making process. Because the goals of the normative model are to maximize decision quality and subordinate acceptance, the assessment of problem and environmental attributes are guided by seven rules designed to address circumstances under which participation is likely to enhance quality and acceptance. Examples of attributes include availability of relevant information for making a quality decision and criticality of subordinate acceptance for effective implementation. For example, if subordinates do not have sufficient information to make high quality decisions, participation should be decreased. If subordinate acceptance is critical for effective implementation, more participation is suggested because the inclusion of subordinates in the decision making process is thought to increase acceptance and subsequent motivation during implementation (cf., Miller and Monge, 1986). The Vroom-Yetton model is similar to PDM because it is also interested in increasing the likelihood subordinates will have decision commitment and therefore higher individual performance (Jago & Vroom, 1980).

Participation in decision making is purported to increase feelings of control and identification (McLeod, Liker, & Lobel, 1992) resulting in higher subordinate performance. Subordinates also feel they are contributing to the decision process and are thus more likely to internalize the final decision, which leads to improved attitudes and

motivation (Leana, 1987) The mechanisms for affecting subordinates are similar to those described for leader decision making quality Overlap can be seen in the view that greater decision commitment translates into higher levels of subordinate motivation The difference lies in how decision commitment is achieved Under PDM models, precursors of decision commitment are decision involvement and identification With regard to perceptions of decision quality, the path to decision commitment is somewhat different It is hypothesized that perceptions of decision quality, independent of participation, will affect decision commitment and subsequent motivation As noted in the Vroom-Yetton model, situations will vary to the extent that it may not be feasible for subordinates to provide input into the decision making process But subordinates can still have an opinion about the quality of these decisions that may then affect decision commitment This is one example of how decision making quality compares with PDM models

Transformational Leadership and Decision Making Quality

One of the primary purposes of this study is to test the hypothesis that leader decision quality can contribute uniquely to an understanding of effective leadership beyond that of other dimensions (e g , transformational leadership) of leader behavior As a representation of other leadership behaviors, the hypothesized effects of decision making quality will be compared with those of transformational leadership behaviors Transformational leadership is ideal for this comparison because it is one of the most prominent areas of interest in leadership in the recent past (Graen, House, Hunt, & Yukl, 1999) It also includes aspects of the social interactions between leaders and subordinates which is a contrast to the workings of decision making quality A positive relationship between transformational leader characteristics and subordinate outcomes has been

demonstrated in a variety of work settings and over multiple organizational levels (e.g. Bass & Avolio, 1990). Effect sizes on the order of .20 to .40 are not uncommon and at least one recent study found that transformational leadership was related to employee outcomes beyond the effects attributed to two common variables found in leadership research, initiating structure and consideration (Seltzer & Bass, 1990). For these reasons, transformational leadership will represent the interactional style of leaders and will be used as a comparison to leader decision making quality in this study.

The proposed model contains measures for both subordinate motivation and performance to gain a better understanding of the direct and indirect effects of leader behaviors on subordinates. While decision making quality is proposed to have a direct effect on both subordinate motivation and performance, transformational leadership behaviors may be directly linked only to motivation. Many studies have tested the direct relationship between transformational leadership behaviors and subordinate performance (e.g., Hater & Bass, 1988), but there is little evidence or description to suggest that increases in performance are a result of anything other than motivational factors. According to transformational leadership theory, leaders engage the self-concept and value system of followers by communicating a vision of the future that is intended to capture their imagination. This invokes a sense of identification with the leader's values, which leads to a commitment and motivation level beyond the call of duty (House & Shamir, 1993, Shamir, House, & Arthur, 1993, Shamir, 1990). According to Bass and Avolio (1990), transformational leaders affect subordinates through a heightened motivational state in order to achieve high levels of performance in subordinates. What these descriptions of transformational leadership indicate is that subordinate motivation

mediates the link from transformational leader behaviors to subordinate performance. There is also empirical evidence for these effects. A study by Seltzer and Bass (1990) found that transformational leader behaviors have a stronger relationship with subordinate extra effort (i.e., motivation) than subordinate effectiveness. Although not directly assessed, this pattern of relationships suggests that higher subordinate motivation is the direct outcome of transformational leadership. Higher subordinate performance is then a byproduct of higher motivation.

Hypotheses

It has been suggested that leader decision making quality may have specific effects on subordinate motivation and performance. In addition, these effects are proposed to be distinct from the motivational effects of other leadership behaviors such as transformational leadership. Figure 2.1 illustrates a framework with the variables of interest and arrows to indicate the hypothesized relationships. The following summary contains a brief description of each of the main points along with a statement of the hypotheses to be tested in the current study.

Transformational leadership behaviors engage the self-concept of subordinates and elevate them to greater levels of performance (Bass, 1985). Subordinates accept the vision of the supervisor as their own and commit to the overall goals. When the vision is accepted and internalized by subordinates, it has been suggested that they will go to greater lengths to achieve the vision (Shamir, 1991). While the ultimate impact of transformational behaviors is likely to be increased subordinate performance, it is proposed to occur exclusively through invoking a motivational response in subordinates.

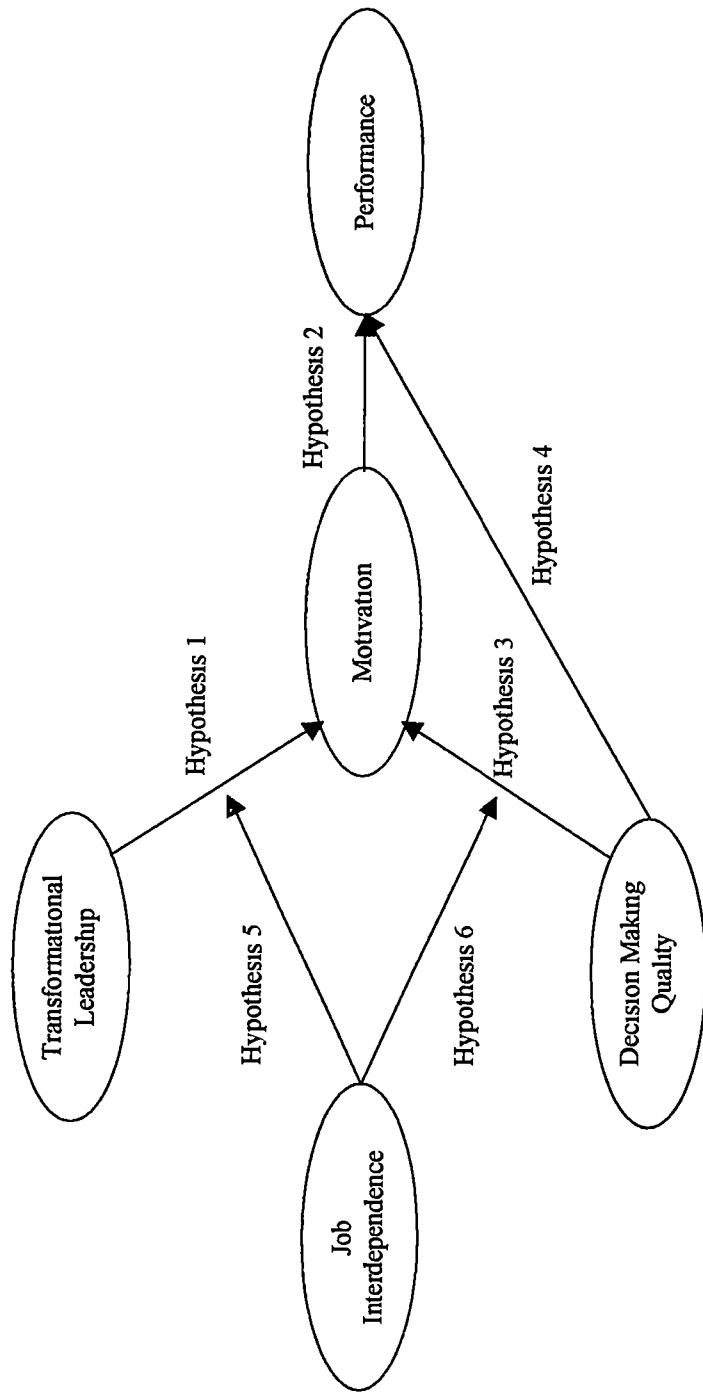


Fig 2 1 Structural model showing summary of hypothesized relationships (Circles represent latent factors Arrows represent hypothesized relationships)

Hypothesis 1 Transformational leadership behaviors will have a direct, positive relationship with subordinate motivation

Motivation has long been considered one of the primary determinants of performance (Locke, 1986, Locke, 1991). Beyond ability effects, motivation through extra effort has a substantial impact on performance levels. As motivation increases, more effort will be applied to behaviors directed at improving efficiency, work quantity and other indicators of performance. The linkage from motivation to performance plays a key role in the present study because it acts as an important mechanism for leader effects on performance. More specifically, heightened motivation represents the primary mechanism for charismatic and transformational leadership effects on subordinate performance (Bass, 1985, Conger & Kanungo, 1987). Kirkpatrick and Locke (1996) used subordinate self-efficacy and goals, two components of what Locke (1991) considers the “motivational hub”, as mediators between leader behaviors and performance. Significant relationships were found between these components and subordinate performance. Therefore, the following hypothesis is proposed

Hypothesis 2 Subordinate motivation will have a direct, positive relationship with subordinate performance

Leader decision making quality is proposed to have two distinct effects on subordinates, a subjective and objective effect. The subjective effect is hypothesized to impact the motivation of subordinates, while the objective effect is hypothesized to be directly linked to subordinate performance. The subjective or motivational effect derives from subordinate’s qualitative assessment of the leader’s decision making ability. This qualitative assessment may be based on such criteria as the extent to which subordinates

agree that these decisions will take them in the desired direction. Therefore, to the extent that subordinates believe that their supervisor is making quality decisions, they will be more motivated because they believe that engaging in these leader directed decisions will result in goal attainment.

Hypothesis 3 Leader decision making quality will have a direct, positive relationship with subordinate motivation.

The objective effect of leader decision making quality is not dependent on subordinate motivation but is instead described as dependent on the objective or absolute quality of leader decisions. Independent of subordinate subjective perceptions of the quality of leader decisions, if these decisions reflect the best means by which goals will be achieved then they should lead to higher subordinate performance.

Hypothesis 4 Leader decision making quality will have a direct, positive relationship with subordinate performance.

Hypotheses 1 and 3 predict positive relationships between leader behaviors and subordinate motivation. In most discussions of leadership, there is a recognition that there are situational and environmental factors that may affect the leader's ability to motivate employees. One example of this would be the degree to which subordinates are dependent on supervisory decisions to complete work tasks. If subordinates are highly dependent on their supervisors for decisions and providing direction, supervisor behaviors may have stronger effects on subordinates. In a study of the substitutes for leadership paradigm (Kerr & Jermier, 1978), Podsakoff, Niehoff, MacKenzie, and Williams (1993) tested a variable labeled spatial distance as a moderator for the relationship between several leader behaviors and subordinate effects. They found

significant moderating effects for spatial distance on the relationship between leader reward behaviors (e.g., contingent reward and noncontingent punishment) and subordinate satisfaction and performance. These effects suggest that working closeness may be a relevant factor in investigations of leadership effects on subordinates. Therefore, there are likely to be stronger effects between leader behaviors and subordinate motivation when subordinates are more dependent on leader decisions.

Hypothesis 5 Job interdependence will positively moderate the relationship between transformational leadership and subordinate motivation.

Hypothesis 6 Job interdependence will positively moderate the relationship between leader decision making quality and subordinate motivation.

Much of the past research regarding leader behaviors and subordinate outcomes suggests that there is a causal linkage between these variables such that leaders exhibit behaviors (e.g., transformational leadership behaviors) that in turn elicit corresponding behaviors from subordinates (e.g., increased motivation) (e.g., Bass, 1985). Causal inferences are typically based on the theoretical description of the relationship because the data is primarily correlational in nature. Following this convention the current study will be testing the hypotheses using correlational analytics (e.g., regression), thus, the hypotheses do not contain causal language. This explanation addresses the causal relationships described in the review of research above but are not reflected explicitly in the hypotheses.

CHAPTER III

METHOD

Procedure

Participants in this study consisted of 284 employees at a large Fortune 100 information technology company headquartered in the Northeast. Of these, 109 were managers and 175 were their subordinates. Participants represented various divisions and departments within the company. Available sample demographics are presented in Table 3.1. A large proportion of the managers had been with the company for a significant amount of time, over 40% for more than 10 years. Subordinate tenure with the manager was typically below one year (73%). For subordinates, just over half were male (55%) which provides a desirable distribution between genders.

TABLE 3.1
RESEARCH POPULATION DEMOGRAPHICS*

Manager Organizational Tenure	
0-5 years	33%
5-10 years	25%
10-20 years	29%
20+ years	13%
Subordinate Tenure with Manager	
< 1 year	73%
1-2 years	26%
2+ years	1%
Subordinate Gender	
Male	55%
Female	45%

Note * Other standard descriptive statistics (e.g., age) are not available because of sensitivity and political concerns with the data collection process.

Survey questions for the current study were couched within a six month post-training assessment that was arranged with the training department of the organization. The primary objective of the training program was to provide managers with additional skills in dealing with the human resource aspects of their jobs (e.g., giving formal performance reviews).

With assistance from the human resources department, 450 managers who had at least two subordinates and had completed the training program were identified. Each of these managers was sent an e-mail inviting them to participate in the study. All aspects of data collection were conducted electronically through a Lotus Notes e-mail system designed by the primary researcher. In addition to answering questions about the training program, managers were asked to provide the names of two subordinates who had some experience working with each other (referred to in this study as subordinate A and subordinate B). Upon submission of the manager's questionnaire responses, an electronic invitation was automatically sent to the two subordinates named by the manager. The subordinates were then asked to complete an electronic survey at their convenience. All data were kept confidential by the primary researcher and final manager and subordinate responses were not associated with any identifying information. In total, 137 (30%) managers completed the survey. Of the 274 invited subordinates (two per manager), 87 subordinate A (64%) and 88 subordinate B (65%) questionnaires were completed. The dataset was constructed by creating a data case for each manager which also included his/her subordinate ratings. Twenty-eight manager cases had no matching subordinate ratings and were therefore dropped from the dataset. As a result, the final

dataset consisted of 109 records, 66 of which contained ratings from both subordinates and 43 contained ratings from one subordinate

Measures

Pilot Study. Prior to the main study, a pilot test was conducted to examine the psychometric properties of a set of items used to measure leader decision making quality and job interdependence. A description of the method and results of this pilot study are contained in Appendix A. The measures resulting from the pilot study were used in the main study as described below.

Decision Making Quality. Seven items were used to assess subordinates' perceptions of their managers' ability to make high quality decisions (e.g., "my manager makes high quality decisions"). Items (see Table 3.2) were rated on a five-point scale (1 = Strongly Agree to 5 = Strongly Disagree) and reverse scored with higher average responses indicating that the managers made higher quality decisions.

Transformational Leadership. Transformational leadership was assessed via four subscales from the Multifactor Leadership Questionnaire (MLQ-Form 5X, Bass & Avolio, 1990). Each subscale, idealized influence (e.g., "the person I am rating specifies the importance of having a strong sense of purpose"), inspirational motivation (e.g., "the person I am rating articulates a compelling vision of the future"), intellectual stimulation (e.g., "the person I am rating seeks differing perspectives when solving problems"), and individualized consideration (e.g., "the person I am rating spends time teaching and coaching"), contained four items (see Table 3.2) and was rated on a five-point scale (1 = Strongly Agree to 5 = Strongly Disagree). Responses were reverse scored with higher average ratings indicating a higher incidence of the corresponding transformational

TABLE 3 2
ITEMS FOR MEASURES

<u>Items</u>
Decision Making Quality
1 If I went to my manager for advice on how to accomplish a task, I would feel comfortable following his/her advice
2 My manager knows when to explore ideas or suggestions further
3 My manager makes high quality decisions
4 My manager knows how to remedy problems
5 My manager has good ideas about how to accomplish work
6 I trust the judgment of my manager
7 My manager gives the right job to the right person
Transformational Leadership (My manager)
1 Spends time teaching and coaching
2 Talks about his/her most important values and beliefs
3 Talks optimistically about the future
4 Re-examines critical assumptions to question whether they are appropriate
5 Treats you as an individual rather than as just a member of the group
6 Specifies the importance of having a strong sense of purpose
7 Talks enthusiastically about what needs to be accomplished
8 Seeks differing perspectives when solving problems
9 Considers that you have different needs, abilities, and aspirations from others
10 Considers moral and ethical consequences of decisions
11 Articulates a compelling vision of the future
12 Gets you to look at problems from many different angles
13 Helps you to develop your strengths
14 Emphasizes the importance of having a collective sense of mission
15 Expresses confidence that goals will be achieved
16 Suggests new ways of looking at how to complete assignments
Job Interdependence
1 The person I am rating often has to consult me about the work s/he does
2 The person I am rating relies heavily on decisions made by me
3 The way s/he accomplishes work tasks is highly determined by me
Motivation
1 S/he works harder by going the 'extra mile'
2 S/he takes the initiative to solve work problems
3 S/he persists in overcoming obstacles to complete a task
4 S/he tackles difficult work assignments enthusiastically
5 S/he is highly motivated to complete assigned tasks
Performance
1 S/he greatly exceeds standards for job performance
2 S/he performs at a high level in comparison to others
3 S/he contributes more to unit effectiveness when compared to others

leadership behavior. The MLQ-Form 5X is based on earlier versions of the MLQ and is commonly used for assessing transformational leadership behaviors. The technical report that accompanies the MLQ contains an analysis of these items from over 2,000 respondents in nine different samples ranging in size from 66 to 475 (Bass & Avolio, 1995). Reliability estimates ranged from .66 to .93. These studies also showed significant relationships between these measures of transformational leadership and ratings of subordinate satisfaction and effectiveness.

Job Interdependence. Job interdependence was measured with three items reflecting the extent to which subordinates rely on their managers for task related instructions (e.g., “the person I am rating relies heavily on decisions made by me”). The items (see Table 3.2) were constructed specifically for this study and were rated on a five-point scale (1 = Strongly Agree to 5 = Strongly Disagree). They were reverse scored with higher average ratings indicating greater reliance on the manager for task related instructions.

Work Motivation. Work motivation was measured with five items reflecting subordinate motivation with respect to effective completion of their job duties (e.g., “I feel highly motivated to complete my work tasks”). Four of the items were taken from a job dedication measure (e.g., “tackles a difficult work assignment enthusiastically”, Van Scotter & Motowidlo, 1996), while the fifth item was independently constructed (“is highly motivated to complete assigned tasks”). Items (see Table 3.2) were rated on a five-point scale (1 = Strongly Agree to 5 = Strongly Disagree) and reverse scored with higher average ratings indicating greater motivation on the job.

Performance. Overall subordinate performance was measured with three items adopted from a measure used by Van Scotter and Motowidlo (1996) to validate alternative performance measures. The questions were rated on a five-point scale (1 = Strongly Agree to 5 = Strongly Disagree). The authors reported Cronbach's alphas of .95 and .96 for two independent samples indicating that the measure has adequate internal consistency reliability. Items for each scale were reverse scored and averaged with higher scores indicating higher performance (see Table 3.2).

Respondents

The manager and subordinate A were the main targets of the study. The manager was rated on decision making quality and transformational leadership. Subordinate A was rated on the motivation and performance measures. Job interdependence was rated by the manager and reflects the working relationship between the manager and subordinate A.

In total, there were five measures and three raters (i.e., the manager and subordinates A and B). One of the concerns when studying the relationship between variables measured with self-report questionnaires is single-source bias. This form of bias can occur when only one rating source is used to provide measures to examine the relationship between variables. A potential outcome is that the observed covariances are inflated due to some aspect of the respondent, such as mood or rater liking, which leads to a spurious consistency in the rating of different variables that does not truly exist (i.e., shared method variance, Bagossi & Yi, 1990). In order to avoid this form of bias, three different rating sources were used: the manager, subordinate A, and subordinate B (i.e., a peer of the subordinate) who acted as an additional source of ratings from outside the

manager-subordinate A dyad. In addition, the five measures were distributed among the different rating sources such that four of the five variables were measured by different combinations of raters. A summary of the raters and the ratings they provided is displayed in Table 3.3

Analysis Overview

Before testing the hypotheses, the data were examined for adequate psychometric properties. Three confirmatory factor analyses (CFA) were performed on the data, one for each rating source. After the factor structures were verified, internal consistency reliabilities were inspected to assess the need for further refinement of scales (e.g., deletion of items to significantly improve reliability).

Once the final measures were verified, ratings from each of the three raters were to be aggregated for hypothesis testing. Because aggregation combines ratings from multiple perspectives, reliability of the resulting measures should be higher. One aspect of aggregation is that it requires demonstration of an acceptable level of agreement across

TABLE 3.3
SUMMARY OF RATERS FOR EACH VARIABLE

	Ratings by		
	Manager	Subordinate A	Subordinate B
Decision Making Quality		Z	Z
Transformational Leadership		Z	Z
Job Interdependence	Y		
Motivation	Y	X	Y
Performance	Y		Y

Note: X indicates self ratings; Y indicates ratings of Subordinate A; Z indicates ratings of the manager.

rating sources. Interrater agreement signals that the different raters are converging on their perceptions of the measured behaviors. As a result, it provides evidence that the independent ratings reflect valid and reliable measures of the constructs (e.g., motivation) (Nunnally & Bernstein, 1994). The aggregated ratings can then be used to test support for the hypotheses as single measures of the constructs.

A series of interrater agreement tests were conducted to determine support for aggregation across raters (James, 1982). During these tests, anomalies in the data were discovered that resulted in low agreement and precluded proceeding with aggregation across the three rating sources. Further details will be provided in the Results section.

Without aggregation, hypothesis testing was performed with each of the individual rater datasets. Multiple regression was used as the analytic method for testing the hypotheses. Although the tests were conducted independently, if subordinate A and B ratings both indicated significant relationships between the constructs of interest, then there could be more confidence in the conclusions. Differential support is an undesirable situation because it leads to significant complications for interpretation.

CHAPTER IV

RESULTS

The results are organized into three sections. The first section contains the results of the factor analyses conducted on the raw data to investigate the hypothesized measurement model. The second section contains a description of how aggregation across rating sources was considered and concludes with the final assembly of measures. The third section contains tests for the hypotheses and a description of the results.

A visual summary of the ratings given by each of the raters is offered below to facilitate discussion of the analysis process (Figure 4.1).

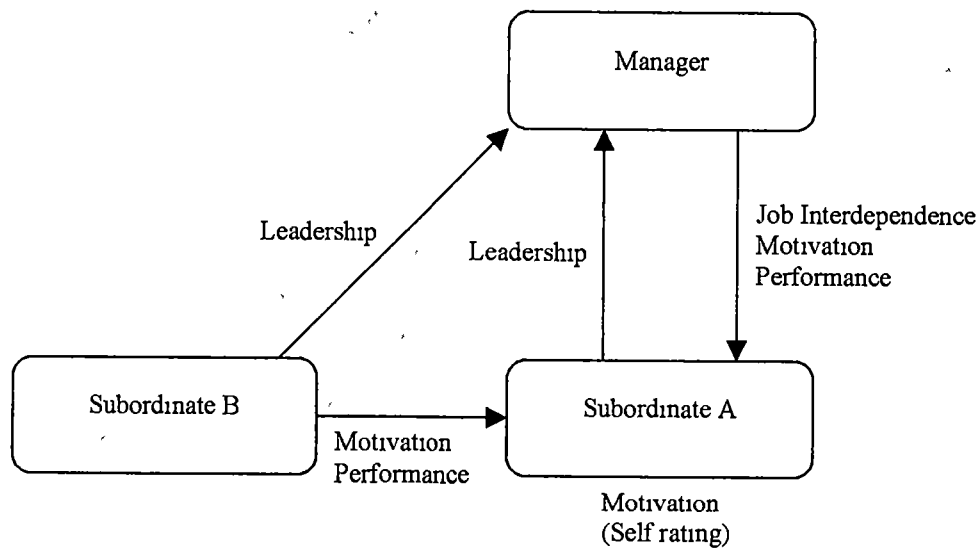


Fig 4.1 Summary of raters and ratings. "Leadership" represents ratings of transformational leadership and decision making quality.

Confirmation of Measures

The data were analyzed to test the underlying factor structure and assess the reliability of each of the measures. First, in order to test the factor structure, the data were divided into three sets representing each rating source: manager, subordinate A, and subordinate B. While not expected, it is possible that each rating source had a different way of organizing the content of each of the items. Next, an independent confirmatory factor analysis (CFA) was conducted on each of the three rating sources. In contrast to exploratory factor analysis, CFA allows more control over the models to be tested because the researcher can specify items with their associated factors based on the a priori factors. The expected model can then be statistically compared to alternative models by using several fit indices that indicate the level of congruence between the data and the specified model (Schumacker & Lomax, 1994).

Confirmatory factor analysis first begins with estimation of the null model, which as the name implies, specifies null relationships among the items. χ^2 is one of the outputs of CFA used to gauge the amount of error in the specified model. The resulting χ^2 for the null model then acts as the basis of comparison for the χ^2 of the hypothesized factor models. As an index of fit of the hypothesized model, both χ^2 values are used to calculate the comparative fit index (CFI) (Bentler, 1990). The CFI will range from 0 to 1 with numbers approaching 1 indicating a better fit to the data. The χ^2 statistics are reported but were not used to evaluate model fit due to the sensitivity of the statistic to sample size and trivial differences between predicted and observed covariance (James, Mulaik, & Brett, 1982).

In addition to the CFI, the root mean square error of approximation (RMSEA) (Steiger, 1990) was also used to measure fit of the data to the model. The RMSEA is a nonstochastic, discrepancy measure that ranges from 0 to 1 with 0 indicating that the proposed model fits the data exactly. One of the benefits over the CFI is that the RMSEA is sensitive to the parsimony of the model. By definition, χ^2 can be lowered by adding parameters to the model but the RMSEA is sensitive to the value of those extra parameters and may indicate a reduction of overall fit. In other words, a more parsimonious model will not have better fit unless the reduction in χ^2 is substantial. Another difference is that the goal for RMSEA is not to achieve a perfect match between the data and the proposed model. Browne and Cudeck (1993) point out that the goal of some measures is to reach an exact fit (i.e., 0.00) whereas this may not be the most practical approach given the strict nature of this guideline. They suggest taking a "reasonable fit" approach, seeking a goal of 0.050 for RMSEA. The test for reasonable or *close* fit of the model was employed below and was denoted as the PCLOSE statistic. This is a standard *p*-value statistic to determine if the RMSEA is within the 90% confidence interval of 0.050. Based on previous research, Browne and Cudeck also suggest a model of reasonable fit will not exceed an RMSEA of 0.100. This 0.100 guideline was employed here.

Table 4.1 contains CFA results for each of the rating sources. As indicated, a couple of models were tested for each of the raters to allow for comparisons of different factor structures. The fit of the null model is shown in the first column of the table. Tests of the hypothesized and alternative models are also shown. The χ^2 , degrees of

TABLE 4 1
FIT INDICES FOR CONFIRMATORY FACTOR ANALYSES FOR EACH RATER*

Source	χ^2	df	CFI	RMSEA	PCLOSE
Manager					
1 Null	1018.54	55	-	-	-
2 2 Factor	103.73	44	.938	.122	.000
3 3 Factor	67.86	43	.972	.082	.058
Subordinate A					
1 Null	2244.68	378	-	-	-
2 2 Factors	633.62	349	.848	.099	.000
3 3 Factors	594.34	347	.867	.092	.000
4 6 Factors	542.44	335	.889	.086	.000
Subordinate B					
1 Null	3170.19	465	-	-	-
2 3 Factors(L)	856.31	431	.843	.109	.000
3 3 Factors(M)	801.55	431	.863	.099	.000
4 4 Factors	777.53	430	.872	.095	.000
5 7 Factors	697.05	413	.895	.088	.000

Note CFI, comparative fit index, RMSEA, root mean square error of approximation, PCLOSE, p-value for $RMSEA \leq .05$. The (L) indicates the model with transformational leadership and decision making quality restricted to one factor. The (M) indicates the model with motivation and performance restricted to one factor.

* Manager CFA included items for job interdependence, motivation, and performance. Subordinate A CFA included items for decision making quality, transformational leadership, and motivation. Subordinate B CFA included items for decision making quality, transformational leadership, motivation, and performance.

freedom (*df*), CFI, RMSEA, and PCLOSE statistics are indicators of the data's fit to the hypothesized model

For the managers' ratings, the hypothesized model contained specifications for the three factors as illustrated in Figure 4 2, job interdependence, motivation, and performance. The fit of this model (3 Factor) indicated a reasonable approximation of the data with $\chi^2(43) = 67.86$, CFI = .972, and RMSEA = .082 (see Table 4 1). While a significant correlation between motivation and performance was expected, examination of the model parameters showed a sufficiently high correlation ($r = .85$, $p < .001$) to prompt a test to verify the independence of the two measures. The results of this test (2 Factor) are shown in the table. The reduction in CFI of .034 and the movement of the RMSEA to a value greater than .100 suggests that the theoretically hypothesized three factor model is a better representation of the data. Thus, the 3 Factor model specifying job interdependence, motivation, and performance was used in subsequent analyses. Standardized factor loadings for the final 3 Factor measurement model can be found in Table 4 2.

Results for the CFA of subordinate A ratings is also shown in Table 4 1. In addition to the null model, the first model (6 Factor) tested contained six factors as illustrated in Figure 4 3, four transformational leadership components, decision making

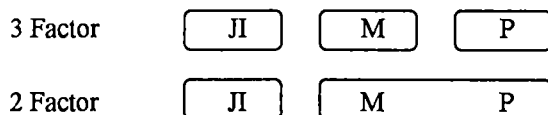


Fig 4 2 Illustration of manager CFA measurement models. Circles represent specified factors for the CFA. JI = Job interdependence, M = Motivation, P = Performance.

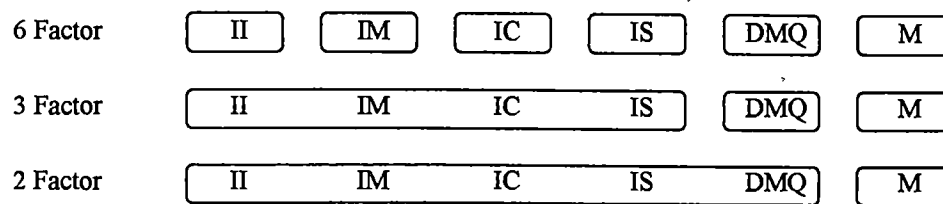


Fig 4 3 Illustration of subordinate A CFA measurement models Circles represent specified factors for CFA II = Idealized influence IM = Inspirational motivation IC = Individual Consideration IS = Intellectual Stimulation DMQ = Decision Making Quality M = Motivation

quality, and motivation With $\chi^2(335) = 542.44$, CFI = .889, and RMSEA = .086, it represented a reasonable fit to the data Inspection of the high transformational leadership component intercorrelations indicated that the data may be better represented by a single overall factor of transformational leadership Further, there has been some evidence provided in other studies which has found that transformational leadership is better represented by a single higher-order factor rather than four separate components (e.g., Yammarino & Dubinsky, 1994) Thus, a second model (3 Factor) was tested that combined the four components into one factor representing overall transformational leadership Comparison of the 3 Factor and 6 Factor models indicated that specifying four separate components provided a slightly better fit to the data While not substantial, the difference in fit for the 3 Factor model over the 6 Factor model of .022 for the CFI and .006 for the RMSEA gives some support for keeping the components separated A further examination of the relationships between factors revealed high correlations between the four transformational leadership factors and leader decision making quality Therefore, a third model (2 Factor) was examined specifying all leadership components as one factor and motivation as another The fit of this model was noticeably worse The

CFI was reduced by .041 and the RMSEA moved close to the predetermined cutoff of 100 (.099). In summary, the 6 Factor model (i.e., motivation, decision making quality, and four transformational leadership components) represented the best fit to the data; a significantly better fit than the 2 Factor model, and a slight improvement over the combined transformational leadership component 3 Factor model.

As illustrated in Figure 4.4 and shown in Table 4.1, the hypothesized measurement model for subordinate B ratings contained seven factors ($\chi^2(413) = 697.05$, CFI = .895, RMSEA = .088) four components of transformational leadership, decision making quality, motivation, and performance. After the null and hypothesized models (7 Factors) were estimated, two additional models were tested using different variations of leadership factors. Similar to the test done with subordinate A ratings, the first was specifically used to assess the fit of a single transformational leadership factor versus four separate components (4 Factors, $\chi^2(430) = 777.53$) and the second was a three factor model (3 Factors (L), $\chi^2(431) = 856.31$) further combining the one transformational leadership factor with decision making quality to form an overall factor containing all

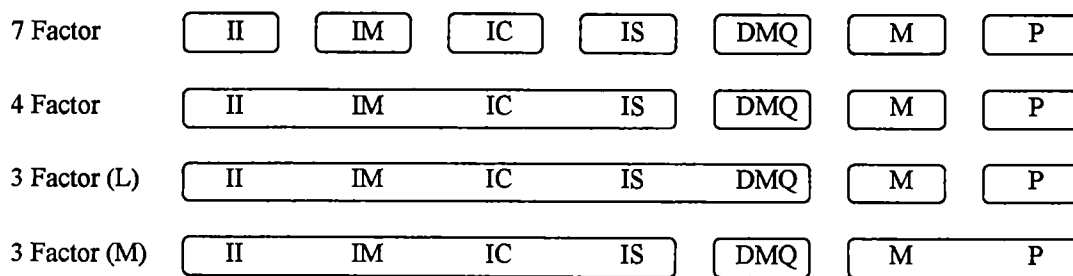


Fig 4.4 Illustration of subordinate B CFA measurement models. Circles represent specified factors for CFA. II Idealized influence, IM Inspirational motivation, IC Individual Consideration, IS Intellectual Stimulation, DMQ Decision Making Quality, M Motivation, P Performance.

leadership ratings of the manager. Once again, for the model combining transformational leadership components into one factor (4 Factor model), the CFI and RMSEA favored the distinction between four separate transformational factors (i.e., 7 Factor model), CFI 895 vs 872 and RMSEA 088 vs 095. Fit for the three factor model, where transformational leadership and decision making quality were combined together, was noticeably poorer than either the seven or four factor models. When compared to the 7 Factor model, the fit of the 3 Factor model (L) was off by 052 for the CFI and 021 for the RMSEA. In addition to testing different leadership measurement models with subordinate B ratings, the hypothesized model showed signs that the criteria, motivation and performance, might be better represented by a single, combined factor (3 Factors (M)). Similar to the test conducted with leadership ratings, the model was not supported. The reduction in the CFI of 032 and movement of the RMSEA (099) to a point very close to the cutoff of 100 for the 3 Factor (M) model indicates a significant preference for separate criteria measures. Although several alternative models were reviewed, the original 7 Factor model offered the best comparative fit to the data.

In both the subordinate A and subordinate B CFA results, the fit indices suggested that treating transformational leadership as four separate components more closely approximated the data. Although the four component model receives some support from the data, a single factor may be more appropriate within the context of the current study. The primary purpose of this study is to test the viability of a relationship between leader decision making quality and subordinate motivation above and beyond that of transformational leadership. The individual relationships of idealized influence, inspirational motivation, intellectual stimulation, and individual consideration are

tangential to this test. Past studies have found meaningful effects for all four of these components on different criteria measures (cf., Bass & Avolio, 1993) giving evidence that they are each relevant. However, these same studies report varying preference for both combined and component level models (e.g., Koh, 1990, Waldman et al., 1987) indicating that there is not strong empirical support for one model over another.

In addition to questions of factor independence, treating the components as separate predictors of motivation may lead to problems arising from multicollinearity. Multicollinearity is present when predictors are highly intercorrelated (Nunnally & Bernstein, 1994) causing a reduction in the stability of the regression weights (Cohen & Cohen, 1983) when tested with a criteria measure. When high correlations between predictors are present, most of the variance accounted for in the criteria of interest will be attributed to the predictor with the highest correlation. Similar to other studies involving transformational leadership, evidence of multicollinearity can be found in the current results where intercorrelations between the components are all significant at $p < .001$, between .73 and .81 for subordinate A ratings and between .78 and .90 for subordinate B ratings. This is not surprising given the small difference between fit of the competing CFA models as described above.

The presence of multicollinearity between the components of transformational leadership also makes it difficult to examine any differential contribution to the criteria of interest. Furthermore, in extreme cases, it is not uncommon for a positive correlation between one of the predictors and the criteria to return a negative regression (path) weight which can significantly distort any attempt at meaningful interpretation of the results (Cohen & Cohen, 1983).

An ad hoc test was conducted to determine the viability of finding meaningful differences in the relationships between the four components of transformational leadership and subordinate motivation. Using the t-test for differences of correlations (Cohen & Cohen, 1983), no differences were found between any of the correlations for subordinate A or subordinate B ratings. Taken together, the results suggest a high level of multicollinearity between the components. Combined with theoretical concerns about the factor independence of the four components of transformational leadership, this statistical support suggests proceeding with the combined overall transformational leadership measure model. While it is recognized that the CFA indicates a slightly better fit for the four component model, a single transformational leadership factor was used to test the main hypotheses in the present study. Standardized factor loadings for all of the final measurement models for each of the raters can be found in Tables 4.2, 4.3, and 4.4 below.

TABLE 4.2
MANAGER CFA STANDARDIZED FACTOR LOADINGS FOR ITEMS

<u>Items</u>		Factor Loadings
Job Interdependence		
1	The person I am rating often has to consult me about the work s/he does	74
2	The person I am rating relies heavily on decisions made by me	95
3	The way s/he accomplishes work tasks is highly determined by me	68
Motivation		
1	S/he works harder by going the 'extra mile'	83
2	S/he takes the initiative to solve work problems	83
3	S/he persists in overcoming obstacles to complete a task	85
4	S/he tackles difficult work assignments enthusiastically	85
5	S/he is highly motivated to complete assigned tasks	88
Performance		
1	S/he greatly exceeds standards for job performance	88
2	S/he performs at a high level in comparison to others	89
3	S/he contributes more to unit effectiveness when compared to others	83

Note All standardized factor loadings were significant at $p < .01$ $N=137$

TABLE 4 3
SUBORDINATE A CFA STANDARDIZED FACTOR LOADINGS FOR ITEMS

	<u>Items</u>	<u>Factor Loadings</u>
Decision Making Quality		
1	If I went to my manager for advice on how to accomplish a task, I would feel comfortable following his/her advice	78
2	My manager knows when to explore ideas or suggestions further	80
3	My manager makes high quality decisions	89
4	My manager knows how to remedy problems	88
5	My manager has good ideas about how to accomplish work	86
6	I trust the judgment of my manager	86
7	My manager gives the right job to the right person	77
Transformational Leadership (My manager)		
1	Spends time teaching and coaching	66
2	Talks about his/her most important values and beliefs	56
3	Talks optimistically about the future	69
4	Re-examines critical assumptions to question whether they are appropriate	77
5	Treats you as an individual rather than as just a member of the group	71
6	Specifies the importance of having a strong sense of purpose	76
7	Talks enthusiastically about what needs to be accomplished	80
8	Seeks differing perspectives when solving problems	75
9	Considers that you have different needs, abilities, and aspirations from others	78
10	Considers moral and ethical consequences of decisions	64
11	Articulates a compelling vision of the future	71
12	Gets you to look at problems from many different angles	82
13	Helps you to develop your strengths	77
14	Emphasizes the importance of having a collective sense of mission	82
15	Expresses confidence that goals will be achieved	81
16	Suggests new ways of looking at how to complete assignments	85
Motivation		
1	I work harder by going the 'extra mile'	72
2	I take the initiative to solve work problems	75
3	I persist in overcoming obstacles to complete a task	81
4	I tackle difficult work assignments enthusiastically	73
5	I am highly motivated to complete assigned tasks	73

Note All standardized factor loadings were significant at $p < .01$ $N=87$

TABLE 4 4

SUBORDINATE B CFA STANDARDIZED FACTOR LOADINGS FOR ITEMS

<u>Items</u>		<u>Factor Loadings</u>
Decision Making Quality		
1	If I went to my manager for advice on how to accomplish a task, I would feel comfortable following his/her advice	83
2	My manager knows when to explore ideas or suggestions further	87
3	My manager makes high quality decisions	91
4	My manager knows how to remedy problems	86
5	My manager has good ideas about how to accomplish work	81
6	I trust the judgment of my manager	83
7	My manager gives the right job to the right person	77
Transformational Leadership (My manager)		
1	Spends time teaching and coaching	70
2	Talks about his/her most important values and beliefs	52
3	Talks optimistically about the future	85
4	Re-examines critical assumptions to question whether they are appropriate	86
5	Treats you as an individual rather than as just a member of the group	79
6	Specifies the importance of having a strong sense of purpose	78
7	Talks enthusiastically about what needs to be accomplished	77
8	Seeks differing perspectives when solving problems	89
9	Considers that you have different needs, abilities, and aspirations from others	84
10	Considers moral and ethical consequences of decisions	86
11	Articulates a compelling vision of the future	80
12	Gets you to look at problems from many different angles	88
13	Helps you to develop your strengths	84
14	Emphasizes the importance of having a collective sense of mission	78
15	Expresses confidence that goals will be achieved	82
16	Suggests new ways of looking at how to complete assignments	85
Motivation		
1	S/he works harder by going the 'extra mile'	91
2	S/he takes the initiative to solve work problems	87
3	S/he persists in overcoming obstacles to complete a task	90
4	S/he tackles difficult work assignments enthusiastically	79
5	S/he is highly motivated to complete assigned tasks	76
Performance		
1	S/he greatly exceeds standards for job performance	92
2	S/he performs at a high level in comparison to others	93
3	S/he contributes more to unit effectiveness when compared to others	88

Note All standardized factor loadings were significant at $p < .01$ N=88

After confirmation of the factor structures for each of the rating sources, internal consistency reliabilities (Cronbach's alpha) were calculated for all the factors. In support of the CFA analyses, reliability estimates exceeded .80 suggesting adequate internal consistency for the measures (Nunnally & Bernstein, 1994). All of the item total correlations were then examined to determine whether removal of any items would significantly improve the reliability estimates. None were found and all items were retained in the final measures. These coefficients, along with descriptive statistics and intercorrelations are reported in Table 4.5. Also included in Table 4.5 are the relationships between the variables of interest and subordinate A gender, tenure with the manager, and organizational tenure.

Aggregation

To test the hypothesized model, the measures needed to be aggregated to form single indicators of each of the constructs. To justify the use of aggregated scores, it was first necessary to demonstrate a significant level of agreement between raters (Roberts, Hulin, & Rousseau, 1978). Rater agreement indicates the presence of common perceptions between raters and provides support for the validity of each perspective. There has been considerable debate regarding appropriate estimates of interrater agreement to justify aggregation (Kozlowski & Hattrup, 1992; Schmidt & Hunter, 1989). Each approach to assessing interrater agreement has its own merits as well as shortcomings, therefore two common and representative methods were employed, as described below.

TABLE 4 5
MEANS, STANDARD DEVIATIONS, AND CORRELATIONS FOR INDICATOR VARIABLES**

Rater			Manager			Subordinate A			Subordinate B			
Indicator Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10
1 Job Interdependence (M with A)	2 71	88	(84)									
2 Motivation (M rating A)	4 31	75	-.18	(94)								
3 Performance (M rating A)	4 13	82	-.22	.85	(93)							
4 Transformational leadership (A rating M)	4 18	65	02	.25	15	(95)						
5 Decision making quality (A rating M)	4 41	61	04	18	10	.86	(94)					
6 Motivation (A rating A)	4 55	49	07	.20	12	.39	.33	(86)				
7 Transformational leadership (B rating M)	4 19	72	02	06	12	.22	.24	03	(96)			
8 Decision making quality (B rating M)	4 34	71	06	02	02	.24	.34	04	.83	(94)		
9 Motivation (B rating A)	4 20	74	-06	.20	.27	-06	02	12	.36	.22	(93)	
10 Performance (B rating A)	3 96	88	-01	17	.23	-04	00	04	.28	17	.84	(94)
Gender (female = 1, male = 2)	na*	na	-06	09	08	-02	-10	08	06	00	01	11
Subordinate A tenure with manager	na*	na	-02	07	18	-18	-12	00	-14	-14	09	13
Subordinate A organizational tenure	na*	na	-05	-02	-11	00	04	06	-07	-03	-07	-03

Note The letters in parentheses signify the rater, (M) manager, (A) Subordinate A, (B) Subordinate B Parenthetical values represent coefficient α reliability estimates of the indicator variables Correlation coefficients in bold are significant at $p < .05$ "na" = Not applicable, categorical variables * See Table 3 1 for descriptions of the gender and tenure distributions ** Correlations were tested for linearity, none contained curvilinear relationships

The James, Demaree, and Wolf (1984) statistic ($r_{WG(J)}$) was used in the first test of rater agreement (see Table 4.6). When used with multi-item scales, this statistic gives a ratio of the true variance over total variance corrected by the Spearman-Brown prophecy formula (Finn, 1970; James, Demaree, & Wolf, 1993). It does not depend on the correlation between ratings. Two raters whose ratings that are close to each other on the scale (e.g., 4 and 5 on a five-point scale) might be considered in agreement even if they do not rank order the ratees in the same fashion (i.e., the two raters lacked correlational agreement).

Calculations for the interrater agreement indices ($r_{WG(J)}$) produced a coefficient between 0 and 1 for each of the variable by ratee combinations. After discarding records with only one rating source and/or missing data, the calculations resulted in 314 coefficients. In the past, a coefficient of .70 or greater has been offered as providing sufficient evidence to proceed with aggregation (e.g., George, 1990). Of the 314 coefficients, 86% exceeded the .70 standard. Thus, the $r_{WG(J)}$ test provided evidence that there was sufficient agreement from different sources to justify aggregation across raters.

TABLE 4.6
ESTIMATES OF WITHIN GROUP AGREEMENT AND INTRACLAS CORRELATIONS AS TESTS
OF AGREEMENT

	$r_{WG} > .70$	ICC
Transformational Leadership	80%	16
Decision Making Quality	91%	32
Motivation	92%	12
Performance	81%	23

Note: Agreement estimates $> .70$ are considered acceptable (George, 1990). ICC, Intraclass correlation.

While the $r_{WG(J)}$ test suggested that there was a sufficient level of agreement to support aggregating the ratings for managers, subordinate A, and subordinate B, results of a second test for agreement, the intraclass correlation (Shrout & Fleiss, 1979), provided conflicting evidence. In contrast to $r_{WG(J)}$, the intraclass correlation depends on agreement of rank ordering of targets and also between-target differences in ratings. An index is calculated for each variable ranging from 0.00 to 1.00. The results of this analysis are provided in Table 4.6. Intraclass correlation coefficients ranged from .12 for ratings of motivation to .32 for ratings of decision making quality. These values are lower than what would be considered acceptable levels of agreement. The reason for the discrepancy between the various approaches to agreement highlights their fundamental differences.

In situations where there is a discrepancy between two measures of agreement, it is appropriate to examine the possible reasons behind it to gain a better understanding of the structure of the data. Beginning with descriptive statistics, Table 4.5 shows that nearly all of the variable means were above 4.0 on a five-point scale and most of the standard deviations were below .75, indicating that a majority of the ratings were at the top of the scale. This pattern of ratings is consistent with results of the $r_{WG(J)}$ analysis which indicated evidence of agreement between raters. However, contrary to the $r_{WG(J)}$ analyses, consistency in ratings across raters can have detrimental effects on the intraclass correlation. That is, $r_{WG(J)}$ relies on absolute value agreement while the intraclass correlation relies on correlational agreement. While these two methods can often times support the same conclusion, they can also indicate different conclusions (James et al., 1984). The intraclass correlation is a correlational form of interrater

reliability and is referred to as a "consistency" index by Shrout and Fleiss (1979). It "attends only to similarity of rank orderings of judges' target ratings (i.e., whether judges' scores correlate with one another, irrespective of whether the scores are the same)" (James et al., 1993). In the present study, correlations between the different raters ranged from .12 for motivation to .34 for decision making. One explanation for the low level of correlational agreement is likely to be attributed to the relatively narrow distribution of ratings in the 4 to 5 range of the rating scale (i.e., range restriction). If the distribution of ratings is compressed enough, correlational statistics or their direct derivatives (e.g., intraclass correlation) can be significantly attenuated (Cohen & Cohen, 1983).

As a test for the notion that restricted range may have attenuated the intraclass correlations, a measure of range restriction was calculated. Range restriction (cf., Saal, Downey, & Lahey, 1980) is the amount of variation across ratees and dimensions, and will approach 0.0 when there is no variation in how raters are rating ratees and will approach 1.4 if there is a uniform distribution across the five available scale values (Mood, Graybill, & Boes, 1974). The range restriction values for each of the raters was as follows: manager .77, subordinate A .61, and subordinate B .79. These values are lower than what might be expected if raters were using the entire scale and suggest that the different raters were inclined to give similar ratings to each of the different ratees. While it is impossible to conclude that range restriction is the sole factor responsible for the low intraclass correlations, it is certainly one possible reason for low coefficients of agreement.

In summary, two indices of agreement were calculated to determine the appropriateness of aggregating ratings across the rating sources. While $r_{WG(j)}$ provided support for agreement, the intraclass correlations did not. Because these are two distinct and valid forms of measuring agreement, a conservative approach to the analyses suggests that the ratings should not be aggregated. Thus, hypothesis testing was conducted with separate tests of the hypotheses for each of the rating sources.

Convergent and Discriminant Validity

The low level of agreement demonstrated by the intraclass correlation analysis has potential implications for the validity of the measures. The use of more than one source of ratings is typically utilized to avoid single method biases and increase the validity of the measures by combining different rater perspectives. From a multitrait-multimethod (MTMM) perspective (Campbell & Fiske, 1959), when there are multiple raters for each of the attributes, the goal is to show higher levels of between-rater correlational agreement, when looking at a single trait, in comparison to within rater correlations between different traits. This provides a way to check for the convergent and discriminant validity of the measures. Convergent validity will be exhibited when multiple methods of measurement for a given trait are shown to be highly correlated. If the methods are valid indicators of the underlying construct, then a high correlation between them suggests that they are measuring the same construct. In the current study, convergent validity would be represented by a high level of agreement (correlation) between the different raters (methods).

Discriminant validity is similar to convergent validity in that it is tested by examining the level of correlation between two measures, but in this case it is contingent

on lower correlations between traits within a given rating method. Even though a significant correlation between two traits may be hypothesized, such as between motivation and performance, very high correlations call into question the discriminant validity of the measures. It is also referred to as a test for method bias because the method itself accounts for the high level of correlation rather than the linkage between the traits. Very high correlations here suggest that raters did not distinguish, or discriminate between the measures. Concerns over both forms of validity are relevant for the question, what is being measured here, motivation, performance, or some hybrid of the two.

Measurement of convergent or discriminant validity is not done with a specific set of predetermined values that act as yardsticks. Instead, Campbell and Fiske (1959) suggest a guideline where, "ideally, (measures of the same trait should correlate higher) than the correlations among different traits measured by the same method." They also refer to this as relative validity. The relative validity of the present measures can be assessed with the correlations in Table 4.5. As already described, the correlations between raters on the same traits were relatively low, ranging from .12 to .34, whereas correlations within raters and between traits were very high for motivation and performance (.80's), and for transformational leadership and decision making quality (.80's). The discrepancy noted here between low rater agreement and correspondingly very high within rater correlations for both the leadership and criteria measures warrants some concern about the validity of the measures.

In contrast to concerns over convergent and discriminant validity, there is some encouraging support for the validity of the measures offered by another indicator derived

from the correlation matrix. There is an extensive amount of research that has shown significant linkages between transformational leadership and subordinate criteria such as motivation and performance (Bass & Avolio, 1993). Correlational values typically range from .20 to .40. While there are concerns about the validity of the measures, the correlations found in Table 4.5 between transformational leadership and subordinate outcomes (e.g., motivation) replicate those of previous studies and are consistent between raters (subordinate A, $r = .39$, subordinate B, $r = .36$). In addition, the correlation with performance for subordinate B (subordinate A was not available) was less than with motivation ($r = .28$ versus $r = .36$) which supports the hypothesized model where motivation is acting as a mediator.

In sum, there is reasonable concern over the convergent and discriminant validity of the measures, lower than expected agreement coincides with very high within rater correlations (i.e., method variance). Taken together, they make it difficult to make supporting conclusions about the construct validity of the measures. While this causes hesitation with respect to hypothesis testing, the pattern of correlations between transformational leadership and subordinate criteria are encouraging because they replicate findings in other studies, suggesting that the correlations found between leader behaviors and subordinate outcomes may have merit. Because the primary focus of the present study is to test the comparative linkages of the two leadership measures with subordinate motivation and performance, hypothesis testing was performed with some caution given to interpretation of the results. Concern over the validity of the measures is also noted in the Limitations section.

Hypothesis Testing

A visual summary of the results from hypothesis testing is presented in Figure 4.5. The primary hypotheses of the study predict relationships between the leader behaviors (i.e., transformational leadership and decision making quality) and subordinate outcomes (i.e., motivation and performance). Due to the low agreement between rating sources, hypotheses were tested separately for each of the rating sources (see Figures 4.6 and 4.7). After discussion of findings from each source, results will be reviewed in an overall summary of findings.

Ratings of transformational leadership, decision making quality, and self-ratings of motivation were obtained from subordinate A. Figure 4.6 depicts a diagram of the hypotheses relevant to the measures available for subordinate A. Hypotheses 1 and 3 predict significant positive relationships between the two measures of leadership behavior and subordinate motivation. Hypotheses 2 and 4 predict significant relationships between subordinate motivation and performance and between decision making quality and performance respectively but could not be tested because subordinate A was not asked to rate his/her own performance.

To test Hypotheses 1 and 3, subordinate motivation was regressed on transformational leadership and decision making quality. A significant relationship between transformational leadership and subordinate motivation was found ($\beta = .40, p < .05$) indicating support for Hypothesis 1. However, contrary to Hypothesis 3, decision making quality was not significantly related to subordinate motivation ($\beta = .00, p > .05$).

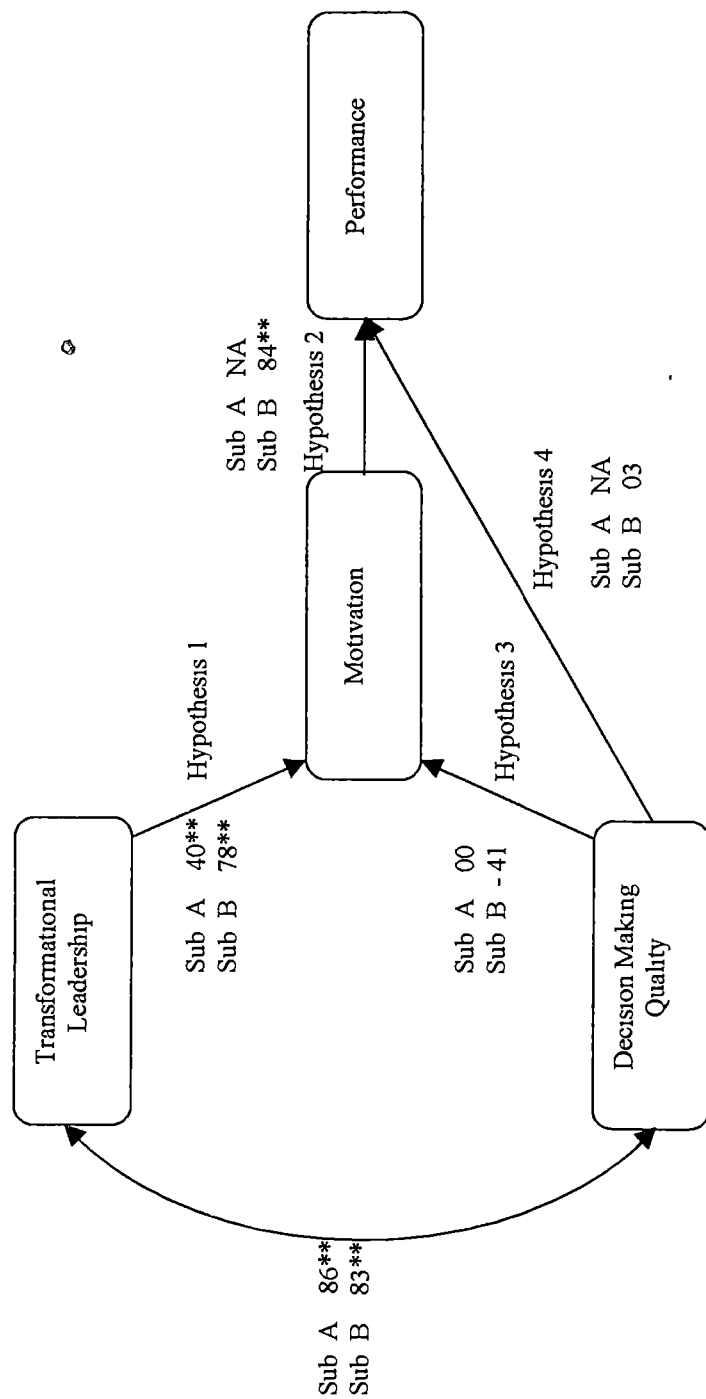


Fig 4 5 Summary of hypotheses and results from regression tests Sub A = Subordinate A results Sub B = Subordinate B results Coefficients are standardized regression weights (β) Arrows represent tested relationships using regression. * $p < .05$ and ** $p < .01$

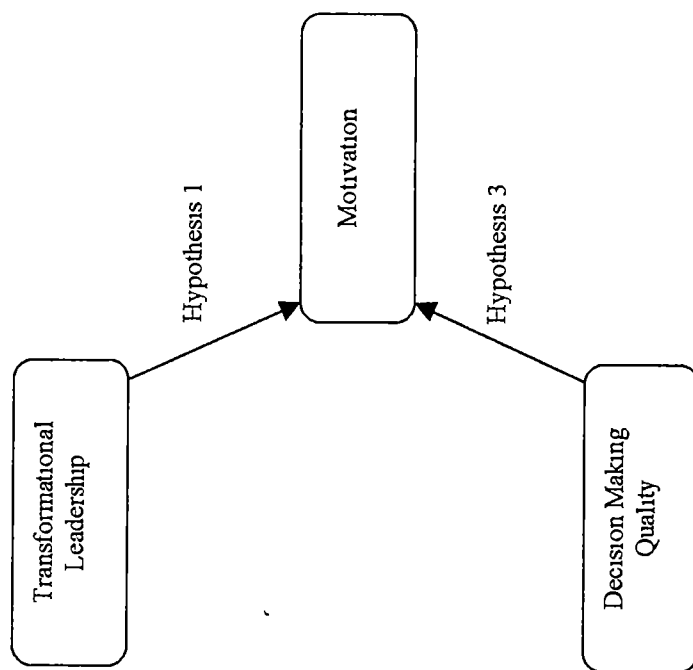


Fig 4 6 Representation of subordinate A variables and hypothesized positive relationships Arrows represent tested relationships using regression

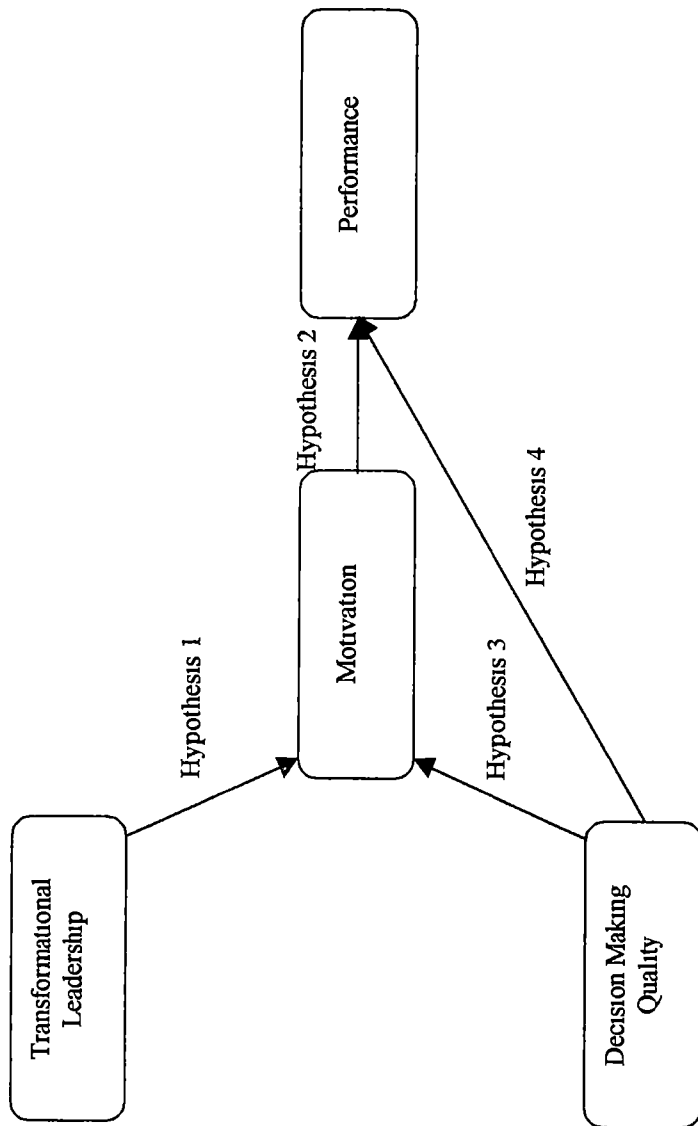


Fig 4 7 Representation of subordinate B variables and hypothesized positive relationships Arrows represent tested relationships using regression

Due to the availability of all the required measures, subordinate B ratings offered a more complete test of the hypotheses. Hypotheses 1 through 4 are shown in Figure 4.7. Subordinate motivation in this model acts as a complete mediating variable between transformational leadership and subordinate performance, but is only a partial mediating factor for the relationship between decision making quality and subordinate performance because Hypothesis 4 predicted an additional direct relationship between these two variables. The relationships described here are best tested using a mediator analysis. Baron and Kenny (1986) describe the test for a mediator as containing 3 steps. First, there must be a relationship between the independent variables (transformational leadership and decision making quality) and the mediator (motivation). Second, a relationship between the mediator and dependent variable (performance) must be established. The third step involves demonstrating that the relationship between the independent and dependent variables is no longer significant when the relationship between the mediator and the dependent variable is controlled for.

The hypotheses were tested using three regression steps as recommended by Baron and Kenny (1986). First, similar to the subordinate A analysis, subordinate motivation was regressed on both transformational leadership and decision making quality to test Hypotheses 1 and 3 respectively. Results indicated support for the linkage between transformational leadership and subordinate motivation (Hypothesis 1) ($\beta = .78$, $p < .05$), while the linkage between decision making quality and subordinate motivation (Hypothesis 3) was not supported ($\beta = -.41$, $p > .05$). Similar to subordinate A results, the significant, positive, zero-order correlation between decision making quality and

subordinate motivation ($r = .22, p < .05$) did not emerge in the regression due to decision making quality's high collinearity with transformational leadership ($r = .83, p < .05$)

For the second mediator step, Hypothesis 2 predicts a positive relationship between subordinate motivation and performance. Results of the correlational analysis shown in Table 4.5 indicate strong support for this relationship ($r = .84, p < .01$). Finally, a third regression analysis was performed to verify that subordinate motivation mediates the relationship between leader behaviors and subordinate performance. This analysis was also used to test Hypothesis 4, which predicts a significant direct relationship between decision making quality and performance. Baron and Kenny (1986) describe this as a partially mediated relationship because decision making quality is hypothesized to have linkages with subordinate performance through motivation (mediator) as well as directly with subordinate performance. In order to check for the mediating role that subordinate motivation plays in this model, the third mediator step was broken into two parts. First, subordinate performance was regressed on transformational leadership and decision making quality. Next, subordinate motivation was entered into the regression equation as an additional independent variable. If motivation is acting as a mediator, then the significant relationship between the two independent variables and subordinate performance should drop to zero, and the linkage between motivation and performance will be significant. In the results for the first part, transformational leadership was significantly related to performance ($\beta = .51, p < .05$), but decision making quality was not ($\beta = -.28, p > .05$). When motivation was added to the equation in part two, the resulting regression weight was highly significant ($\beta = .84, p < .01$). In addition, the previously significant relationship between transformational leadership and subordinate

performance dropped to zero ($\beta = .03, p > .05$) Given the nonsignificant results in part one for decision making quality, the nonsignificant results for part two were expected (Hypothesis 4, $\beta = .00, p > .05$) While this supports the hypothesis that subordinate motivation mediates the relationship between transformational leadership and subordinate performance, the results also suggest that the hypothesized direct and indirect (mediated by subordinate motivation) relationships between decision making quality and subordinate performance are not supported

Managers rated subordinate A motivation, performance, and task interdependence between the manager and subordinate A The manager was not asked to rate himself/herself on leadership behaviors Because measures of leader behavior are crucial to testing the primary hypotheses of the study, manager ratings were dropped and were not used as part of the hypothesis testing This also has repercussions for the testing of Hypotheses 5 and 6 which make predictions about the moderating impact of task interdependence on the relationship between leader behaviors and subordinate motivation Because leadership measures are not available for the manager ratings, these hypotheses were not assessed

Summary of Findings

Because the data did not support aggregation across the three rating sources, each of the datasets was independently analyzed to test the hypotheses The main hypotheses of this study were tested with a series of regressions and the resulting Beta values were used to determine if the data supported the hypotheses Manager ratings had to be dropped altogether because they did not provide any measures of leadership behavior and

therefore could not be used to test the relationship between leader behaviors and subordinate outcomes, which were of primary interest in the present study

Despite the lack of support for aggregation, the results from subordinate A and B hypothesis testing were consistent. Strong support was found for Hypothesis 1 (transformational leadership and subordinate motivation) among both rating sources while Hypothesis 3 (decision making quality and subordinate motivation) was not supported by either rating source. The pattern of multicollinearity between the two leader behavior measures was also consistent across both subordinate rating sources. In both instances, decision making quality had a significant zero-order relationship with subordinate motivation, but when transformational leadership was entered in the equation, the relationship between decision making quality and motivation was reduced to zero.

Table 4.7 contains a summary of the findings for each of the hypotheses. It highlights the consistency of the subordinate A and B results. While the problems noted with aggregation prevented an integrated approach to testing the hypotheses, the agreement between the two rating sources on the relationships between variables lends more confidence that the relationships are not spurious and indicative of only one ratings perspective.

In general, the current findings support past studies that explored the relationship between transformational leadership and subordinate outcomes. Transformational leadership is related to subordinate motivation, which in turn is significantly related to performance. Both linkages have been well-documented in the literature (cf., Bass & Avolio, 1993). An additional objective of the study was to explore the potential added

TABLE 4 7
SUMMARY OF FINDINGS

<u>Hypothesis 1</u> Transformational leadership behaviors will be positively related to subordinate motivation	<u>Subordinate A</u>
	Supported, $\beta = .40$ ($p < .05$)
	<u>Subordinate B</u>
	Supported, $\beta = .78$ ($p < .05$)
<u>Hypothesis 2</u> Subordinate motivation will be positively related to subordinate performance	<u>Subordinate A</u>
	NA
	<u>Subordinate B</u>
	Supported, $\beta = .84$ ($p < .05$)
<u>Hypothesis 3</u> Leader decision making quality will be positively related to subordinate motivation	<u>Subordinate A</u>
	Not Supported, $\beta = .00$ ($p > .05$)
	<u>Subordinate B</u>
	Not Supported, $\beta = -.41$ ($p > .05$)
<u>Hypothesis 4</u> Leader decision making quality will be positively related to subordinate performance	<u>Subordinate A</u>
	NA
	<u>Subordinate B</u>
	Not Supported, $\beta = .03$ ($p > .05$)
<u>Hypothesis 5</u> Job interdependence will positively moderate the relationship between transformational leadership and subordinate motivation	Dropped
<u>Hypothesis 6</u> Job interdependence will positively moderate the relationship between leader decision making quality and subordinate motivation	Dropped
Note	NA Not applicable due to missing measures "Dropped" indicates that the ratings by the Manager were discarded before hypothesis testing because of inability to aggregate

contributions of leader decision making quality to motivation and performance

However, there was no evidence to support these relationships

CHAPTER V

DISCUSSION

During the past 20 years, leadership researchers have turned their attention toward describing the qualities in leaders that enable them to capture the hearts and souls of their followers. Transformational leaders, as they are often referred to, are said to be able to motivate employees "beyond expectations" (Bass, 1985). More specifically, they inspire those who work with them by coaching, inspiring trust, and demonstrating a vision for the future. Transformational leaders also have the capability to instill this vision in others, thereby spreading the desire to reach common goals (Conger & Kanungo, 1987).

In contrast to research on transformational leadership, which focuses on the more emotional and inspirational aspects of leadership, the purpose of the current study was to go beyond this scope and also explore a more strategic approach to leadership. Investigations of leader decision making quality represent an attempt to better understand how the strategic direction and everyday decisions leaders make are related to subordinate motivation and performance. Decision making is a common topic within the managerial behavior literature (Yukl, 1994), but is largely absent in research on effective leadership. In order to bring the concept of decision making quality into the leadership arena, this study tested the hypothesis that leader decision making quality is incrementally related to subordinate outcomes beyond that of transformational leadership behaviors. Subordinates were expected to be more motivated because they trust the judgement of their manager and believe in the direction they are heading. It was also hypothesized that high quality manager decision making would have a direct positive linkage with subordinate performance because better decisions should lead to more

efficient avenues for achieving goals. Therefore, while transformational leaders are said to inspire subordinates to move forward more quickly, higher quality decisions made by managers should lead subordinates in a more direct and efficient path toward desired goals.

In order to test these hypotheses, manager transformational leadership behaviors and decision making quality were measured along with subordinate motivation and performance. The closeness of the working relationship between managers and subordinates was also measured to determine if manager behaviors tend to have a stronger relationship with subordinate outcomes when there is a more interdependent working relationship between them. This was hypothesized to occur because of the greater opportunity for manager behaviors to have an impact on subordinates.

During the data analysis process, problems were encountered in the aggregation phase. Ratings from the manager, subordinate A, and subordinate B were compared to test for a sufficient level of agreement to aggregate the data to construct single indicators for each of the construct variables. Results of the agreement analyses revealed low levels of agreement with the intraclass correlation. Values ranged from .16 to .32, which is much lower than the level recommended for aggregation (Shrout & Fleiss, 1979). Therefore, ratings from each of the raters were not aggregated and each set was used to test the hypotheses independently. An unfortunate consequence of this process was that the manager ratings had to be dropped from all analyses because there were no self-ratings of leadership. This eliminated the ability to test the relationships of primary interest with manager ratings (i.e., those between leadership behaviors and subordinate

outcomes) Hypothesis testing was therefore carried out with only the subordinate A and subordinate B ratings

Hypothesis testing with subordinate A and subordinate B ratings yielded the same results This suggests that while they did not significantly agree on their ratings, they did agree on how the constructs are related to each other Given this consistency in findings, the following discussion does not make a distinction between results from the individual raters

The current study found that while transformational leadership was significantly related to subordinate motivation, which in turn was significantly related to performance, there was no link found between decision making quality and either subordinate motivation or performance Subsequent sections of this chapter explore these findings in greater detail First, however, findings relevant to the relationship between transformational leadership, subordinate motivation, and performance are reviewed This is followed by a summary of the potential motivating mechanisms associated with transformational leadership Findings for decision making quality are then reviewed as a contrast to those of transformational leadership Given the lack of support for the hypotheses concerning decision making quality, alternative models are discussed Finally, consideration is given to study limitations, followed by recommendations for future research and current study implications

Findings for Transformational Leadership

The hypothesized relationship between transformational leadership behaviors and subordinate motivation (Hypothesis 1) was supported ($\beta = .40, p < .05$ and $\beta = .78, p < .05$ for subordinate A and B respectively), replicating similar findings from previous

studies (e g , Howell & Avolio, 1993) Managers who express a sense of mission and value the individual strengths of those they lead have a better chance of motivating subordinates and therefore increasing their performance level These results reinforce and further support the primary tenets of transformational leadership theory that state, in one form or another, that transformational leaders are able to elicit higher levels of motivation from subordinates (Bass, 1985) In addition, the effects of transformational leadership are often found to be above and beyond the effects of transactional leadership styles, which are described as exchange or contingency-based interactions (e g , rewards given in return for special effort or accomplishments) (e g , Hater & Bass, 1988)

While there is significant discussion regarding the motivational effects that transformational leaders have on subordinates (e g , shared vision, extraordinary achievements, transcended self-interest), there is little attention given regarding the mechanisms by which these leader behaviors psychologically influence subordinates (Shamir, House, & Arthur, 1993) Shamir and associates attempt to provide a psychological description of the processes activated by transformational leaders that result in higher levels of subordinate motivation In their description, self-concept plays a central role in the process This motivational theory posits that the subordinate's self-concept is engaged (e g , heightened self-esteem, self-worth, self-efficacy, and social identification) by the behaviors of a transformational leader The motivational effects are a byproduct of subordinates seeking to bring their actions in line with their heightened self-concept In other words, subordinates act to prove to themselves that they can accomplish the enhanced set of goals set by the leader's vision and their own desire for maintaining their enhanced self-worth Although the present results reveal little about the

psychological mechanisms involved in these subordinate effects, the description of these hypothesized mechanisms represents an important attempt at understanding why subordinates are described as being “swept away” by transformational leaders. Future research should attempt to validate the mechanisms surrounding the linkages of transformational leadership that have been repeatedly found in studies such as this one.

Of particular note in the results of the present study was the treatment of the transformational leadership items from the MLQ as a single factor rather than the four components sometimes used in other studies (inspirational motivation, idealized influence, intellectual stimulation, and individual consideration). Although the current confirmatory factor analyses supported the four factor model by revealing a slight preference for four distinct factors of transformational leadership, intercorrelations between the factors and correlations with the criteria (i.e., motivation), suggested the use of a single factor. As recognized by Howell and Avolio (1993, p. 49) “examination of discriminant validity is particularly important because the factors composing transformational leadership are often highly correlated with each other which has raised some critics to question the construct validity of the MLQ survey.” Without the ability to distinguish between the individual effects of each of the components, interpretation of regression beta weights or other indications of effect magnitude are difficult to make. Because of these concerns, the current study utilized a single factor model to explore the relationship between transformational leadership and motivation. While this approach was used in the current study, it is not likely to be suitable in all situations. Because of the varying situational and environmental aspects in which data are collected, it is difficult to specify whether the data will suggest a single or four factor

treatment of transformational leadership in other samples. Therefore aggregation of MLQ items into a single overarching indicator of transformational leadership behaviors or specifying the items as four individually relevant components should be grounded in theory and also allow for meaningful interpretation of the results.

Findings for Motivation and Performance

Hypothesis 2 predicted a significant relationship between subordinate motivation and performance. Results indicated a tendency for subordinates who were more motivated to also have better than average performance ($r = .84, p < .01$). This linkage is common in conceptualizations of motivation and has been evidenced in many studies (e.g., Kanfer, 1990, Locke, 1991). All things being equal, when subordinates put forth more effort, they tend to perform better. While other factors, particularly subordinate ability, environmental constraints, and task demands can contribute to varying levels of performance (Hackman & Oldham, 1976), motivation is likely to be a primary mechanism in how leader behaviors impact subordinate performance (Bass, 1985b, House & Shamir, 1993, Kirkpatrick & Locke, 1996, Seltzer & Bass, 1990).

Motivation plays a key role in the present study because it acts as the only significant mediator between transformational leadership and performance. Results supported the mediating role of motivation for the linkage between transformational leadership and performance, and also indicated that there was no additional direct relationship between transformational leadership and performance. This is significant empirical evidence for descriptions of transformational leaders. In many discussions (e.g., Conger & Kanungo, 1988), subordinate motivation represents the core of attention as a primary product of transformation leadership behaviors. If a direct relationship was

found between these leader behaviors and performance, this might suggest that in addition to being able to increase subordinate motivation, transformational leaders may also be able to impact performance in other ways. An example would be changes made to the work environment that would make it easier for subordinates to achieve goals, such as reducing barriers to performance (e.g., substitutes for leadership, Kerr & Jermier, 1978). Since no direct relationship was found, motivation appears to play a key role in explaining how transformational leadership is linked to subordinate performance.

Summary of Transformational Leadership

Findings that support relationships between transformational leadership and motivation and subsequent performance are consistent with most descriptions of transformational leadership. Transformational leaders are described as being able to energize subordinates to achieve higher levels of performance. The relationships between transformational leadership and motivation, and between subordinate motivation and performance were significant, giving further evidence that transformational leadership may play a significant role in increasing subordinate performance. Although one of the most prominent areas of interest in leadership in the recent past (Graen, House, Hunt, & Yukl, 1999), transformational leadership accounted for only 16% percent of the variance in subordinate motivation. Under the assumption that this 16% is entirely attributed to a causal effect from transformational leadership to subordinate motivation, there is still 84% unaccounted for, leaving room for other relevant effects that could be attributed to other leader behaviors. While not discounting other well-documented contributions to motivation described by other theories, such as perceptions of equity and extrinsic rewards (Kanfer, 1990), the 84% of unexplained variance in motivation that is

unaccounted for suggests that other types of leader behaviors may be relevant and therefore should be explored

As evidenced by several studies of managerial behavior (Mintzberg, 1973, Yukl, 1994), decision making is an important aspect of everyday work-life for managers. Managers are often responsible for making decisions that affect the path taken by individuals and the team as a whole. Hence, the quality of these decisions was hypothesized to be directly related to subordinate motivation levels (Hypothesis 3). To test this hypothesis, manager decision making quality was measured along with subordinate motivation and performance. Transformational leadership plays an essential part in the current model because its relationship with subordinate outcomes serves as a comparative basis for those of decision making quality.

Findings for Manager Decision Making Quality

It was hypothesized that the perceived quality of managers' decisions would be directly related to subordinate motivation (Hypothesis 3). There was no support for this in the results ($\beta = .00, p > .05$ and $\beta = -.41, p > .05$ for subordinate A and B respectively). In a model where both transformational leadership and decision making quality were analyzed as contributors to motivation, decision making quality does not provide a significant contribution to motivation above and beyond transformational leadership. It was also hypothesized that decision making quality would be significantly related to subordinate performance (Hypothesis 4). This linkage was described as the ability of the manager to direct work activities and navigate the workteam toward goals with agility. For example, better managerial decisions would allow subordinates to work more efficiently and thus achieve goals more quickly. But as the results show, this also was

not supported by the data ($\beta = .03, p > .05$ for subordinate B). Apparently, as a potential influence on subordinate motivation and performance, the quality of manager decision making does not appear to play a significant role.

Reconsideration of Decision Making Quality

Results from the current study did not yield support for the proposition that manager decision making quality is related to subordinate motivation and performance. One conclusion that might be suggested is that decision making quality is not significantly relevant to subordinate outcomes. In other words, while good manager decision making may lead to better personal performance (Beach & Mitchell, 1978), it is not relevant with respect to subordinate outcomes (i.e., motivation). Before such a conclusion is drawn about the role decision making quality plays with respect to leadership, several issues such as the validity of the rating methodology, the pattern of correlations and the directionality of effects should be addressed.

In considering support for the hypotheses, one question that may arise about the method used to assess decision making quality is the validity of the ratings. Given the lack of previous investigations of this variable, this is a reasonable concern. Subordinates were asked to give their perceptions of their managers' ability to make high quality decisions. Two particular areas of interest are the quality of the measure and the appropriateness of subordinates as raters. Regarding the former point, factor analyses and internal consistency indicators supported the reliability of the measure in both the pilot and main studies. Internal consistency reliabilities for both the subordinate A and subordinate B ratings were within acceptable levels. Furthermore, face validity was the main consideration in the development of the measure. Items were written specifically

for this study and included wording that is directly relevant to the content and focus of the measure, for example "my manager makes high quality decisions "

The second concern involves the appropriateness of subordinates as raters While other rating sources could have been used (e.g , self and manager's superior), subordinates seem to represent the most valid source for conducting tests of the relationships between leader decision making quality and subordinate motivation and performance (Judge & Locke, 1993) Subordinate perceptions of manager behaviors should be more closely tied to subordinate behaviors than ratings from other sources Thus, while there was no significant relationship between decision making quality and subordinate outcomes, the focus on face validity and subordinates as raters represents a reasonable attempt to ensure valid measures of the constructs Even though content validity was a goal of the measurement process, there were concerns noted earlier about the lack of convergent and discriminant validity found in the correlation matrix Interpretation of the results should therefore be approached cautiously to avoid making final conclusions based only on this one set of data Subsequent samples in this and other populations may produce other patterns of results Even though these concerns represent a limitation of the current study, the pattern of correlations between leader behaviors and subordinate outcomes is consistent with other studies (e g , Bass, 1990) and therefore gives some confidence in these results

While the nonsignificant results appear to indicate that leader decision making quality may not be important as portrayed in the current model, this may not be entirely true given the correlations reported in Table 4 5 These zero-order correlations indicate that decision making quality is significantly related to the other variables in the model

For subordinate A and subordinate B ratings, there were significant zero-order correlations between manager decision making quality and subordinate motivation ($r = .33, p < .05$ and $r = .22, p < .05$, respectively). Although there were significant zero-order relationships between these variables, no incremental contribution was found for decision making quality with motivation because of the high collinearity decision making quality shares with transformational leadership (e.g., $r = .83, p < .01$, subordinate B). Multicollinearity was a problem because when transformational leadership was part of the model, the relationship between decision making quality and subordinate motivation disappeared. It seems that the strong tie between transformational leadership and subordinate motivation overshadows the potential contributions of decision making quality. Because of these relationships, however, it is possible that decision making quality may be more closely related to transformational leadership than initially thought.

The goal of this study was to assess the potential impact that leader decision making quality could have on subordinate outcomes, such as motivation, above and beyond the already established effects of transformational leadership (e.g., Conger & Kanungo, 1988). Although the hypotheses for leader decision making quality were not supported, decision making quality was highly related to transformational leadership and had a significant zero-order correlation with subordinate motivation and performance. This pattern of correlations suggests three alternative perspectives on the role played by decision making quality. It could be described as either a (1) component of, (2) criteria of, or (3) predictor of transformational leadership.

The first alternative suggests that decision making quality may be just another component of transformational leadership, similar to intellectual stimulation and inspirational motivation. As described earlier, however, the confirmatory factor analyses suggested that decision making quality was a separate variable from transformational leadership. In addition to the quantitative results, transformational leadership (Bass, 1985) differs conceptually from decision making quality. The primary tenets of transformational leadership are that subordinates are transformed by the way in which the leader's message is communicated to subordinates. It is also described as a style in which leaders give personal attention to subordinates and help them to grow (Bass, 1985). The mechanisms behind decision making quality are theoretically very different. The style is thought to be somewhat irrelevant in that the effects of higher decision making quality are hypothesized to come from a belief in the decision the manager is making. From a valence-expectancy perspective (House, 1977), the effects of decision making on subordinates can be thought of as an increase in the effort-to-performance expectancy. Subordinates will have more faith that they are going to reach goals because they believe in the leader's ability to make high quality decisions for their work. By contrast, the effects of transformational leadership could be described as an increase in the positive valence associated with reaching the goals. The goals subordinates are striving for are part of a compelling vision offered by the leader that makes them seem more desirable. This distinction of expectancy (decision making quality) versus valence (transformational leadership) suggests that the motivational effects for decision making quality and transformational leadership should be different. Perhaps more importantly,

they suggest an alternative perspective that there may be a causal linkage between transformational leadership and decision making quality

Under a causal linkage model between the two variables, transformational leaders would be expected to exude confidence in subordinates and describe a compelling vision that convinces subordinates of the leader's decision making abilities. Leaders who believe strongly in their convictions and can articulately communicate them to others would therefore be more believable (Howell & Frost, 1989). Regardless of actual decision making capabilities, transformational leaders may be perceived by subordinates to be better decision makers. Although this appears to be a reasonable description of how transformational leadership behaviors could have positive effects on perceptions of decision making quality, a more intuitive approach may be to view the causal relationship as flowing in the other direction, such that better decisions on the part of the manager positively influence subordinate perceptions of transformational leadership.

The effects of transformational leadership originate from the sharing of a vision with followers, the recognition of individual strengths, weaknesses, and developmental opportunities (House & Shamir, 1993). Transformational leaders are said to have a charismatic communication style, speak with a captivating tone, make direct eye contact, and have a confident and dynamic interaction style (House, Woyce, & Fodor, 1988; Howell & Frost, 1989). Ratings of these behaviors are typically given by subordinates. Subordinate perceptions that managers make high quality decisions may be a prerequisite for believing in the vision that is being communicated. Bennis and Nanus (1985) explain that the content of the vision is more important for creating follower commitment than the style used to convey it to subordinates. This suggests that the quality of decisions

will influence perceptions of being transformational. A manager that leads the team in a haphazard fashion in many cases may not have a vision and if there is one, it is not likely that subordinates will be transformed by a message they do not believe in (Howell & Avolio, 1992). Depicted in this fashion, the strategic direction then takes on the role as the leader's transformational vision. In sum, a plausible interpretation of the findings is that when subordinates have faith in managerial decisions they may perceive their managers as being more transformational, as a result subordinates are more motivated.

Given the nature of the results and the plausibility of both of the causal models just described (i.e., transformational leadership $\Rightarrow$ decision making quality, decision making quality $\Rightarrow$ transformational leadership), it is difficult to arrive at a defensible conclusion regarding the presence and direction of any causal relationships. Further, it also seems plausible that there is a reciprocal relationship between transformational leadership behavior and decision making quality. That is, increasing perceptions of leadership contribute to perceptions of effective decision making which in turn works to further enhance the believability of the vision. Similar to attributional theories of leadership (Cronshaw & Lord, 1987, Larson, Lingle & Scerbo, 1984, Phillips & Lord, 1981), subordinates who believe that leader decisions will allow them to reach goals more easily may attribute this to the manager's transformational style. Regardless of the exact nature of the relationship between transformational leadership and decision making quality, these considerations suggest that decision making quality is likely a meaningful construct to take into consideration and is worthy of further investigation.

Leader Behaviors as Criteria

Leadership variables are nearly always portrayed as managerial behaviors that have some kind of impact on subordinate outcomes such as motivation and performance (e.g., Bass, 1985). Managers engage in influence, modeling, and other tactics designed to elicit desirable behaviors from those who work for them. What is seldom mentioned in discussions of leadership is the potential for subordinate behaviors to have an influence on the way managers behave, essentially reversing the proposed causal effects that are present in most leadership models. In the present study, subordinate ratings were collected at a single point in time. Respondents were asked to rate subordinate motivation and performance and leader transformational leadership and decision making quality behaviors. Correlations such as these are nearly always portrayed in the literature as the leader behaviors causing the subordinate outcomes. Beyond theoretical rationale, there is no property of the present correlational design that limits the inferences of the model to this causal direction.

Bandura's (e.g., Bandura, 1990) work on self-regulatory influences is relevant for explaining how the present correlational findings may be interpreted in other ways. In the self-regulatory model, group performance (subordinate performance) is relevant with respect to predicting future managerial behavior (Bandura, 1988). Through effects on managerial self-efficacy, managers are positively reinforced when group performance is higher. Bandura (1986) for example, showed that group performance had predictive influence on the strategic goals that managers used. Prior group performance also had predictive influence over the analytic strategies employed by managers. In a related study, Wood, Bandura, and Bailey (1990) found that subordinate performance is

important for managers to better understand what leadership style will be more effective for group goal achievement. These are examples of findings where subordinate performance in the form of group goal attainment had a significant impact on how the manager responded in subsequent situations. This work highlights the ability of performance related criteria to change subsequent manager behavior.

A model where subordinate outcomes have predictive power over manager behavior is also a possibility in the present study. There was a significant zero-order correlation between decision making quality and subordinate motivation, but the incremental decision making quality regression weight was not significant when transformational leadership was also included as an independent variable. An alternative to the hypothesized model is that subordinate performance and motivation may have significant effects on leadership behaviors. Within a self-regulatory framework, subordinate motivation and performance levels may have an impact on manager perceptions of self-efficacy as well as give them feedback about what works in the given environment. The result is different leadership behaviors in reaction to motivation and performance information from the workgroup. Choice of leadership behaviors are then dependent on subordinate actions. If the model is viewed in this way, where motivation is tested as having influence over transformational leadership and decision making quality, the analysis results in significant effects to both transformational leadership and decision making quality from motivation. The reason decision making quality is now significant is because the magnitude of the paths will be equivalent to the correlational values between motivation and transformational leadership and decision making quality (subordinate A, $r = .39$ and $r = .33$, subordinate B, $r = .36$ and $r = .22$ respectively). The

collinearity between these two leader behaviors would now be described as a shared consequent of subordinate motivation. When subordinates are more motivated and perform at a higher level, leaders are more likely to use this information and react in a transformational fashion and make better decisions about future directions. Further, decision making quality now plays a significant role in the model. Given the ability to provide rational descriptions of effects going in both directions, Wood and Bandura (1989) suggest that the most likely scenario is that of a "bidirectionality of influence" where there are reciprocal interactions between leaders and the groups they oversee.

As mentioned previously, the correlational nature of the current dataset does not allow for conclusive comments about the causal relationships operating between these variables. Overall, the nonsignificant results for decision making quality raise several questions about the validity of the currently proposed model. Some alternative models have been discussed here: decision making quality could be a component of transformational leadership, decision making quality could play a more predictive role over ratings of transformational leadership, or subordinate behaviors may be at least partially responsible for different types of leadership behavior. While the results do not offer overwhelming support for any one of these scenarios, the relationships found do suggest that decision making quality has a significant presence within the leadership arena.

Limitations

The results of this study should be viewed with a consideration of study limitations. There may be certain aspects of the study design that reduced the ability to find the expected effects. Potential confounds were the use of paper-and-pencil

measures, response bias, respondent fear of being identified, and model misspecification. Any one of these or a combination of them could have contributed to the lack of support for the hypotheses surrounding decision making quality. With regard to overall interpretation of the results, there were concerns about the validity of the measures that should be noted as well.

First, none of the variables were measured objectively, such as by direct observation. They were all measured with an electronic version of what is commonly referred to as a paper-and-pencil test, meaning that data was collected with self-report questionnaires (i.e., perceptions of subordinates and their managers). In some instances, subjective measurement introduces error into the ratings to the extent that perceptions are not an accurate reflection of reality, subject to interpretation or observation bias (Cooper, 1974). Although, with respect to ratings of managerial behavior, subordinates are said to be in an advantageous position to provide valid ratings because of their experiences with managers (Judge & Locke, 1993).

On a related note, a concern that arises from the use of voluntary surveys is response bias. Subordinate participation was solicited under the auspices of providing feedback for a training program that the managers had attended six months earlier. Some of the subordinates may have viewed the survey as more of a managerial feedback tool instead of an assessment of the training program. Several studies in the performance appraisal literature have found that raters are more likely to offer ratings if they have favorable ratings to give (e.g., Ilgen, Fisher, & Taylor, 1979). While this is a valid concern in the present study, the response rate was nearly 66% for subordinates, which suggests that nonresponse bias may not be a significant issue. However, some of the

mean values for ratings were above 4.0 on a five-point scale. The skew of ratings at the top of the rating scale is likely the cause of range restriction that was found during the tests for agreement. To the extent that range restriction was then the cause of the low intraclass correlation coefficients, these response patterns are considered a limitation of the study.

The potential effects of using an electronic Lotus Notes based system for collecting data in this organization are unknown. Ratings of individual performance and behavior are often sensitive issues, while all participants were guaranteed complete anonymity, there may have been some concern that their responses would not be kept confidential. Respondent concern over anonymity is not exclusive to electronic surveys, but this type of data collection, in contrast to paper-and-pencil forms, may be more prone to it because e-mails almost always have some kind of identification that allows tracking back to the origin (Kiesler & Sproull, 1986). As a result, respondents may have distorted their responses, fearing that the ratees might learn about their ratings. For example, ratings for transformational leadership were relatively high given the five-point scale (subordinate A, *mean* = 4.18, subordinate B, *mean* = 4.19), and concern was mentioned previously about the presence of range restriction which is a likely result of responses skewed to the top of the rating scale. However, the sample for the study was taken from a Fortune 100 company with 42% of the managers having been with the company longer than 10 years. This indicates that respondents had a high level of experience and may be more deserving of higher ratings than new hires. They were also in professional management positions where one would expect to see higher ratings on these attributes.

than for example, in a factory setting. In light of the circumstances, it is difficult to conclude if electronic data collection resulted in any biasing effects on the data.

The specified linkages within the hypothesized model should also be briefly considered. Given the methodology of the study, tests for relationships between the different variables had to rely on correlational statistics, causal effects can only be inferred. This limits the ability to make firm conclusions about the directionality of the relationships. Particularly in regard to decision making quality, where the hypotheses were not supported and little prior work has been done, other models of influence could be proposed. For example, decision making quality was primarily viewed as a predictor of motivation and not as a potential predictor of transformational leadership. A model where transformational leadership mediates the relationship between decision making quality and motivation is a possibility given the pattern of correlations (Baron & Kenny, 1986, Cohen & Cohen, 1983). Another possible scenario would be a model depicting subordinate outcomes having significant predictive influence over leader behaviors. Building upon this, it is likely that subordinate motivation has a reciprocal relationship with leader behaviors, vis-a-vis some form of self-regulatory mechanism (Wood & Bandura, 1989). Overall, the role of decision making quality, while believed to be important with respect to leadership and subordinate motivation, remains somewhat ambiguous at least partially because of the limitations inherent in correlational data.

Finally, it should be noted that caution should be used when interpreting the overall findings. The low interrater agreement combined with high within rater across-trait correlations can be indicative of problems with construct validity. This makes it difficult to make conclusive statements about the relationships found between the

measures because there may not be a good match between the measures and the constructs they are intended to measure. While caution should be taken with the current findings, it is possible that the overall validity concerns and the high collinearity between transformational leadership and decision making quality were linked together in the current study. They may not be indicative of this population overall or other populations. If this is true, the significant zero-order correlation between decision making quality and motivation might then point to meaningful relationships with respect to subordinate outcomes. Transformational leadership would no longer be an overshadowing influence and the hypothesized relevance of decision making quality could be measured. Only future research can answer this question.

Suggestions for Future Research

Results of the present study leave questions still unanswered regarding the role of decision making quality as a relevant factor for manager and subordinate interactions. Although relationships with subordinate motivation and performance were not supported, decision making quality may still be an important aspect of leadership research, acting in some other capacity. Since there has been little work in the area of manager decision making as a leadership construct, future research should begin with an attempt to do further construct validation with this measure. In the current study, the seven items that were used as the measure were derived from a pilot study and showed high internal consistency results in both phases of the study, but concerns were noted regarding the lack of rater agreement and the very high collinear relationship with transformational leadership. With respect to further construct validation, decision making quality could be measured along with a set of other variables that should be highly correlated with it, such

as manager intelligence, supervisor ratings of manager decision making ability, and more objective measures of decision making quality such as in-baskets or simulations. Such research could validate the measure as a relevant and accurate measure of subordinate *perceptions* of leader decision making quality. More objective measures may also be needed from the perspective of the direct link between decision making quality and performance. Because this linkage is proposed to occur as a result of *objectively higher* quality decision making, subjective ratings may not be appropriate here. Future work would be needed to identify the ability of subjective ratings to act in this capacity.

Results of the current study also raise questions regarding the role of decision making quality with respect to transformational leadership. The high correlations between the two variables indicate that they are strongly related to one another which raises concerns about factor independence. Although the CFA analyses indicated that they are separate constructs, this should be validated with other samples in other work settings.

If decision making quality is found to be a relevant independent measure of leader behavior, then it may act as some form of predictor of transformational leadership. Support for this would pave the way to further look at the system of behavioral and contextual variables that enable managers to be viewed as having transformational influence over subordinates. There has been considerable theoretical discussion regarding the presumed mechanisms surrounding transformational leadership (Shamir et al., 1993), but little empirical support has been offered (e.g., Kirkpatrick & Locke, 1996). Future research should consider decision making quality along with other variables in an

attempt to better understand the potential for predicting when subordinates are likely to view managers as transformational leaders

Finally, while direct relationships between decision making quality and subordinate motivation were not supported, this does not eliminate the possibility that decision making quality may be acting in another capacity with regard to subordinate outcomes. Under the heading 'substitutes for leadership' (Kerr & Jermier, 1978), it is predicted that certain individual, task, and organizational variables may be present that moderate the effectiveness of leader behaviors. With respect to decision making quality, there may be environmental characteristics that when present (e.g., highly structured work environment) allow decision making quality to directly affect subordinate outcomes.

Implications

One of the most important findings of the study was validation of the well established wisdom that more motivated workers tend to perform better (Locke, 1991). While additional predictors of performance, such as ability were not measured, the significant link with motivation suggests that when employees put forth more effort, they are able to accomplish more. While seemingly mundane, this is an important finding in that it not only reinforces what has been reported previously, but also provides a more descriptive view of how motivation and performance are related to leader behaviors.

In addition, the link between transformational leadership and subordinate performance was found to operate entirely through motivation. The results did not reveal a direct link between transformational leadership and performance. This suggests that transformational leadership behaviors may be largely motivating behaviors. Much of the

descriptive work by Shamir and his colleagues (Shamir et al , 1993) supports this finding, but it leaves open alternative ways leaders can influence subordinate performance directly. For example, it was theorized that leaders who are better at making decisions would not only be able to elicit higher subordinate motivation, but also have a direct positive influence on subordinate performance. The results did not offer support for this conclusion, so evidence from the present study indicates that motivation plays a key intermediary role between transformational leadership behaviors and subordinate performance, and neither of the leader behaviors were directly relevant to performance. Given these findings, managers should not expect significant direct performance improvements from subordinates unless they are also able to instill subordinates with a sense of urgency and appealing to them with inspirational messages (i.e., be transformational).

Another significant point resulting from the study lies in the relative importance of transformational leadership behaviors over decision making quality. Regardless of the direction or presence of causal linkages between these two leadership behaviors, the results clearly suggest that transformational behaviors are more closely related to subordinates outcomes than decision making quality. Although it makes intuitive sense that better decision makers are likely to perform better in their own jobs, it may not be as relevant as a leadership characteristic. Given these results, if the primary goal of leadership is to influence others, then a transformational style seems to be a more relevant driver than the perceived quality of their decisions.

Although further investigation will be needed to determine how transformational leadership and decision making quality interact with each other, the results suggest that

there is a significant relationship that highlights the potential importance of decision making quality. As suggested earlier, one possible scenario is that decision making quality may act as a predictor of transformational leadership. If this is the case, believability of the vision or charisma associated with managers may derive at least partially from trust in the decisions they make. Under this scenario, belief in the leadership message may be a prerequisite for following a vision which then has motivational effects on subordinates. The implications of this statement are highly relevant from a training perspective. Followership would play a key role in teaching managers how to be better leaders. The lesson to managers is that it takes more than motivational speeches to produce better leadership, it also requires that subordinates want to follow the manager because of trust in the decisions s/he is making for the group.

Conclusions

In the present study, it was hypothesized that leader decision making quality would be related to subordinate motivation above and beyond the linkages previously shown with transformational leadership behaviors. Results verified the presence of a significant transformational leadership linkage to motivation, but the hypothesized relationships between decision making quality and both subordinate motivation and performance were not supported. Consistent with other studies, these results suggest that transformational managers may be able to increase the motivation of those they supervise but contrary to the hypotheses, perceptions of managerial decision making are not likely to have an additional direct effect on subordinate outcomes.

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APPENDICES

APPENDIX A

PILOT STUDY

Before proceeding with data collection to test the main hypotheses of the study, a pilot questionnaire was constructed to test items for two of the variables in the main study, decision making quality and manager influence. The results will be used to identify items for each of these constructs in order to produce reliable and content valid measures of the constructs for the main portion of the study. The pilot questionnaire was distributed to and completed by 142 employees from the same company that was also used in the main portion of the study. The participants were recruited from two training classes. The questionnaire was administered by the trainer who then returned the completed forms to the researcher. Participation was voluntary with no incentives offered.

To test the construct, Decision Making Quality, 25 items were constructed to measure the extent to which subordinates believe their manager makes high quality decisions. In addition, seven items were written to measure the construct, Manager Influence. Manager Influence is the extent to which subordinates work closely with the manager and rely on direction provided by him/her to complete work tasks. The items resulting from this pilot study and subsequent analyses will be used in the final questionnaire.

Pilot Study Results

The items for each of the two variables were then separately factor analyzed to determine the factor structure and the corresponding factor loadings. The 25 items used to measure Decision Making Quality and the seven items used to measure Manager

Influence were factor analyzed using Principal Components extraction and rotated using an oblique (nonorthogonal) method, Promax ($k=2$) as programmed in the Statistical Package for the Social Sciences. An oblique rotation is typically utilized when the resulting factors are thought to be correlated (Gorsuch, 1983). Given that the items were designed to measure each of their respective constructs, it was likely that if multiple factors (i.e., more than 1 eigen value above 1.0) resulted from the analyses, they would be correlated. Since correlated factors will cause a higher occurrence of cross loadings, oblique rotation is used to draw greater distinctions between the factors, yielding higher loadings and fewer cross loadings. For each analysis displayed in Tables A 1 and A 2, only loadings above .40 are shown to highlight the significant loadings and reveal those items that may tend to be related to multiple factors. A factor loading of .50 and no cross loadings above .40 were used as cutoff criteria for consideration of an item on a particular factor.

Table A 1 contains the rotated factor loadings from analysis of the decision making quality items. Three factors were found which accounted for 61.8% (52.7%, 4.7% and 4.4% respectively) of the variance. Based on these results, a content analysis of the items and their respective relationships with each of the factors, it was determined that those items which had loadings on factor 1 higher than .50 and had no cross loadings above .40 on other factors would be used as indicators of the Decision Making Quality construct. The resulting measure contains 7 items with a mean of 4.00, standard deviation of .62 and internal consistency reliability of .91 (α).

Table A 2 contains the rotated factor loadings from the seven manager influence items. Two factors were found which accounted for 74.0% (55.3% and 18.7%

respectively) of the variance. Since factor 1 accounts for over 50% of the variance and contains a sufficient number of items (4) which have loadings above .50, these items will be used as the measure of Manager Influence. The resulting measure has a mean of 2.84, standard deviation of .94 and internal consistency reliability of .89 (α).

TABLE A 1
 ROTATED FACTOR LOADINGS FOR ITEMS COMPRISING THE MEASURE
 DECISION MAKING QUALITY

<u>Item</u>	Factor Loadings		
	1	2	3
DMQ5	77		
DMQ1	74		
DMQ18	70		
DMQ10	63		
DMQ15	60		
DMQ21	60		
DMQ6	58		
DMQ2	55		41
DMQ4	51		47
DMQ23	50	42	
DMQ14	44	42	
DMQ17	43		
DMQ25	41		
DMQ22			
DMQ13		74	
DMQ11		70	
DMQ9		70	
DMQ8		61	
DMQ24		57	
DMQ20		54	
DMQ19		46	
DMQ12		45	
DMQ3			66
DMQ16			64
DMQ7			45

Note Factor loadings less than 40 have been omitted DMQ = Decision Making Quality N=142

TABLE A 2
 ROTATED FACTOR LOADINGS FOR ITEMS COMPRISING THE MEASURE
 MANAGER INFLUENCE

<u>Item</u>	Factor Loadings	
	1	2
MI7	90	
MI6	87	
MI5	85	
MI4	81	
MI3	63	42
MI2		84
MI1		83

Note Factor loadings less than 40 have been omitted MI = Manager Influence N=142

VITA

Steven M Barnard was born in Barberton, Ohio on August 1, 1969. He grew up in DeLand, Florida and graduated from DeLand High School in June, 1987. The following Fall he entered the University of Florida in Gainesville, earning a Bachelor of Science with a major in psychology and minors in business and philosophy in May, 1992. After working for a year as a manager on the University of Florida campus, he entered the Industrial/Organizational Psychology doctoral program at the University of Tennessee in Knoxville.

After completing all coursework and examinations in 1996, he began work in market intelligence at IBM's corporate headquarters in Armonk, New York. After four years at IBM, Steven left for Scient, an e-business consulting company located in New York, NY, conducting strategic user research and customer perception work.