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Implementing Core Values in the High-Tech Industry

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2011

Abstract

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Abstract

Previous research has indicated that the path-goal theory is an effective way to study leadership behavior; however, a gap exists in the literature with respect to its achievement-oriented and participative leadership dimensions in high-tech organizations. In this quantitative study, the effects of a core values intervention on the four leadership dimensions of House's path-goal theory were evaluated at a semiconductor manufacturer with a focus on the differences between supervisors and non-supervisory personnel. Data were gathered from the validated, company-developed Corporate Culture Survey that was administered pre and post intervention. Data were also gathered from a categorization task that sorted the Corporate Culture Survey items into leadership dimensions to form the dependent measures. ANOVA was used to determine whether significant changes in perceptions of leadership behavior by supervisors and non-supervisory personnel occurred on House's four leadership dimensions as a result of the values intervention. Results of a two-way ANOVA on the directive supervision subscale show an interaction between the pre-post intervention factor and supervisors/non-supervisory factor in addition to a main effect for the pre-post intervention factor. Analysis of the simple effects for directive leadership shows a significant pre-post intervention gain on mean score for non-supervisory personnel. Implications for social change include recognizing perceptions of enhanced directive leadership that can help remove manufacturing interruptions to increase productivity and decrease costs.

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Chapter 1: Introduction to the Study

Introduction

At the most basic level, organizational culture is essential for feeling pride and carrying out work. Organizational culture can instill a positive attitude and impact learning and performance (Robbins & Judge, 2010). An organization must, therefore, ensure that the culture reflects its stated values (Riad, 2007). Proper alignment between organizational culture and values makes organizational members more inclined to embrace the culture (Martin, 2009).

Significant changes that impact the day-to-day operations of business organizations are under way in technology, education, economics, and politics worldwide (Tarrant, 2008). The process of change is indicative of how leadership is viewed by an organization, but the challenge is in implementing change that works. Old agreements of roles and responsibilities between organizations and workers have had to change as businesses in the United States have downsized to meet the demands of international competition (Tarrant, 2008). These changes affect the organizational culture. The changing world of organizations has often sought insight from psychology to help with culture change.

Businesses may appear untrustworthy because of seemingly questionable practices, disproportionate CEO salaries and bonuses, and pressure to increase productivity while cutting costs (Persons, 2006). Employees expect to work for a trustworthy organization, so a lack of trust can impact workforce climate and morale. A successful business requires leadership that is capable of establishing direction while

motivating its followers (Robbins & Coulter, 2009). Industry has looked at values such as trust, integrity, and respect within organizations (Moorehead & Griffin, 2007), and the degree to which these values are present is believed to have either a positive or a negative impact on the functioning of the organization. Because employees are looking for such values as trust, integrity, and respect for people, an organization can attract and maintain a competitive workforce by institutionalizing a culture with these core values and leadership behaviors that support these values (Robbins & Coulter, 2009).

Background of the Study

I chose to study one organization, a large semiconductor manufacturing group named in this study as Company X because of its commitment to implement an organizational culture based upon the core values of respect for people, integrity and responsibility, competition and knowledge, initiative and accountability, and customer success. I recognized that the company's core values shared similar attributes with House's (1971) path-goal theory leadership dimensions. Implementation of the core values in the organization began in January 1999. The intervention used to implement the values included forming a fabrication (FAB) culture team at the request of the manufacturing vice president. This culture team, comprised of a vice president, director, managers, supervisors, and line workers, developed and ratified a vision and mission statement and adopted Company X's values.

Next, the FAB team communicated the values to employees in January 1999 during a standard monthly communication meeting. Following communication of the values, natural work groups, comprised of rank-and-file engineers, technicians, and

supervisors of the manufacturing area, participated in focus groups and defined the

desired culture by identifying behaviors that supported the values. After the desired

behaviors of (a) being professional; (b) taking responsibility for personal behavior;

(c) encouraging and enabling others on the team to succeed; (d) helping to train and

mentor others by sharing experiences, knowledge, information, and best practices;

(e) being accountable to themselves and coworkers, and planning ahead for production

goals before scheduling meetings and classes; and (f) providing quantity without

sacrificing quality had been established, these behaviors were used as the framework to

develop questions for the Corporate Culture Survey (CCS).

Company X administered the CCS prior to the core value program's

implementation to obtain a baseline assessment and then again following implementation.

The company elected to maintain its anonymity to protect the survey participants.

Company X was committed to a corporate culture built around the core values of respect

for people, integrity and responsibility, competition and knowledge, initiative and

accountability, and customer success, as stated in the company's purpose, vision,

mission, and values statements. These core values were posted on bulletin boards

throughout the organization and published in a corporate memo.

The CCS was administered in 1999 and again in 2000, that is, pre and

postimplementation of the change. Participants were identified as 924 rank-and-file

workers for both 1999 and 2000. Supervisory numbers remained at 40 participants for

1999 and 2000. Based upon the number of negative responses (answers of *strongly*

disagree on the rating scale), the analysis resulted in the identification of five key areas in

need of improvement: individual reward and recognition, personal development, what to do when mistakes are made, conflict management, and promotion. Following completion of the CCS, Company X addressed these key areas by implementing a broad range of interventions, including forming subteams to address each of the five key areas and identifying coordinators for the five subteams. At that time, Company X did not make a distinction between supervisors and subordinates when implementing these interventions for the manufacturing area. For example, communication was a key area for improvement for both supervision and subordinates. Subsequently, in December 2000, the company continued its reinforcement of the core values and administered the CCS to the FAB employees by using the same process as described for the 1999 test administration.

Company X is located in the southwest region of the United States. The work force at this company in1999 and 2000 included approximately 3,500 employees, consisting of professionals such as electrical engineers, management, and supervision, as well as direct labor. Company X has been in the high-tech industry and has generated several billion dollars in annual revenue (AMD, 1996). Company X currently maintains manufacturing plants in Germany and Japan.

Management focused on changing attitudes via the organizational culture, but it did not focus on the leadership of Company X. Management sought to change the corporate culture to modify the organization's core values. As a former employee, I recognized that the changes being made by the leadership of Company X reflected leadership dimensions according to House's (1971) path-goal theory. Although

management may not have been aware of the path-goal theory at the time, their actions, nevertheless, reflected sound leadership according to the theory.

I examined the effort of an organizational culture change and the ways in which concomitant changes in perceptions of leadership behavior were different between supervisors and rank-and-file workers. Changes and different perceptions of changes, if any, were reflected in the archival data of a 1999 preintervention CCS and a 2000 postintervention CCS. For this reason, the present study is considered unique because the CCS was used to evaluate organizational changes with the intent of relating observed changes to House's (1971) path-goal theory.

Phase 1 of the study consisted of the categorization task, which was administered in 2009. Categorizing the survey items into leadership dimensions was necessary because data collected during 1999 and 2000 were based upon core values, not on dimensions of the path-goal theory (House, 1971). For example, Phase I participants were asked to categorize a survey item such as, "My supervisor gives people the information and explanations they need to do their job." They had to assign this item to one of five leadership categories: Directive, Supportive, Achievement Oriented, Participative, or Not Relevant.

The 2009 categorization task determined that the survey items adequately sorted into the four dimensions of the path-goal theory and allowed the study to go forward as quantitative research. Had the survey items not sorted into the four dimensions of the path-goal theory (House, 1971), I would have conducted the research as a qualitative study by conducting management interviews concerning current efforts by Company X to

improve and maintain core values, company culture, and leadership in accordance with the four dimensions of path-goal theory. In Phase 2 of the study, I analyzed the intervention by using the leadership scales as dependent measures.

Purpose of the Study

I sought to determine whether an organization that attempts to change its culture might also experience a change in leadership style as measured by the four constructs of the path-goal leadership theory (House, 1971). The path-goal theory provided the theoretical framework for this study. In particular, one aspect of the study sought to demonstrate that CCS statements used to evaluate organizational changes in Company X were the equivalent of people's perceptions regarding leadership behavior along the lines of the four dimensions of path-goal theory.

Other researchers (Yukl, 2006) have drawn attention to the dearth of studies showing how participative leadership and achievement-oriented leadership can be expressed through the leader's behavior. Therefore, assessing the quality of leadership dimensions could provide insight into a leader's behavior. In addition, the conflict in the literature (Edwards & Cable, 2009), expressed as a formal body of knowledge versus no formal body of knowledge to strengthen corporate culture, was addressed in the present study to add to the academic literature. I was concerned with strengthening corporate culture by examining an organizational climate change effort using House's (1971) four leadership dimensions as the theoretical framework.

Equally unique is the study of participative leadership and achievement-oriented leadership. According to Yukl (2006), not enough studies have been completed to deliver

a sufficient list of results about these leadership dimensions. I sought to examine the relationship between the CCS statements and the four leadership dimensions of path-goal theory. Thus, based upon the path-goal theory of leadership, which is described in more detail in chapter 2, the survey statements developed for the purpose of measuring organizational culture were expected to correlate with the leadership dimensions of House's (1971) path-goal theory.

Statement of the Problem

Although the path-goal theory provides an effective way of examining leadership issues, the lack of research focus on high-tech organizations has left a void that needs to be addressed. House's (1971) path-goal theory sounds useful from a hypothetical viewpoint; however, the theory has not been sufficiently tested in practice. Furthermore, previous research has focused primarily on directive leadership and supportive leadership (Yukl, 2006). Thus, the dearth of research on participative and achievement-oriented leadership has not been limited to the high-tech sector; rather, it also has been apparent in low-tech organizations.

With this in mind, I examined whether a relationship existed between the core values of Company X, as articulated in 1999 and 2000, and perceptions of leadership, as defined by the following leadership categories: (a) Directive, (b) Supportive, (c) Achievement Oriented, and (d) Participative. I also sought to determine whether differences existed within Company X between the perceptions of leadership held by supervisors and the perceptions of leadership held by rank-and-file workers.

Nature of the Study

I sought to examine differences between supervisors and rank-and-file workers regarding their perceptions of the leadership dimensions of the path-goal theory (House, 1971). I used a field study approach to investigate variations in perceptions of leadership dimensions between the groups. A general linear model that included correlation, an ANOVA, and regression was appropriate for this study because the participants self-reported their perceptions of the leadership dimensions. Chapter 3 provides an extended discussion of the methods of this study.

Research Questions and Hypotheses

Two research questions guided this study. Research Questions 1 and 2 are linked to House's (1971) path-goal theory of leadership, specifically in the dimensions of supportive leadership, directive leadership, participative leadership, and achievement-oriented leadership (House & Mitchell, 1974).

1. Will the culture survey questions provide reliable, content-valid, and psychometrically adequate measures to relate core values to the four dimensions of leadership style of the path-goal theory?

H_{01}: There are no reliable, content-valid, and psychometrically adequate measures to relate core values to the four leadership dimensions of the path-goal theory.

H_{a1}: The sorting of the items into categories and the measurement of coefficient alpha will relate core values to the four leadership dimensions of the path-goal theory.

2. Will there be changes between the 1999 CCS and the 2000 CCS on leadership

    dimension constructs?

    H_{02}: There is no difference in population means between the 1999 CCS and the

    2000 CCS on leadership dimension constructs for supervisors and rank-and-

    file workers.

    H_{a2}: There are significant differences between supervisors and rank-and-file

    workers in the mean score changes between the 1999 CCS and the 2000 CCS

    on the leadership dimension constructs.

Definitions of Terms

Following are definitions of key terms that were used in this study.

Achievement-oriented leadership: Setting goals that challenge subordinates,

implementing performance enhancements, emphasizing performance quality, and feeling

assured that subordinates will achieve high standards (Yukl, 2006).

Directive leadership: Informing subordinates of expectations, presenting explicit

directions, asking subordinates to follow guidelines and procedures, and scheduling and

arranging the work (Yukl, 2006).

Natural work group: A team of individuals from one module or department on a

single shift (AMD, 1994).

Organizational change: Changes in the organizational structure that involve the

way activities are organized into subunits, authority and reporting relationships, work

flow, work procedures, communication networks, reward systems, formal performance

standards, and criteria for personnel decisions such as selection and promotion (Beer, 1988).

Participative leadership: Deliberation with subordinates and taking their ideas and proposals into account (Yukl, 2006).

Perceived organizational support (POS); The employees' impressions of how supportive the organization is (Rhoades & Eisenberger, 2002).

Shared values: Significant interests and aims common to individuals in the group. Shared values tend to inform the group behavior and often continue over time when group constituency changes (Kouzes & Posner, 2007).

Supportive leadership: Taking into account the needs of subordinates, exhibiting concern for their well-being, and creating an amicable environment in the work unit (Yukl, 2006).

Delimitations

This study was confined to a convenience sample of 40 supervisors and 924 rank-and-file workers who were administered the CCS pre- and postimplementation. These participants were drawn from the manufacturing area of Company X, located in the southwestern region of the United States. This study also was confined to a sample of 11volunteers who were administered a categorization task. These volunteers were employees of a charter school also located in the southwest region of the United states.

Assumptions and Limitations

I assumed that the pre- and postimplementation data were valid and that the participants would respond honestly on the CCS. I also assumed that the participants who

completed the categorization task would have expertise in leadership behavior applicable to this study and that they would respond honestly in categorizing the items on the CCS. Finally, I assumed that the CCS items could be categorized into the four leadership dimensions of House's (1971) path-goal theory.

One limitation of the study was that the participants who completed the 1999 CCS and the 2000 CCS were limited to employees of one major semiconductor manufacturing organization. Participants who completed the CCS were drawn from the manufacturing area of the organization, which is located in the southwestern region of the United States. Another limitation was that the categorization task panel for the 2009 CCS was comprised of 11 volunteers from a charter school also located in the southwestern region of the United States. These participant volunteers who assisted with Phase I of the study were not employees of Company X.

A further limitation of this study was the reliance, to a large extent, on archival, self-reported data from the CCS. Because the participants were reporting their own perceptions and reactions, they might not have responded to the questions with complete candor, even though there was no clear reason for them to not answer honestly.

Another limitation of the study was its internal validity. Minimizing threats to the internal validity of the CCS increased my ability to argue that the intervention, not outside factors, accounted for the experimental results. Therefore, although the participants did not have any biases, research conducted in a field setting is always subject to threats to internal validity. For example, regression to the mean could have

occurred because of the random instability in the population. However, the stability of the

sample in the study did not impact the findings.

In addition, external validity raised questions about the limits of the study. With

this in mind, I needed to consider the limitation concerning the demographics of the

participants drawn from the existing manufacturing area. Moreover, financial and time

constraints could have prohibited a period of prolonged engagement in completing the

CCS pre- and postimplementation. Participant mortality (i.e., participants dropping out of

the group after the study began) could have affected the findings about the efficacy of the

implementation (Isaac & Michael, 1997). However, with the large sample size and high

participation rate in the study, participant mortality did not impact the findings.

I approached generalizing the findings to other facilities with caution because of

the precise operations required in carrying out the manufacturing process of the

semiconductor. In addition, the operation of highly technical equipment in processing

requires a background in statistics as well as basic electrical engineering knowledge.

Therefore, generalization to other organizations may have been limited.

Significance of the Study

This study is significant because of its simple and direct focus on the four

leadership dimensions of House's (1971) path-goal theory within a semiconductor

manufacturing area. The advantage of such a focus is that it allowed me to view the full

range of leadership dimensions. This study was designed to add to the psychological

literature of supportive and directive leadership in a unique way because the study was

conducted in the semiconductor manufacturing area, a very guarded industry not

generally open to outsiders. From a psychological perspective, this industry seems to vary from others in that it requires its personnel to have acumen in math and sciences to perform day-to-day operations, whereas low-tech organizations in the manufacturing area are manually driven.

By adding to the literature in the field, the study can aid other organizations in their efforts to effect change in leadership behaviors that can contribute to job satisfaction, employee retention, and continued success of the organization. A further important aspect of this study was to determine whether Company X was able to change with respect to any of the four leadership dimensions following the core values implementation.

The use of data from the 1999 and 2000 CCS was instrumental in providing evidence of the organization's change effort and examining the relationship to House's (1971) path-goal theory. Admittedly, even though the data are almost a decade old, examining the relationship between the CCS items and the path-goal theory leadership dimensions was useful in understanding how leadership and organizational change efforts are linked. The data demonstrating that the relationship between the four leadership dimensions and leadership behavior can impact the culture of an organization remain relevant.

Kotter and Rathgeber (2005) conveyed that in the most successful change efforts of the past, everyone played a crucial role in helping the organizations to adapt to a changing world. An in-depth analysis was never conducted by Company X, but the company did examine the percentage of increase on the survey items and concluded that

there was a positive culture change from 1999 to 2000 in five key areas. Insight gained from these results will make a significant contribution to the field.

Summary

This chapter introduced the four leadership dimensions of House's (1971) path-goal theory and its potential relationship to shared values in a semiconductor manufacturing area. How an intervention meant to change the organization's core values result in changed perceptions of leadership behavior was examined. Also examined was whether these perceptions were different between supervisors and rank-and-file workers. The problem statement noted that although the path-goal theory has been used effectively to study leadership issues, a lack of research exists with respect to its use in high-tech industry and with respect to the dimensions of participative leadership and achievement-oriented leadership, even in low-tech organizations. The social significance of the study and its limitations were discussed, and key terms were defined.

Chapter 2 presents a review of relevant literature with particular emphasis on House's (1971) path-goal theory. Also reviewed is literature on various research methods. Chapter 3 includes a description of the research methods, including the use of archival data from the 1999 and 2000 CCS. Also described are the original data collection and data analysis protocols. A categorization task was performed, resulting in the survey items being sorted into the four dimensions of the path-goal theory, the expected outcome of Phase I, and facilitating the performance of a quantitative study in Phase II. Chapter 4 presents the outcomes of the research, encompassing an examination of the research hypotheses. Included in chapter 5 are a discussion of the results, an

explanation of the findings, the implications for social change, and recommendations for additional activity and study.

Chapter 2: Literature Review

Introduction

This literature review focused on empirical research and provided meaningful information to explain how House's (1971) path-goal theory can be used to view organizational change. The research was based upon the assumption that a changed in the organizational culture reflects a concomitant change in leadership style, as evidenced by changes in the perceptions of leadership behavior by supervisors and rank-and-file workers and expressed through the four leadership dimensions of the path-goal theory. In this chapter, I examine the dearth of empirical research on the four leadership dimensions in the high-tech industry and the lack of studies on two of the dimensions, namely, participative leadership and achievement-oriented leadership, even in the low-tech sector. Studies exploring methodological issues such as causal-comparative research and attitude scaling also are discussed.

I reviewed articles on empirical research from such databases as PsycInfo, PsycArticles, and Dissertations International. I also perused articles in *The Journal of Psychology, Management Review, Organizational Psychology,* and other respected journals that report on organizational research findings. I also consulted various textbooks. Key input terms for the literature search included *path-goal theory*, *directive leadership*, *supportive leadership*, *achievement-oriented leadership*, *participative leadership*, *organizational culture*, *ANOVA*, and *Likert survey*, with a date parameter of 1971 to 2010.

A search of the literature identified empirical studies conducted with the use of House's (1971) path-goal theory in various industries, including manufacturing (Dale & Fox, 2008); education (Van Dick, Hirst, & Grojean, 2007); and health care (Addington-Hall & Karlen, 2005). Research literature supporting the present study has used the path-goal theory of leadership, which includes the dimensions of supportive leadership, directive leadership, participative leadership, and achievement-oriented leadership (Yukl, 2006). The literature search revealed that an informational gap exists with respect to path-goal theory and the semiconductor industry as well as two of the theory's dimensions, namely, participatory leadership and achievement-oriented leadership.

Path-Goal Theory

The path-goal theory of leadership was established by House (1971) to clarify how the leaders' behaviors impact the job satisfaction and performance of subordinates. The application of the path-goal theory to Company X seemed appropriate because the organizational philosophy of leadership behavior and the impact of the leaders' behaviors on the organization shared similar constructs with the path-goal theory and its four leadership dimensions. House constructed the path-goal theory upon an earlier version of the theory that had been developed by Evans (1970). In contrast to Evans, whose theory did not include intervening variables that might explain how leaders' behaviors affect subordinates' satisfaction and effort, House (1971) formulated a more elaborate version that included situational variables. According to House's path-goal theory, leaders can affect the effectiveness, fulfillment, and incentive of subordinates in different ways, such as by (a) offering rewards for accomplishing performance goals, (b) explaining paths

toward these goals, and (c) eliminating obstacles to performance. The four leadership dimensions of directive leadership, supportive leadership, participative leadership, and achievement-oriented leadership can be used to describe perceived changes in the leaders' behaviors for the good of the organization.

Leadership is enhanced when the leaders remove obstacles and clarify goals and objectives (Nye, 2008). These leadership actions tend to overcome inadequacies and are instrumental to the subordinates' satisfaction in the workplace (House, 1996). Examples of research on path-goal theory include a study by Dale and Fox (2008), who examined the application of the theory and the positive effects of the leadership dimensions for the organization. Peterson (1997) examined group cohesiveness and support for group decision making using a directive leadership style. A goal was to keep members satisfied that their inputs were being considered, subsequently increasing their support for group decisions.

The effects of leaders' behaviors on subordinate contentment are not always the same as the effects on subordinate effectiveness. Depending on the event, leadership behaviors may affect contentment and performance in similar ways; in different ways; or in one way, but not the other (House & Dessler, 1974). The four leadership dimensions cover various aspects of the relationship with subordinates (Yukl, 2006). Supportive leadership deals with the relationship between supervisors and rank-and-file workers in the areas of courtesy, concern for the employees' well-being, and openness and approachability (House, 1971). Directive leadership looks at the tasks that need to be accomplished and specifies what is expected, how and when to do the tasks, what the

schedules and norms are, and which procedures and regulations are required to complete

the tasks. Achievement-oriented leadership deals with demanding and supporting: It sets

challenging goals, focuses on continuous improvement, and expects ever higher

performance. Achievement-oriented leadership also deals with confidence in effort and

achievement, and it allows workers to assume more responsibility. Participative

leadership deals with consulting with the group, such as in soliciting suggestions,

listening to concerns, sharing work problems, and including workers in the decision-

making process (House & Mitchell, 1996).

House's (1971) path-goal theory sounds useful from a hypothetical point of view;

however, not all four leadership dimensions have been put to the test in practice. In

particular, little research has been devoted to examining the dimensions of participative

and achievement-oriented leadership. In this study, I focused on the directive and

supportive leadership dimensions to show that adequate research on all four leadership

dimensions of the path-goal theory has been lacking, as discussed later in this chapter.

Application of Path-Goal Theory

This section is devoted to research on the application of path-goal theory and how

the effects of leadership vary from situation to situation. The leadership-substitutes

theory (Kerr & Jermier, 1978) and the situational-leadership theory (Hersey & Blanchard,

2007) served as points of comparison for House's (1971) path-goal theory. House's

(1971) path-goal theory explored the interaction of leadership behaviors and the

psychological effects on subordinates. Some management consultants have written about

issues of leadership and organizational culture with the presumption that interventions

would be successful based upon House's (1971) path-goal theory but without actual empirical evidence to support such a presumption. This lack of evidence has been especially obvious in high-tech organizations.

Path-Goal Theory Compared and Contrasted

The leadership-substitutes theory (Kerr & Jermier, 1978) and the situational-leadership theory (Hersey & Blanchard, 2007) served as points of comparison for House's (1971) path-goal theory. I selected these two theories because they highlighted differences in how each limits or minimizes the role of leaders in comparison to the path-goal theory.

The leadership-substitutes theory minimizes the importance of managers as leaders (Kerr & Jermier, 1978), whereas the path-goal theory does not. The path-goal theory deviates from the leadership-substitutes theory in that the latter pinpoints aspects of the situation, making leadership behavior repetitious or inconsequential. The leadership-substitutes theory distinguishes between two kinds of situational variables: substitutes and neutralizers (Kerr & Jermier, 1978). In addition, the leadership-substitutes theory uses neutralizers as constraints, which prevent the leaders from doing anything to improve conditions in the workplace.

In sharp contrast, the path-goal theory provides that the leaders will remove barriers to the subordinates' job performance and job satisfaction (House, 1971). Thus, in the path-goal theory, leaders solicit suggestions to improve conditions in the workplace, whereas leadership-substitutes theory places no value on the leaders' solicitation of employees' suggestions to improve working conditions. The latter model must include

comprehensive characteristics of the subordinates' tasks to ensure that they clearly understand their roles and are motivated and highly qualified to do the work without supervision (Kerr & Jermier, 1978).

Several important differences arise in a comparison of the path-goal theory and the situational-leadership theory. In proposing the situational-leadership theory, Hersey and Blanchard (2007) took into account that different leadership behaviors might be called for depending on the maturity level of the employees. Both theories are grounded in leadership behavior, but according to the situational-leadership theory, an employee's maturity establishes the optimal model of the leader's behavior, whereas in path-goal theory, many aspects of the employee facilitate the leader's involvement.

In addition, according to the situational-leadership theory, the type of leadership used depends on the confidence and skill of the subordinates in relation to the tasks assigned, whereas according to the path-goal theory, the type of leadership is not limited to the employees' confidence and skill, but will take into consideration a broad view of the employees (Hersey & Blanchard, 2007). According to the situational-leadership theory, leaders are encouraged to be flexible in behavior depending on changes in the subordinates' maturity (Yukl, 2006). One notable variation between the two theories is that the behaviors of situational leaders focus mainly on only two areas, namely, tasks and relationships, whereas the path-goal theory accounts for many leadership behaviors.

Although all three theories are based upon leadership behavior, the situational-leadership and leadership-substitutes theory are limited in their scope of the leaders' behaviors. For example, in the leadership-substitutes theory, the focus of the leaders'

behaviors is confined to instrumental and supportive leadership. In the situational-leadership theory, the leaders' behaviors are also focused on tasks and relationships. In contrast, the four leadership dimensions of the path-goal theory are a much better fit to assess the characteristics of the organizational culture in Company X, making the path-goal theory the method of choice that grounded the theoretical framework of this research.

Application of Path-Goal Theory to Supervision

House's (1971) path-goal theory explored the interaction of leadership behaviors and the psychological effects on subordinates. Motivational functioning of the leaders consists in enhancing personal payoffs to subordinates for work goal accomplishment and in making the path to these payoffs effortless by explaining job responsibilities, decreasing roadblocks and pitfalls, and augmenting opportunities for employee satisfaction in their employment. Norman and Avolio (2010) investigated a low-tech organization in the United States that was downsizing. The purpose of their study was to determine how the leaders gained the trust of the 304 followers and how effective the leaders were in addressing turmoil and change in the organization. Results indicated that the leaders' level of support and positivity had a positive impact on the followers' perceptions of leadership.

Application of House's (1971) path-goal theory to supervision was shown by Peterson (1997), who was able to demonstrate that the application of directive leadership resulted in positive outcomes in group member satisfaction. Peterson observed member satisfaction measures in a low-tech manufacturing organization and showed how these

measures were reflective of the classic tension in group functioning between accomplishing a task and keeping the group members cohesive and satisfied. Peterson used archival data from a low-tech manufacturing organization as well as a questionnaire to identify the effects of leader outcome and process directiveness by showing that when the leaders reduce role ambiguity, they increase the workers' expectations and effort. Hence, keeping members satisfied through directive leadership is an important leadership function because members who are satisfied and confident that their thoughts were considered are more likely to support group decisions.

Dale and Fox (2008) investigated the impact of leaders' behaviors on role stress characteristics and organizational commitment. The study was based upon a sample from a large low-tech organization in the U.S. Midwest. Results revealed that the subordinates perceived themselves as having more responsibility and a higher commitment to the organization when the leaders exhibited behaviors that formalized the work environment and provided formal rules and procedures for employees to follow.

Cherniss (1995) illustrated the importance of the leaders' behaviors by using House's (1971) path-goal theory to identify the intimate connection between how leaders act toward subordinates and the subordinates' perceptions of how supportive the workplace is. Behavior based upon trust, confidence, recognition, and feedback can enhance the well-being of subordinates. Hakimi, Van Knippenberg, and Geissner (2010) examined the importance of leadership trust in an organization in the Netherlands. Results showed that the leaders' trust in the followers' performance was perceived as positive and supportive by subordinates.

Empirical evidence also exists, as shown by the meta-analysis of Lee and Ashforth (1996), that when leaders are perceived as providing social support, there is also less perceived stress and eventual burnout among the subordinates. It is noteworthy that although Lee and Ashforth included low-tech organizations in their meta-analysis, they did not discuss possible replication of the research in a high-tech setting.

In another study, Jones (2005) used a questionnaire to survey 170 workers at a Dutch company. He reported that supervisor assistance moderated the association between employees' perceived empowerment in the workplace and their levels of creative behavior. Results of the study implied that when supervisors are observed as being supportive, employees are encouraged to use their empowerment to carry out creative activities that enhance the success of the organization.

Van Dierendonck, Haynes, Borrill, and Stride (2004) conducted a longitudinal study using House's (1971) path-goal theory as the basis of their investigation into the relationship between leadership behavior and subordinates' well-being. Well-being was viewed as people's impression about themselves and the environment in which they lived and worked. Over 14 months, 562 staff members from two community trusts participated in four assessments. Five models were devised to respond to two questions:"(a) What is the most probable viewpoint of the relationship between leadership and well-being? and (b) What is the time frame for the relationship to change? " (p. 168). The model with the best fit indicated that leadership behavior and subordinate replies were linked in a feedback loop.

As previously noted, a gap exists in the literature with respect to House's (1971)

path-goal theory and its dimensions of participative and achievement-oriented leadership. In the studies discussed thus far, the researchers did not focus on these two variables. The

path-goal theory emphasizes that leaders' behaviors can affect performance, fostering renewed loyalty, commitment, and motivation in the group (Martin, 2009).

Parker, Axtell, and Turner (2001) assessed supportive supervision in a large low-tech manufacturing area by summing four items from the Cook and Wall (1980) leadership scale. Rank-and-file workers were asked to rate the extent to which their cell leader, or supervisor, behaved in various supportive ways on a 5-point Likert scale ranging from 1 (*not at all*) to 5 (*a great deal*). Questionnaire items were the following: My leader is approachable, my leader encourages people who work for him/her to make suggestions, and my leader provides or arranges for help so that the group can work effectively. Looking at the leaders' behaviors in various supportive situations, the results suggested that supervisors can do more than introduce rules, punishments, or other strategies. Parker et al. noted that supervisors can demonstrate a supportive coaching style that enriches work as well as communicate and share information with their employees. The study provided strong evidence for a relationship between supportive leadership and job satisfaction in low-tech manufacturing. The analysis claimed that the importance of supportive supervision was not a spurious finding because it was obtained even when all other characteristics and background factors were included in the assessment of job satisfaction.

Kouzes and Posner (2007) reported that employees are more willing to follow leaders whom they like and trust. Dirks (2000) empirically investigated the association between trust and team capability. Goal 1 was to examine an assumption found in several pieces of literature, namely, that confidence in the team by those in charge has an impact on the team's work outcome. Goal 2 was to review the heightened connection between confidence and team outcome, whereby confidence of those in charge interposed the connection between past and future team effectiveness. Survey and archival data from a sample of men's college basketball teams were the foundation for both hypotheses, suggesting that trust in leadership is both product and cause of team performance. The trust variable was calculated by utilizing a measurement scale for trust in a leader that was a modification of the instrument discussed in McAllister (1995). Dirks supported House's (1971) path-goal theory by showing that the leaders' behaviors can enhance employees' performance. Fukushige and Spicer (2007) examined followers' leadership preference in a Japanese manufacturing organization by conducting semistructured interviews in Phase 1 and questionnaires in Phase 2 of the data collection protocol. Results showed that the traditional approach of House's (1971) path-goal theory was a model of value when examining leaders' behaviors.

Van Dick et al. (2007) found a further connection between leader and cohort organizational identification and cohort attitudes. Study1 comprised 367 school teachers and 60 headmasters in Germany. Study 2 comprised 233 school teachers and 22 lead teachers. A third study replicated the results in a dissimilar sector by using a sample of 314 travel agents and their leaders. Taken concurrently, leaders' self-identification in

terms of the organization was akin to cohort organizational identification, leading to

increased cohort satisfaction and commitment to go above and beyond in effort on behalf

of the organization.

Simons and Roberson (2003) examined the aggregation of justice perception on

business unit-level outcomes by examining data at the individual and department levels.

The large sample ($N = 4,539$) comprised employees of 763 different hotel properties with

635 participants identified as managers and 3,904 identified as employees. Simons and

Roberson's study has important practical implications for managers. First, the results

showed that fair policies and treatment of employees in organizations enhance the

organizations' ability to address the needs of their customer base. Second, fair treatment

of employees by management encourages employee retention and commitment to the

organization. These results seemed to strengthen the assumption of a connection between

leaders' behaviors and employees' perception of how supportive the workplace is. These

perceptions are congruent with the leadership dimensions of House's (1971) path-goal

theory. Wong and Chan (2010) examined leadership perceptions of staff in China's hotel

industry by examining data from a survey of national cultural and hierarchical levels of

an organization that affected leadership perceptions. Results showed that a supportive

setting throughout the hierarchical levels of an organization increased employees'

perceptions of the integrity of the leadership.

Addington-Hall and Karlen (2005) examined the perceptions of 504 hospice

employees in the United Kingdom about the relationship between hospice management

and nurses. Results showed that the nurses wanted more supportive leadership from

management. Over all, the nurses in the study who had considered leaving were less satisfied with management and felt less valued as employees. Addington-Hall and Karlen reported that access to high-quality leadership programs may play an important role in ensuing effective, supportive working relationships and the retention of employees. Cummings and MacGregor (2010) examined 53 leadership behavior studies and outcomes for Canadian nurses employed in a hospital setting. They reported that 24 of the studies identified leadership styles focusing on supportive leadership as being associated with higher nurse retention and a positive view of management.

Epitropaki and Martin (2004) examined implicit-leadership theory in several settings to (a) provide a shorter scale for implicit-leadership theory in organizations, (b) access implicit-leadership theory across different employee groups, and (c) evaluate implicit-leadership theory over time. Two independent samples of organizational members were used in the study: $N_1 = 500$ included 100 supervisors, and $N_2 = 439$ included 96 supervisors. Participants were asked to rate how characteristics of the 41 traits presented applied to business leaders, with no explicit definition of the term provided. The results were congruent between implicit-leadership theory and other research findings on various subscales, emphasizing the importance of the leaders' support, as posited by House (1971).

Application of Path-Goal Theory to High-Tech Industries

Research using the path-goal theory (House, 1971) explored in this chapter supports the assumption that a corporate intervention to change organizational culture will correlate with a change in perceptions of leadership behaviors. As previously noted,

academicians such as Dirks (2000), Parker et al. (2001), and Peterson (1997) have focused on low-tech organizations with manual operations. In addition, such researchers have written about issues of leadership and organizational culture with the presumption that interventions would be successful based upon House's (1971) path-goal theory, especially in a high-tech organization, but without actual empirical evidence to support such a presumption. I evaluated the extent to which a corporate intervention, with a focus on the implementation of corporate culture change, resulted in changes in perceptions of leadership as defined by the path-goal theory. That the leadership dimensions of the path-goal theory are applicable to high-tech organizations became evident in a study by Makoto and Sutcliffe (2008) who examined how a group's decision-making practices influenced how the information system was used to achieve the group's goals. Results showed that different groups in the organization needed to align their use of the information system with the prevalent leadership dimensions of directive or supportive leadership used by the leaders to enhance the groups' effectiveness.

Leach, Jackson, and Wall (2001) evaluated an empowerment initiative encompassing increased fault-management accountability for operators of intricate technology. The researchers designed a feedback intervention to provide specific, timely feedback on operator-correctable faults. Further investigations suggested that the initial lack of increment in performance was the result of a lack of applicable feedback. Leach et al. hypothesized that the intervention would augment operator self-reliance in operating intricate technology and encourage system performance. The results of the feedback intervention showed an increase in operator self-reliance and improved system

performance. Thus, Leach et al. made a valuable contribution to the literature on directive leadership; however, they did not examine the participative or the achievement-oriented leadership dimension in either low-tech or high-tech organizations.

More recent studies of leadership dimensions have continued the trend of focusing on directive and supportive leadership. Buono (2010) examined what defines effective leaders and how organizations continue to struggle to define leadership. The research focused on organizational architecture and capabilities, as well as individual needs and capabilities of the employees. Results showed that directive leadership should be used in the workplace when subordinates are inexperienced and are unsure which procedures have to be followed to achieve organizational goals.

Yun, Faraj, and Sims (2005) investigated leadership and effectiveness of teams operating in a high-pressure hospital emergency room environment. On the basis of previous literature, Yun et al. proposed and tested the effect of leadership on team effectiveness during trauma revival and whether it deviated according to the situation. Yun et al. used a 2 x 3 design (2 = severely injured patient, not severely injured patient; 3 = experienced team, inexperienced team, empowered leadership). They also manipulated leadership under two conditions. First, the attending surgeon stood outside the bay and ranked the leader's decision-making skills on a 5-point Likert type scale of 1 (*strongly disagree*) to 5 (*strongly agree*). Second, the attending surgeon entered the bay and imposed decisions on the team using the same scale. Results showed that empowering leadership was positive when trauma seriousness was low and when team

expertise was high. Conversely, directive leadership was more useful when trauma was high or when the team was lacking in experience.

Barling, Kelloway, and Iverson (2003) argued that high-performance work systems generate a better work environment for employees, leading to improved quality of work life and increased job satisfaction. What the researchers failed to examine, however, was path-goal theory and the relationship between leaders' behaviors and their possible positive impact on the organization. In conclusion, the leaders' positive attitude can be beneficial to the organizational culture (House, 1971).

The application of House's (1971) path-goal theory to examine organizational change in a high-tech organization may be highly beneficial to an organization that is attempting a culture change to understand the relationship of its core values to the four dimensions of the path-goal theory. For this reason, studies that offer insight into the relationship between organizational culture and the path-goal theory might further the general understanding of leadership behavior.

Organizational Culture and Path-Goal Theory

Organizational culture is important from the perspective of House's (1971) path-goal theory because the theory emphasizes the potential beneficial impact of the leaders' behaviors on the performance, satisfaction, and motivation of subordinates. Hence, the leaders' behaviors can be perceived as either positive or negative by employees. From the perspective of organizational cultural work, the leaders' behaviors in support of the organization's core values may be perceived as aligning with the four leadership dimensions. Therefore, studies on organizational culture that offer insight into all four

leadership dimensions and leaders' behaviors will help organizations to better understand and use the path-goal theory.

To explain further, organizational culture is a term that denotes people who form common values and actions (Kotter & Rathgeber, 2005). Acceptable conduct becomes diffused throughout and maintained by the group. These actions continue because the constituents instruct new members in these practices. Members who comply are rewarded; those who do not are discouraged. In the same manner, common values are significant interests and aims agreed upon by most members in the group. They align to form group actions that often continue over time, even when group membership fluctuates.. According to House (1971), leaders' behaviors play a key role in an organizational culture by allowing employees to be engaged, challenged, and motivated. For this reason, efforts by the organization to modify its culture may be reflected in leadership changes.

Application of House's (1971) path-goal theory to an organization can be termed robust if the application is distinctive and characterized by a significant consensus among organization members regarding their beliefs, values, and ideals (Robbins & Coulter, 2009). For example, Zewell (2000) stated that a successful organizational culture fosters employee development and encourages employees maximally to impact the organization. Organizations with a strong culture often are noted for their commitment to developing their human resources. Such a commitment might be evidenced by the employee selection process, training programs, and appraisal systems. Zewell (2000) provided support for the path-goal theory by emphasizing how leaders' behaviors can have a

positive psychological effect upon employees. Because leaders display different behaviors in different situations, an organization's efforts to change the core values of its culture may be evaluated as aligning or not aligning with the four leadership dimensions of the path-goal theory.

According to Luthans (2005), the art of strengthening the organizational culture does not have a formal body of authoritative knowledge to support the assertions of practitioners. Organizations with strong cultures often are noted for their commitment to developing their human resources necessary to implement culture change. Therefore, organizations must master the rhetoric, learn the anecdotes, and confidently demonstrate the interpersonal skills necessary to implement changes to the organizational culture. However, this view stands in contrast to that held by other researchers. For example, Boxx, Odom, and Dunn (1991) adopted different strategies to strengthen the organizational culture, such as developing human resources and implementing training programs.

In conclusion, the organizational culture affects everyone (Martin, 2009), and it is important because it can have an enormous impact on the behaviors of leaders and subordinates. At times, culture can be difficult to change. The shared values of an organization, which may be deeply engrained in the culture, tend to be the most difficult to change. Although it is possible to modify behavior without conscious cooperation, is the process is much simpler if people are motivated to change their behavior. For example, House's (1971) path-goal theory empowers the leaders to become actively engaged in the well-being of the organization.

Changes to the organizational culture can occur without researchers specifically applying House's (1971) path-goal theory. Dooley (2003); Harrison and Pietri (1991); and O'Reilly, Caldwell, Chatman, and Lapiz (2010) examined organizational culture change efforts in various organizations. They examined such interventions as surveys, feedback, and training, finding them to be success techniques in helping to change the organizational culture. However, they failed to focus on the positive or negative effects of leadership behavior on the organization.

Literature on Various Research Methods

The literature review in this section focused on causal-comparative research for examining archival data. The CCS, which was used in this study, has a Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The data analysis using an ANOVA allowed me to determine whether significant differences existed between two samples of vastly different size, namely, supervisors and rank-and-file workers. More important, the ANOVA also revealed whether mean scores changed over time as a function of the intervention.

Causal-Comparative Research

Causal-comparative inquiry is ex post facto, which means that the data are gathered after all the events of interest have transpired (Van Dalen, 1979). The researcher then takes one or more effects (i.e., the dependent variables) and analyzes the data by going back through time, pursuing possible causes and relationships and their significance. Causal-comparative research fit well with the current study because I used preimplementation data from the 1999 CCS and postimplementation data from the 2000

CCS to examine differences in the perceptions of supervisors and rank-and-file workers

regarding organizational change. Furthermore, the causal-comparative approach allowed

me to examine possible cause-and-effect relationships by perceiving some existing

outcome and searching back through the data for persuasive causal factors, as described

by Van Dalen (1979).

Likert-Type Scales

Another popular data collection method is the Likert-type scale. A scale is a

measuring device allowing the assignment of symbols or numbers to individuals or their

behaviors by rule. Such an assignment indicates the individuals' possession of a

corresponding amount of whatever the scale is claiming to measure. Generally, all scales

are inferential, varying in the degree of objectivity they possess. In variance terms,

observer variance is at a minimum (Isaac & Michaels, 1997). Knowing this, Cohen and

Swerdlik (2009) reported that Thurstone was credited for developing methodologically

sound scaling methods. Scaling may be considered the procedural rules utilized for

designating numbers for measurement. From a different perspective, scaling is a

procedure by which a measuring technique is conceived and adjusted and numbers scale

valuation are allotted to different quantities of the scale items being measured. The CCS,

which was used in this study, has a Likert-type scale ranging from 1 (*strongly disagree*)

to 5 (*strongly agree*).

Furthermore, in psychometrics, scales may be instruments used to measure items.

The item being calculated is typically a psychological trait, a characteristic, or an

attribute. Test developers establish a measurement procedure in the manner they believe

is optimally beneficial to the way they have envisioned measurement of the target traits

(Cohen & Swerdlik, 2009). These scales contain a set of items, all of which are thought

to be approximately equal in point of view or value loading. The participant responds

with different degrees of magnitude on a scale ranging between limits such as *agree* and

disagree, like and *dislike,* or *accept* and *reject* (Isaac & Michaels, 1997). One type of

summative rating scale, the Likert scale, is widely used within psychology, frequently to

scale attitudes (Cohen & Swerdlik, 2009).

By way of example, Zacharatos, Barling, and Iverson (2005) utilized Likert-type

scales similar to the scales used in the 1999 CCS and the 2000 CCS. Zacharatos et al.

used scales ranging from 1 (*strongly disagree*) to 5 (*strongly agree*) on a 61-question

survey. Data were collected from several organizations in Ontario, Canada, representing a

wide range of industries, including chemical, automotive, and construction. Zacharatos et

al. examined the relationship between high-performance work teams and occupational

safety. Thus, the study provided affirmation of the prominent role of organizational

factors in providing worker safety. In particular, the use of scales in my study facilitated

the categorization of the CCS items into leadership dimensions.

CCS

As previously noted, organizational culture is based upon the shared perceptions

of employees concerning the policies, practices, and programs rewarded and supported in

a particular workplace setting (Yukl, 2006). Following are examples of studies in which

surveys of various organizations have been conducted. Liu, Siu, and Shi (2010) examined

survey data based upon how positive leadership can elevate followers in the long term.

The researchers examined data from 745 employees from the People's Republic of China (Beijing, *n* = 297; Hong Kong, *n* = 448). Results showed that employees' perceptions of supportive leadership helped to create a friendly climate in the work group.

Malamut and Offerman (2001) examined a multidimensional coping typology and a procedural model to examine strategies in response to sexual harassment, the personnel and environmental decision strategies, and the cognitive procedures underlying strategy choice. The research presented data from the U.S. Department of Defense, which examined 15,404 survey responses from persons who had experienced unwanted sex-related attention. Results showed that the selection of specific coping strategies used to address sexual harassment varied considerably and depended on occupational status, gender, and organizational climate.

Bennett and Lehman (2001) studied 260 municipal workers who neglected to seek help for alcohol or drug abuse because of a questionable workplace climate, shame, and lack of confidence in employee assistance programs. The dependent variable of group climate was assessed by utilizing several dimensions of climate and were scaled from 1 (*strongly disagree*) to 5 (*strongly agree*). Results showed that combining both team and educational training might be the most effective way to improve help seeking and the utilization of employee assistance programs.

Behson (2002) constructed and validated a 21-item scale for a culture survey developed by Thompson, Beauvais, and Lyness (1999). This survey measured informal work accommodations and examined 141 returned surveys from 10 low-tech manufacturing groups in the northeastern region of the United States. Results of the study

indicated that informal work accommodations, along with organizational policies and climate, appeared to be important to manage workplace stress.

Following my review of the aforementioned studies on responses to sexual harassment, help seeking, help for alcohol or drug abuse, and employee assistance programs, all of which employed a culture survey, I diligently searched the EBSCOhost database for cases in which organizational culture and House's (1971) path-goal theory might have been studied together and came to the conclusion that a gap existed in the literature in this regard.

ANOVA

ANOVA is perhaps the most common inferential statistical procedure because it can be used with many experimental designs. Furthermore, ANOVA is the parametric statistical procedure for determining whether significant differences exist for population means in an experiment containing two or more treatments or groups (Heiman, 2005). In this study, I performed the data analysis using an ANOVA. Its use allowed me to determine whether significant differences existed between two samples of vastly different size, namely, supervisors and rank-and-file workers. The ANOVA also revealed whether mean scores changed over time as a function of the intervention.

Many studies in organizational psychology have included an ANOVA as their statistical tool. Edwards and Cable's (2009) study of 997 employees from four water treatment organizations used an ANOVA to examine the relationships of psychological need fulfillment and value congruence with job attitudes. Results indicated that the relationships linking individual and organization values and outcomes could be explained

by the trust and communication employees placed in leadership. Steinhardt, Dolbier, Gottlieb, and McCalister (2003) used an ANOVA to test a model based upon inquiry aiding in supporting the relationship among the predictors of hardiness, supervisor support, group togetherness, and the evidence of stress and job satisfaction. Epitropaki and Martin (2005) included 439 employees of six manufacturing organizations and one service industry in their study. They also used an ANOVA. Results revealed that the closer employees understood their managers' profile implicitly to include the leadership theories, the better was the quality of leader-member exchanges.

ANOVA Studies Examining Disparate Sample Sizes

One study illustrating the use of disparate sample size was Liao and Subramony's (2008) investigation of senior leadership customer orientation on employee customer orientation. A total of 12,604 surveys from 130 global manufacturing facilities were completed, with a final sample of 4,299 employees and 403 senior leaders considered in the final data analysis. Results revealed that employees' customer orientation levels were influenced by the extent to which senior leaders themselves were customer oriented.

Zohar and Luria (2004) focused on environmental as a social-cognitive mediation between environmental attributes and relevant issues. The participants in this study were 2,024 infantry soldiers and 42 platoon commanders. These sample sizes were comparable to the sample sizes in my study, namely, 924 rank-and-file workers and 40 managers. Zohar and Luria (2004) investigated the group-level safety of climate with a 25-item questionnaire. The items referred to a range of supervisory practices and organizational events and were assessed on a 5-point Likert rating scale. Results suggested that group-

level climate was maintained and adjusted by ongoing sense-making processes; thus, sufficiently marked changes in the environment (e.g., policies, procedures, and practices) led to corresponding changes in climate level and strength. Incidentally, Zohar and Luria made no comment about the disparity in sample size between enlisted personnel and officers. Moreover, this study was based upon the premise that group climate is a product of collective sense making, in which members assessed their organizational environment, especially supervisory action patterns, to construe these patterns in psychologically meaningful terms that were capable of informing role behavior, much like the leadership dimensions.

Another example of disparate sample sizes was in a study by Vecchio and Bullis (2001) that focused on attitudinal outcomes of affective reactions to one's supervisor and satisfaction with willingness to continue in the U.S. Army. A sample of 2,883 subordinate-supervisor settings was analyzed with the use of an ANOVA. In describing the organization, the researchers noted that women represented less than 15% of both subordinates and supervisors, and Whites accounted for 33% of subordinates and 20% of supervisors. The respondents were asked to complete a questionnaire to provide ratings designed to assess the level of satisfaction with current officer-supervisors and satisfaction with the decision to stay in the army. The use of a questionnaire in Vecchio and Bullis's study was similar to the CCS used in my study to examine perceptions of leaders' behaviors by subordinates. Results indicated that White subordinates under the supervision of non-White supervisors expressed the lowest level of satisfaction with supervision.

Griffin, Parker, and Mason (2010) investigated a large public sector organization in Australia comprised of 1,800 employees who were required to adapt to new work roles and processes. Surveys were administered 1 year later by the organization to monitor employee well-being during the change process at Time 1 and Time 2. The findings provided insight into the interaction between positive leaders and followers in responding proactively to a change imperative. A further illustration of disparate sample sizes was the study by Sacco, Scheu, Ryan, and Schmill (2003) on the effect of race- and sex-likeness on ratings in one-on-one, highly intricate college recruiting consultations. The samples comprised 708 interviewers and 12,203 candidates for seven dissimilar job families. The disparate results demonstrated the importance of being mindful to nested structures and level-of-analysis issues more broadly. Large and disproportionate sample sizes have been mentioned often in the literature. Disparate sample sizes can occur in various organizational settings, ranging from the military to city government or hotels, and ANOVA was found to be an appropriate statistical procedure.

Summary

In this chapter, I explored research in the areas of House's (1971) path-goal theory, leadership dimensions, supervision, rank-and-file, organizational culture, and methodology. The path-goal theory maintains that leaders' behaviors can be an immediate source of subordinates' satisfaction or instrumental to their future job satisfaction. Also, leaders' behaviors play a key role in organizational culture by allowing employees to be engaged, challenged, and motivated. The path-goal theory also posits that leaders can affect the performance, satisfaction, and motivation of groups in different

ways. Thus, the four dimensions of directive leadership, supportive leadership, achievement-oriented leadership, and participative leadership useful in evaluating how well the leaders have succeeded in improving subordinates' performance, satisfaction, and motivation.

Martin (2009) noted that applying House's (1971) path-goal theory to an organization can be robust if the application is distinctive and characterized by a significant consensus among the members of the organization regarding their beliefs, values, and ideals. Based upon this assumption, I sought to determine whether an effort aimed at changing the core values of the organizational culture could be assessed with the use of the four dimensions of the path-goal theory. Thus, perceived changes in leadership behaviors might be considered a corollary of such efforts, or the change in organizational climate might be viewed as evidence of effective leadership I explain the research methods in chapter 3 by restating the purpose and design, describing the sample surveyed in 1999 and 2000, and explaining the procedures used to analyze the archival data obtained from the CCS.

Chapter 3: Research Methods

Introduction

Included in this chapter are the research methods; research design; description of the sample, sample size, and characteristics; instrumentation; and data collection and data analysis procedures. I used the general linear model to analyze the data. A rationale for the selection of this particular design is provided, and the ethical protection of the participants is discussed.

Research Design and Approach

I examined differences in the perceptions of supervisors and rank-and-file workers regarding four leadership dimensions of House's (1971) path-goal theory by using preimplementation data from the 1999 CCS and postimplementation data from the 2000 CCS. I used a field study approach to investigate variations in perceptions of leadership dimensions expressed by supervisors and rank-and-file workers. A general linear model that includes correlation, an ANOVA, and regression were appropriate for this study because the participants self-reported their perceptions of the leadership dimensions. In accordance with the research design of this study, certain variables such as age; sex; and job position characteristics, other than the distinction between supervision and rank-and-file workers, were not examined.

If House's (1971) path-goal theory is valid, one might expect organizational culture ratings to reflect enhanced leadership, according to the four leadership dimensions. Included in this review is an examination of differences in the pre- and postsurvey answers of the supervisors and rank-and-file workers with respect to the

leadership constructs. Any differences may have resulted from the rank-and-file workers'

increased sense of self-efficacy and modeling of the core values of the organization.

Sample and Setting

The sample and setting section is focused on 40 supervisors and 924 rank-and-file

workers of Company X as well as 11 volunteers who were not members of the

organization. This study had two phases: Phase 1 was the categorization of items on the

CCS into leadership dimensions. These dimensions form the dependent measures that

were subjected to analysis in Phase 2.

Participants

A convenience sample of supervisors and rank-and-file workers was drawn from

the manufacturing area of Company X, located in the southwestern region of the United

States. This population can be generalized to similar high-tech manufacturing areas. I

received permission from the vice president of human resources to conduct the study. I

have the unredacted original document on file. The sample comprised 924 rank-and-file

workers for 1999 and 2000, and 40 supervisory personnel for 1999 and 2000. The

sample utilized for data analysis was comprised of the 964 surveys with complete data of

the 1200 surveys administered. Nonparticipants were employees on vacation or on sick

leave, as well as those who chose not to participate in the survey. Approximately 300 of

approximately 1500 employees did not participate in the study. Efforts, including (a)

communication on the internal TV network about the administration of the survey, (b)

scheduling of administration of the CCS in 1999 and 2000 during regular work group

meetings, and (c) communication about the survey during shift meetings, were made to

encourage participation to obtain a representative sample. Transferability of the results of this research is limited to a population defined by the semiconductor industry, so the results may not be generalized to other industries.

Prior to analyzing the data obtained from Company X in 1999 and 2000, 11 volunteers who were not members of the organization but who agreed to participate in the study, performed a categorization task to develop the scales and categorize the items used in the analysis. The use of multiple raters (Fleis, 1971) facilitated the computation of a statistical measure to assess the reliability of agreement among the raters when classifying the items. The categorization task was modeled as a multinominal process, that is, each item was assigned to one of five categories. When applying normal approximation to the binominal, the np and nq should have been 5 or more. For a sample size of 11 participants, $np = 5$ and $nq = 7$ both exceeded the requirement for values of p equal to .5 and which represented the case assignments with the most uncertainty. These panel members were chosen from responses to a notice seeking volunteers to participate in the study. These volunteers were selected according to the following criteria: (a) They were an accessible population, (b) their educational background provided them with the necessary reading skills to complete the survey, and (c) they were presumed to be knowledgeable in positive and negative leadership behaviors.

Procedures

This study had two phases: Phase 1 was the categorization of items on the CCS into leadership dimensions to form the dependent measures. This categorization of the survey items into leadership dimensions was necessary because data collected from the

1999 preimplementation CCS and the 2000 postimplementation CCS were based upon core values, not House's (1971) path-goal theory. These data were then subjected to analysis in Phase 2.

For example, during Phase 1, the 11 participants were asked to categorize a survey item such as, "My supervisor gives people the information and explanations they need to do their job. They had to assign this item to one of the following five leadership categories: Directive, Supportive, Achievement Oriented, Participative, or Not Relevant. I believed that the survey items were related to the path-goal theory because they shared the same characteristics, namely, performance improvement, setting of challenging goals, and communication. Phase 1 resulted in the development of categories used the CCS items as measures of the four leadership dimensions of House's (1971) path-goal theory.

Categorization Task Panel

Prior to performing the categorization task, the 11 participants were given written information to introduce the study and obtain their informed consent to participate. Specifically, the informed consent contained background information about the study, the process for participating, discussion of confidentiality, ethics concerning the study, and the voluntary status of the participants. The 11 participants on the panel were selected from employees of a charter school in the southwestern region of the United States who had responded to a notice seeking volunteers to participate on a panel.

The 11 participants who indicated their agreement with the conditions to participate received a packet of several forms, including the instruction sheet for completing the categorization task independently (see Appendix A), the 37-item CCS

(see Appendix B), and an answer sheet for sorting the 37 items into the path-goal

dimensions (see Appendix C). I reviewed the instructions with the participants prior to

the categorization task to ensure that they understood the task, I was available to answer

any procedural questions during the task, and I collected the data upon completion of the

task. I will disseminate the results of the categorization to the management team of

Company X and to any participant on the panel interested in receiving them.

Phase 2 was an analysis of the intervention by using the leadership categories

developed in Phase 1 as dependent measures. I used these categories to compare

supervisors' and rank-and-file workers' pre- and postimplementation data. I examined

data from the 1999 CCS and the 2000 CCS to identify any differences in how these two

groups (i.e., supervisors and rank-and-file workers) perceived change in the

organizational culture.

Instrumentation: CCS

The instrumentation section focused on a company-designed survey. Establishing

the construct validity of the CCS for the study was important. I assessed the reliability of

the scales developed during the categorization task for internal consistency by using

coefficient alpha.

The CCS was a company-designed survey compiled by a subteam of three

individuals: a human resources representative, an organizational development specialist,

and an organizational development manager. It was facilitated by a master facilitator. In

particular, the CCS was intended to measure the manufacturing area's behaviors in

support of corporate values. Likert scale rating anchors used on the survey were 1

(*strongly disagree*), 2 (*somewhat disagree*), 3 (*neither agree nor disagree*), 4 (*somewhat agree*), and 5 (*strongly agree*). Endorsement of the CCS prior to the 1999 administration was conducted by the company's vice president of manufacturing, director of operations, and an organizational development director. Subsequently, the review of the instrument resulted in a rating of good. Finally, all responses received from the reviewing body were incorporated into the final instrument.

Construct Validity

Establishing the construct validity of the CCS for the study was important to validate the belief that the CCS coincidentally also measures leadership dimensions as defined by House's (1971) path-goal theory. To determine whether the CCS and the leadership dimensions from the path-goal theory were linked, the members of the categorization task panel had to be able to categorize the CCS items under one of the following categories: (a) Supportive Leadership, (b) Directive Leadership, (c) Participative Leadership, (d) Achievement-Oriented Leadership, or (e) Not Relevant . I believed that the survey items were related to the leadership dimensions of the path-goal theory because they shared similar characteristics. More information on the panel members and the categorization task is discussed in the section on procedures.

Reliability

Reliability of the CCS refers to the consistency and stability of the measurements of the test. Hence, any direct measurement of such consistency calls for a comparison between at least two measurements (Isaac & Michael, 1997). Therefore, I assessed the

reliability of the scales developed during the categorization task for internal consistency by using coefficient alpha.

Dependent and Independent Variables

The dependent measures for Phase 2 were developed in Phase 1. Specifically, the items on the CCS were classified by 11 participants independent of Company X to determine whether they could be used as indicators of leadership as defined by House's (1971) path-goal theory. The independent variables for Phase 2 were levels within the organization, that is, supervisors and rank-and-file workers, and their pre- and postimplementation data from the CCS.

Research Questions and Results

1. Will the culture survey questions provide reliable, content-valid, and psychometrically adequate measures to relate core values to the four dimensions of leadership style of the path-goal theory?

H_{01}: There are no reliable, content-valid, and psychometrically adequate measures to relate core values to the four leadership dimensions of the path-goal theory.

H_{a1}: The sorting of the items into categories and the measurement of coefficient alpha will relate core values to the four leadership dimensions of the path-goal theory.

2. Will there be changes between the 1999 CCS and the 2000 CCS on leadership dimension constructs?

H_{02}: There is no difference in population means between the 1999 CCS and the 2000 CCS on leadership dimension constructs for supervisors and rank-and-file workers.

H_{a2}: There are significant differences between supervisors and rank-and-file workers in the mean score changes between the 1999 CCS and the 2000 CCS on the leadership dimension constructs.

To address the first research question, the 11 panel members individually expressed their opinions of how well each survey item aligned with one of the leadership dimension categories. Second, for each survey item, a frequency distribution of results was constructed. Third, central tendency (mode) was used to assign items to dimensions. Thus, the results of the categorization task were shown with the use of descriptive data that showed the frequency distribution of the leadership dimensions. In addition, after each item was assigned to one of the leadership categories, Fleis's Kappa (1971) was used to examine the effectiveness of the categorization task. Once scales were determined for the CCS items, the responses were used to calculate the coefficient alpha for each scale and examine intercorrelations among the scales. Lastly, data are presented in tabular form, showing whether interaction is present.

To address the second research question, I used a 2 x 2 rank-by-year ANOVA testing for an interaction and two main effects for the leadership dimensions to determine whether significant differences existed between the perceptions of supervisors and rank-and-file workers and whether there were mean score changes between the 1999 and 2000 data. The results of the ANOVA are presented in tabular form. The use of an ANOVA in

this study allowed me to determine whether significant differences existed in the perception of two samples of vastly different size. Finally, I used a significance test on the simple effects for the directive leadership to determine whether significant difference in means existed between rank and year.

Ethical Protection of Participants

Participation of the 11 panel members to conduct the categorization task was voluntary. I ensured the anonymity of the participants by excluding names and employee IDs from the 1999 and 2000 data, as well as any type of identifier for participants in the 2009 categorization task panel. The informed consent form was distributed to all participants, who also were notified that they were free to withdraw at any time from the study without consequences. The Institutional Review Board (IRB) of Walden University approved the study (IRB approval #04-30-09-0005287) because I used mainly archival data from the 1999 and 2000 CCS.   Also, IRB approved 5-7 years duration for data to be on file. Obtaining approval for the study from the IRB further protected the participants.

Summary

Included in this chapter was information about the research methods for this quantitative study, including research design, study characteristics, sample and setting, limitations, social significance, research questions, and data collection and analysis procedures. I reviewed the problem statement and the rationale for the design selection. The instrumentation was the company-designed CCS. The concepts measured were reviewed, and how the study intends to correlate culture survey items with leadership

dimensions of path-goal theory was discussed. Categories utilized on the survey were (a)

Directive Leadership, (b) Supportive Leadership, (c) Participative Leadership,

(d) Achievement-Oriented Leadership, and (e) Not Relevant. Two research questions

were posed, and statistical procedures using the ANOVA were explained. I also described

the two phases of the study. I present the findings in chapter 4.

Chapter 4: Results

Introduction

This chapter presents the outcomes of my study. The first section is a description

of the study participants. The second section is a review of the research questions and an

assessment of the findings. The chapter concludes with a summary.

Sample Demographics

One group of participants in this study comprised supervisors and rank-and-file

workers from the manufacturing area of Company X. Participants were identified as 924

rank-and-file workers for 1999 and 2000, and 40 supervisory personnel for 1999 and

2000. The sample utilized for data analysis was comprised of the 964 surveys with

complete data of the 1200 surveys administered. Nonparticipants were employees on

vacation or on sick leave, as well as those who chose not to participate in the survey.

Approximately 300 of approximately 1500 employees did not participate in the study.

Transferability of the results of this research will be limited to a population defined by

the semiconductor industry; the results may be generalized to other industries with

similar types of operations in the United States. The results also may be generalizable to

other industries using a highly skilled workforce, one in which knowledge of statistics

and basic electrical engineering are important.

As mentioned previously, prior to analyzing the data obtained from Company X

in 1999 and 2000, a panel of 11 participants who were not members of the organization

conducted a categorization task in 2009 to develop the categories used in the analysis.

The use of multiple raters (Fleis, 1971) facilitated computation of a statistical measure for

assessing reliability of agreement among the raters when classifying the items. The

categorization task was modeled as a multinominal process; that is, each item was

assigned to one of five categories.

During the summer of 2009, 15 informed consent forms were distributed to

educators at a charter school. Of the 15 dispersed informed consents, 11 participants

signed the form, signifying their agreement to complete the categorization task. The 11

participants were highly educated, all of them having completed a minimum of a

bachelor's degree (see Table 1). The categorization task complied with Walden

University's IRB procedure.

Table 1

Characteristics of Participants Who Completed Categorization Task

Gender	N	%
Male	2	18.0 %
Female	9	82.0 %
Education		
Bachelor's degree	8	72.7 %
Master's degree	3	27.3 %

Research Questions and Hypotheses

Following are the first research question and hypothesis that I examined:

1. Will the culture survey questions provide reliable, content-valid, and

   psychometrically adequate measures to relate core values to the four

   dimensions of leadership style of the path-goal theory?

H_{01}: There are no reliable, content-valid, and psychometrically adequate measures

to relate core values to the four leadership dimensions of the path-goal theory.

H_{a1}: The sorting of the items into categories and the measurement of coefficient

alpha will relate core values to the four leadership dimensions of the path-goal

theory.

To test this hypothesis, I calculated Fleis's Kappa (1971) to examine the

effectiveness of the categorization task. Fleis's Kappa works for any constant number of

participants who are giving categorical ratings. It is a measure of the degree of agreement

that can be expected above chance. Landis and Koch (1977) indicated that a Kappa of 0.4

to 0.6 has a moderate strength of agreement. The result of the categorization task resulted

in a moderate strength of 0.40 (see Table 2). Based upon the research of Landis and

Koch, Alternative Hypothesis 1 is accepted.

Table 2

Fleis's Kappa: Effectiveness of Categorization Task

No. of cases	30
No. of categories	5
No. of raters	11
Percent of overall agreement	0.40

The results of the categorization task are shown in Table 3. The leadership

category of Supportive had a sorting result of 11 of 30 questions being assigned,

Achievement Oriented had a sorting result of 8 of 30, Directive had a sorting result of 6

of 30, and Participative had a sorting result of 3 of 30 survey items.

Table 3

2009 Categorization Task

Survey item	S[*]	D	A-O	P	NR	Assigned category
1	8	0	0	3	0	Supportive
2	8	0	0	3	0	Supportive
3	0	5	2	0	4	Directive
4	0	2	4	2	3	A-O
5	7	0	0	4	0	Supportive
6	1	10	0	0	0	Directive
7	0	4	6	1	0	A-O
8	2	0	0	9	0	Participative
9	8	1	1	0	1	Supportive
10	2	1	1	6	1	Participative
11	1	1	7	2	0	A-O
12	4	0	3	1	3	Supportive
13	5	0	1	4	1	Supportive
14	10	0	0	1	0	Supportive
15	0	6	2	0	3	Directive
16	0	0	7	2	2	A-O
17	0	3	7	0	1	A-O
18	0	8	3	0	0	Directive
19	5	2	1	3	0	Supportive
20	0	4	0	1	6	N/R
21	0	6	3	0	2	Directive
22	1	6	0	0	4	Directive
23	1	0	9	0	1	A-O
24	5	0	4	2	0	Supportive
25	6	0	1	4	0	Supportive
26	2	1	1	2	5	N/R
27	5	0	0	6	0	Participative
28	0	1	8	1	1	A-O
29	4	2	4	1	0	Supportive
30	0	3	7	1	0	A-O

Note. Although multiple-choice Questions 31-37 were categorized for each choice during the 2009 panel task, co-efficient-alpha was not analyzed for Questions 31-37 because each question in 1999 and 2000 was coded with only one selection per question.

S - Supportive
D – Directive
A-O – Achievement oriented
P – Participative
NR – Not Relevant

Second, to further evaluate the first research question, I calculated the coefficient

alpha for each leadership dimension for 1999 and 2000. Nunnally and Bernstein (1994)

suggested 0.70 as an acceptable reliability coefficient. The larger the overall alpha

coefficient, the more likely it is that the items contribute to a reliable scale. Santos (1999)

also considered 0.70 acceptable and considered an alpha measure lower than .70 as

indicative of poor scale reliability. In contrast to .70 as an alpha, a lenient cutoff of .60 is

common in exploratory research.

Gruenert (2005) examined the relationship between a school's culture and student

achievement. The six factors that he used to access the relationship had alphas ranging

from a high of .657 to a low of .201. Even though the .201 alpha was small, Gruenert

concluded that a collaborative organizational culture depends on the leadership. Writ and

Krug (2005) researched five leadership behaviors by using a survey that provided

principals with a profile of needed improvements of five behaviors. These leadership

behaviors ranged from an alpha of .42 on instructional climate to a high of .76 on student

progress. Based upon the data, it was not difficult for the principals to develop a plan to

improve leadership behavior (Writ & Krug, 2005).

Analyzing constructs such as leadership dimensions requires instruments that can

measure them accurately. Coefficient alpha is such an instrument that estimates the

reliability of the leadership scales by determining the average correlation of items within

the CCS. As previously mentioned, even when alphas are small, conclusions about

leaders' behaviors can be drawn (Gruenert, 2005; Writ & Krug, 2005).

I examined the coefficient alpha for the four leadership categories of Supportive,

Directive, Achievement Oriented, and Participative (see Table 4). For 1999, a coefficient

alpha of .60 for the leadership category of Supportive indicated a fair contribution to

scale reliability. For 2000, a coefficient alpha of .80 for the leadership categories of

Supportive and .70 for Achievement Oriented indicated scale reliability. A coefficient

alpha of .60 for the leadership category of Participative indicated a fair contribution to

scale reliability. Based upon the results of the coefficient alpha, the alternative hypothesis

for Research Question 1 was supported in 1999 for the leadership category of Supportive

and in 2000 for the leadership categories of Supportive, Achievement Oriented, and

Participative.

Although analyzing coefficient alphas for 1999 and 2000 resulted in a variety of

values for the reliability statistics, the purpose of this study was not to make decisions

about individuals, but rather to examine organizational issues. Although analyzing

coefficient alphas for 1999 and 2000 resulted in poor coefficient reliability for the

leadership category of Directive and also in 1999 for the leadership categories of

Achievement Oriented and Participative, I continued with the analysis while recognizing

that having more items should have led to greater coefficient alphas. Subsequently, this

study proceeded as a quantitative study. I did not pursue the qualitative component.

Table 4

Cronbach's Coefficient Alphas for Leadership Categories: 1999 and 2000

Year	S	D	A-O	P
1999	0.60	0.40	0.30	0.13
n	11	6	8	3
2000	0.80	0.30	0.70	0.60
n	11	6	8	3

Following are the second research question and hypothesis that I examined: Will

there be changes between the 1999 CCS and the 2000 CCS on leadership dimension

constructs?

H_{02}: There is no difference in population means between the 1999 CCS and the

2000 CCS on leadership dimension constructs for supervisors and rank-and-

file workers.

H_{a2}: There are significant differences between supervisors and rank-and-file

workers in the mean score changes between the 1999 CCS and the 2000 CCS

on the leadership dimension constructs.

To examine the second research question, I used 2 x 2 rank-by-year ANOVA

testing for an interaction and two main effects for the leadership scales to determine

whether significant differences existed in perceptions of leadership between supervisors

and rank-and-file workers and whether there were mean score changes between1999 and

2000.

Descriptive statistics in Tables 11 to 14 (see Appendix D) provide the rank-and-

file workers' and supervisors' mean scores for the leadership scales for 1999 and 2000.

These tables contain summary statistics; the means are discussed in the ANOVA results.

An ANOVA was conducted for each dependent variable in Tables 5 to 9. Also, partial eta

squared is reported as an estimator of the proportion of the variance in a population

explained by the treatment (Strang, 2009). The ANOVA for supportive leadership in

Table 5 demonstrated a main effect for year, $F(1,1896) = 16.467, p = .00$), as well as a

main effect for rank, $F(1,1896), = 12.909, p = .00$) on mean scores for 1999, $M = 28.21$,

$SD = 5.920$; for 2000, $M = 25.22$, $SD = 7.455$. The rank-and-file workers for 1999 and

2000 had mean scores of 28.55 and 25.29, respectively, compared to the supervisors'

mean scores for 1999 and 2000 of 25.60 and 23.39, respectively. Although the decrease

in mean score for year and rank for 2000 was not expected for supportive leadership, Null

Hypothesis 2 is rejected. Also, the partial eta squared for year (.009) and for rank (.007)

estimated the variance explained in the population and showed the effects to be rather

small.

Table 5

ANOVA for Supportive Leadership: 1999 and 2000

Source	Df	F	Sig of F	Partial eta sq.
Year	1	16.467	.000	.009
Rank	1	12.909	.000	.007
Year*Rank	1	.619	.431	.000

The ANOVA for directive leadership in Table 6 demonstrated a main effect for

year, $F(1,1998) = 4.486$, $p = .034$), on mean scores for year 1999, $M = 14.92$,

$SD = 3.839$; for 2000, $M = 16.35$, $SD = 3.414$. Null Hypothesis 2, concluding that year

had an effect on directive leadership with 2000 having the larger mean as expected, as

well as a significant interaction effect for year*rank, $F(1,1998)$, $= 6.152$, $p = .013$), is

rejected. The rank-and-file workers for 1999 and 2000 had mean scores of 14.78 and

16.38, respectively, compared to the supervisors' mean scores for 1999 and 2000 of

15.90 and 15.77, respectively. Null Hypothesis 2, concluding that year*rank had an

interaction effect on directive leadership, is rejected. Also, the partial eta squared for year

(.002) and for year*rank *(.003)* estimated the variance explained in the population and

showed the effects to be rather small

Table 6

ANOVA for Directive Leadership: 1999 and 2000

Source	Df	F	Sig of F	Partial eta sq.
Year	1	4.486	.034	.002
Rank	1	.517	.472	.000
Year*Rank	1	6.152	.013	.003

The significance test on the simple effects for the directive leadership (see Table

7) showed a significant difference between the 1999 and 2000 means for the rank-and-

file workers. For the supervisors, the population means were not significantly different.

Table 7

Significance Test for Directive Leadership Within Rank:1999 and 2000

Source	Df	F	Sig of F	Partial eta sq.
Rank 1	1	88.616	.000	.043
Rank 2	1	.035	.852	.000

The significance test on the simple effects for the directive leadership (see Table

8) showed a significant difference in means for 1999 between the two ranks; for 2000, the

difference in means was not significant.

Table 8

*Significance Test for Directive Leadership Within Year: Rank-and-File Workers Versus
Supervisors*

Source	Df	F	Sig of F	Partial eta sq.
1999	1	8.827	.003	.004
2000	1	1.092	.296	.001

The ANOVA for achievement-oriented leadership (see Table 9) demonstrated a

main effect for year, $F(1,1949), = 53.469, p = .00)$ and rank, $F(1,1949), = 13.405,$

$p = .00)$ on mean scores for 1999, $M = 20.46, SD = 3.960$; for 2000, $M = 17.76,$

SD = 5.165. The rank-and-file workers had mean scores for 1999 and 2000 of 20.59 and

17.84, respectively, compared to supervisors' mean scores for 1999 and 2000 of 19.49

and 15.63, respectively. Although the decrease in mean score for year and rank for 2000

was not expected for achievement-oriented leadership, Null Hypothesis 2 is rejected.

Also, the partial eta squared for year (.027) and for rank (.007) estimated the variance

explained in the population and showed the effects to be rather small.

Table 9

ANOVA for Achievement-Oriented Leadership: 1999 and 2000

Source	Df	F	Sig of F	Partial eta sq.
Year	1	53.469	.000	.027
Rank	1	13.405	.000	.007
Year*Rank	1	1.498	.221	.001

The ANOVA for participative leadership (see Table 10) demonstrated a main

effect for year, $F(1,2039)$, = 85.226, p = .00*)* on mean scores for 1999, *M* = 7.83,

SD = 2.094; for 2000, *M* = 6.03, *SD* = 2.229. The rank-and-file workers had mean scores

for 1999 and 2000 of 7.85 and 6.05, respectively, compared to supervisors' mean scores

for 1999 and 2000 of 7.66 and 5.60, respectively. Although the decrease in mean score

for year and rank for 2000 was not expected for participative leadership, Null Hypothesis

2 is rejected. Also, the partial eta squared for year (.040) estimated the variance explained

in the population and showed the effects to be rather small.

Table 10

ANOVA for Participative Leadership: 1999 and 2000

Source	Df	F	Sig of F	Partial eta sq.
Year	1	85.226	.000	.040
Rank	1	2.318	.128	.001
Year*Rank	1	.394	.530	.000

Null Hypothesis 2 is rejected based upon the results of the ANOVA, which showed a significant interaction effect for the leadership category of Directive; main effects for Supportive, Achievement Oriented, and Participative; as well as mean score changes between the 1999 and the 2000 CCS data,

Summary

Chapter 4 began with a brief introduction, followed by a description of the sample demographics, which included the participants from Company X and the 11 charter school volunteers who were not members of the organization. Next, the research questions and hypothesis were reviewed, and the corresponding results were presented.

Directive leadership for rank-and-file workers resulted in a lower mean score in 1999 and a higher mean score in 2000 than supervision. Although the data showed an unexpected decrease in means score from 1999 to 2000, the ANOVA reported slightly higher, but not significantly different, means for the rank-and-file workers than supervisors for Supportive, Achievement-Oriented, and Participative leadership.

The results of the ANOVA showed a significant interaction effect and main effect for directive supervision and showed main effects for supportive, achievement-oriented, and participative leadership. Finally, with mean scores changing over time for both rank-and-file workers and supervisors, Alternative Hypothesis 2 is upheld. However, the direction of change for supportive, achievement-oriented, and participative leadership was not as expected, even though Null Hypothesis 2 was rejected. Chapter 5 includes a discussion of the results, implications for social change, and recommendations for additional activity and study.

Chapter 5: Discussion

Introduction

Presented in this chapter is a discussion of the study results, an overview of the study, an explanation of the findings, and suggestions for social change. Also included are recommendations for additional activity and study.

Overview of the Study

I conducted this study to evaluate an organizational culture change and determine how concomitant changes in perceptions of leadership behavior might be perceived differently by supervisors and rank-and-file workers. I used ANOVA testing for an interaction and two main effects for the leadership dimensions to determine whether significant differences existed between supervisors and rank-and-file workers, and whether there were mean score changes between 1999 and 2000 completion of the CCS. I also sought to evaluate whether an organization that attempts to change its culture might also experience a change in leadership style as measured by the four constructs of the path-goal leadership theory (House, 1971).

I used data from the 1999 and 2000 CCS to investigate the gap in the literature for participative leadership and achievement-oriented leadership in low-tech organizations as well as to examine the four leadership dimensions in a high-tech organization. I used the four leadership dimensions of House's (1971) path-goal theory to examine the effects of an intervention designed to modify the core cultural values in a large semiconductor manufacturing organization. Although surveys have the advantage of providing data based upon the participants' experiences or perceptions, caution should be used when

drawing conclusions. This study depended on archival data from a CCS administered in 1999 and 2000, as well as a categorization task administered in 2009. The 2009 categorization task was conducted to determine how each survey item aligned to one of the four leadership dimensions of the path-goal theory.

Leadership behavior can affect the performance, satisfaction, and motivation of employees in negative and positive ways. To be efficient, leaders need to engage in behaviors that offset the inadequacies of subordinates, surroundings, and competences and are instrumental to the subordinate's satisfaction (House, 1996). The organizational intervention in 1999 at Company X addressed the organization's core values. Management sought to change the corporate culture to modify the organization's core values. I recognized that the changes being made by the leadership of Company X reflected leadership dimensions according to House's (1971) path-goal theory.

Although using House's (1971) path-goal theory is an effective way to examine leadership issues, the lack of a research focus on high-tech organizations had left a void in the literature. I sought to address all four leadership dimensions by examining House's path-goal theory in a high-tech organization. Thus, if the House theory proved efficacious, I could have expected the corporate culture to reflect enhanced leadership. Leadership was rated according to the four dimensions and possible differences in the perceptions of supervisors and rank-and-file workers on the answers to the 1999 and 2000 CCS. House's theory has the potential to be useful from a hypothetical viewpoint, but it has not been sufficiently tested in practice. Furthermore, previous research has focused primarily on directive leadership and supportive leadership (Yukl, 2006). Thus,

the dearth of research regarding participative and achievement-oriented leadership has not been limited to the high-tech sector but also has been apparent in regard to low-tech organizations.

Interpretation of the Findings

The interpretation of findings section focused on the result of the categorization task resulted in a moderate Kappa of 0.40. For the coefficient alpha, the results for 1999and 2000 were mixed. Peterson (1997), who used archival data and a questionnaire similar to those I used in this study, was able to demonstrate that the application of directive leadership resulted in positive outcomes in group member satisfaction The findings showed that a corporate intervention to change the organizational culture correlated with a change in perceptions of leadership behavior in a high-tech organization.

Landis and Koch (1977) remarked that a Kappa of 0.4 to 0.6 indicates a moderate level of agreement. The result of the categorization task resulted in a moderate Kappa of 0.40. For the coefficient alpha, the results for 1999 and 2000 were mixed. The low reliabilities made it difficult to answer the second research question. However, a large sample size may have counteracted the effect of poor reliability shown in the analysis of the first research question.

Eleven participants evaluated the CCS and categorized each item as one of the four leadership dimensions or Not Relevant. It was expected that the CCS items would fall into one of the four leadership dimensions of House's (1971) path-goal theory. The items on the CCS were sorted according to the four dimensions, showing evidence that

the path-goal theory is congruent with organizational change efforts. Sorting the items in this manner showed not only that the change effort was consistent with dimensions of the path-goal theory but also that the items served to measure perceptions of leadership.

Analyzing the coefficient alpha for 1999 resulted in a poor coefficient reliability of .40 for the leadership category of Directive, .30 for Achievement Oriented, and .13 for Participative. Analyzing the coefficient alpha for 2000 resulted in a poor coefficient of .30 reliability for the leadership category of Directive. The poor reliability for directive leadership for 1999 and 2000 was based upon a categorization result of six of 30 questions. The poor reliability for participative leadership for 1999 was based upon a categorization result of three of 30 questions. Although the coefficient alphas for 1999 and 2000 resulted in poor coefficient reliability for directive leadership and also in 1999 for achievement-oriented leadership and participative leadership, I continued with the analysis. Recognizing that having more items should have led to greater coefficient alphas, I proceeded with a quantitative study.

I expected a difference in the means of the leadership constructs for supervisors and rank-and-file workers between the 1999 and the 2000 CCS. The findings supported the directive leadership dimension of House's (1971) path-goal theory by suggesting that the cultural change at Company X resulted in the rank-and-file workers perceiving an increase in directive leadership. The data for the dimensions of supportive leadership, achievement-oriented leadership, and participative leadership showed an unexpected decrease in mean from 1999 to 2000. The unexpected decrease in mean raised several possibilities. Perhaps it was management's intention to focus on enhancing directive

leadership, but not the other three dimensions. Alternatively, the change effort to the organizational culture may have included trying to enhance supportive, participative, and achievement-oriented leadership, but the supervisors and rank-and-file workers misperceived the intent of the change effort with respect to all of the dimensions except directive.

In addition, the CCS items may have been deficient in terms of covering the four leadership dimensions. I recognized that the strongest point of the study was the large sample size for analyzing ANOVA. The coefficient alphas were indicators of scale validation for supportive leadership in 1999 and for supportive leadership, achievement-oriented leadership, and participative leadership for 2000. I also recognized that the weakest point of the study was the small number of survey items used to analyze the coefficient alpha. Finally, the mean showed mixed results for leadership behavior as proposed by House. The mean for the leadership category of Directive increased for rank and year, as expected. For the leadership categories of Supportive, Achievement Oriented, and Participative, the mean for rank and year decreased, an unexpected result.

Some of the results for supportive leadership and directive leadership were similar to those from other research on low-tech industries, suggesting that supervisors' behaviors negative or positively impact rank-and-file workers. Parker et al. (2001) assessed supportive supervision in a large low-tech manufacturing area by summing four items from the Cook and Wall (1980) leadership scale. Rank-and-file workers were asked to rate the extent to which their cell leaders or supervisors behaved in various supportive ways on a 5-point Likert scale from 1 (*not at all*) to 5 (*a great deal*) that was similar to

the Likert scaled used in this study on the CCS items. Looking at the leaders' behaviors in various supportive situations, Parker et al. suggested that supervisors can do more than introduce rules, punishments, or other strategies: They can demonstrate supportive coaching style that enriches work, and they can communicate and share information with employees.

Simons and Roberson (2003) examined the aggregation of justice perception on business unit-level outcomes by examining individual-level and department-level data. The large sample ($N = 4,539$) comprised employees from 763 different hotel properties, with 635 participants identified as managers and 3,904 identified as employees. These results seemed to strengthen the assumption of a connection between leaders' behaviors and employees' perceptions of how supportive the work setting is. These perceptions were congruent with the leadership dimensions of House's (1971) path-goal theory.

I reported that the leadership category of Supportive had a sorting result of 11 of 30 questions being assigned, with a mean score of 2.293 and Questions 1, 2, 13, and 19 being closest to the mean. In regard to the leadership categories of Participative and Achievement Oriented, even though the results were unexpected, my study adds to the current literature on House's (1966) research. The nature of the path-goal theory is that for leaders to be effective, they must emulate behaviors that balance deficiencies in subordinates, the workplace, and individual abilities in a manner that is conducive to the subordinates' satisfaction (House, 1996).

Application of Theory to Supervision

Peterson (1997), who used archival data and a questionnaire similar to those I used in this study, was able to demonstrate that the application of directive leadership resulted in positive outcomes in group member satisfaction. Peterson observed member satisfaction measures in a low-tech manufacturing organization and showed how these measures were reflective of the classic tension in group functioning between accomplishing a task and keeping group members cohesive and satisfied. Dale and Fox (2008) concluded that subordinates perceive higher responsibility and have higher commitment to the organization when the leader exhibits behavior that formalizes the work environment and provides formal rules and procedures for employees to follow. Cherniss (1995) reported that the path-goal theory recognizes the intimate connection between how a leader acts toward subordinates and the latter's perceptions of how supportive the work setting is.

In contrast to empirical research in low-tech industries examining only directive and supportive leadership by Peterson (1997), Dale and Fox (2008), and Cheriss (1995), I examined the four leadership dimensions of directive leadership, supportive leadership, participative leadership, and achievement-oriented leadership in a high-tech manufacturing organization. Specifically, I wanted to know whether the organization's cultural value interventions affected the supervisors' behavior, as reflected by House's (1971) path-goal theory leadership dimensions, and the perceptions of rank-and-file workers of the supervisors' behavior.

My study had mixed results, showing that the dimension of directive leadership supported House's (1971) path-goal theory with an increase in means for year and rank in 2000, as was expected. Directive leadership looks at the tasks that need to be accomplished and specifies what is expected, how and when to do the tasks, what the schedules and norms are, and which procedures and regulations are required to do the task (House & Mitchell, 1996). The dimensions of supportive leadership, achievement-oriented leadership, and participative leadership had a decrease in year and rank in 2000, which was unexpected.

Application of Theory to High-Tech Industries

The findings showed that a corporate intervention to change the organizational culture correlated with a change in perceptions of leadership behavior in a high-tech organization. As previously mentioned, academicians such as Dirks (2000), Parker et al. (2001), and Peterson (1997) have directed their research toward low-tech organizations, focusing on the dimensions of directive leadership and supportive leadership. In addition, they have written about issues of leadership and organizational culture with the presumption that interventions would be successful based upon House's (1971) path-goal theory, especially in a high-tech organization, but without actual empirical evidence to support such a presumption. This study was different in that I examined all four leadership dimensions of the path-goal theory in a high-tech organization by not relying on the theory, but on actual empirical evidence.

The directive leadership dimension of House's (1971) path-goal theory applicable to high-tech organizations was evident in the study by Leach et al. (2001), who evaluated

an empowerment initiative encompassing increased fault-management accountability for operators of intricate technology. My study shared similarities in that the rank-and-file workers operated highly technical equipment and the results did not lead to an increase from 1999 to 2000 in all mean scores on the leadership dimensions.

Yun, Faraj, and Sims (2005) investigated leadership and the effectiveness of teams operating in a high-velocity hospital emergency room environment by utilizing a 5-point Likert type scale with rankings. Finally, Barling et al. (2003) argued that high-performance work systems create a better work environment for employees, leading to improved quality of work life and increased job satisfaction. One limitation of this study was that I could not use a repeated-measures design because of the need to maintain the anonymity of the responses. If matched responses for the participants could have been used in 1999 and 2000, the statistical test would have been more powerful.

Implications for Social Change

Taking a global view of social change, this study showed how people can be empowered by the positive change effort of directive leadership to have more productive lives in the workplace. Empowering employees is the essence of House's (1971) path-goal theory of leadership, which holds that to be effective, leaders must engage in behaviors that improve the workplace, help employees to gain competence to offset inadequacies, and enhance subordinates' satisfaction (House, 1996). Empowered employees of Company X who produce the integrated circuit can enhance the productivity of many other industries (Ruiz, 2001). Leadership behaviors that support the organizational culture can contribute to job satisfaction, employee retention, and

continued success of the organization.   The results of the social change effort for

supportive, achievement-oriented and participative leadership showed a decrease in

leadership scores suggesting organizational interventions need to be implemented with

both supervision and rank-and-file having a thorough knowledge of all four leadership

dimensions.

Recommendations

The results provided valuable information for organizations on how leaders'

behaviors impact the organization by allowing employees to be engaged, challenged, and

motivated. The findings of this research can be utilized to help other organizations in

their cultural change efforts. A second endorsed action is to combine the four leadership

dimensions into organizational culture change efforts. This research presented a

fundamental awareness of all four leadership dimensions in a high-tech organization. For

this reason, organizational efforts to modify the culture may be reflected in leadership

changes. The application of House's (1971) path-goal theory in an organization can be

termed robust if the application is distinctive and characterized by a significant consensus

among organization members regarding their beliefs, values, and ideals (Robbins &

Coulter, 2009). Although the research presented a fundamental awareness of the

leadership dimensions, organizational implementation should also include intervals of

evaluation to ensure all participants have a complete working knowledge of the culture

change that is desired.

Further Research

Future researchers may want to focus on the four leadership dimensions in low-tech and high-tech organizations to add to the current body of research. They also may want to include a larger number of survey items to obtain higher coefficient alphas. Further studies may want to focus on why reliabilities were high one year and low the next, as well as the decrease in the mean. Perhaps researchers may choose to focus on specific interventions that may impact the results contrary to what I had expected. Researchers may want to focus on data gathering in real time rather than use archival data. They also may want to use or design a different instrument to measure leadership dimensions to ensure that the organizational change effort is consistent with House's (1971) path-goal theory. It might be worthwhile to examine leadership styles beyond the United States to gain a more in-depth understanding of how well modern organizations are embracing the four leadership dimensions of the path-goal theory.

Conclusion

I used 1999 and 2000 data from the CCS to evaluate changes in the organizational culture of a high-tech manufacturing organization with the intent of relating leadership behavior changes to House's (1971) path-goal theory. This study raised new questions about participative leadership as well as achievement-oriented leadership. Much remains to be learned about the specific qualities of the four leadership dimensions in low-tech as well as high-tech organizations. The application of the path-goal theory to examine organizational change in a high-tech organization might be highly beneficial for an

organization that is attempting a culture change to understand the relationship of core values to House's four dimensions of the path-goal theory.

The possibility that a company can improve by reinforcing its core values is particularly promising for the semiconductor industry because by reinforcing its core values, the organization ensures an ongoing articulation of the desired culture. Yet, some decision makers may be reluctant to implement such changes within their organizations for various reasons, including fear of change or fear of empowering employees. However, as a result of the culture program at Company X, the 2000 survey showed higher mean scores on the Directive leadership category than did the 1999 survey; as such, this study convincingly showed that efforts to change the culture correlated with changes in perception of leadership as described by the path-goal theory. Future studies that can offer insight into organizational culture change and House's path-goal theory might enhance the current understanding of leadership behavior.

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Appendix A: 2009 Categorization Task

Instructions

I want to thank each of you for volunteering to take part in this categorization of the climate survey. You are not required to put any type of identification on the answer sheet. Your answers will be analyzed and used as part of a dissertation research project.

Please pay attention as I instruct you on how to perform the Categorization Task. You will be asked to categorize the 37 climate-survey questions into one of the leadership styles, according to House's (1971) path-goal theory of leadership. (*Note: hold up a copy of the climate survey and the answer sheet*.)

First, I will read through the definition of each of the four leadership dimensions. Then you will read each question thoroughly. Then, refer back to the definition of each leadership style and match each of the questions with the leadership style you feel most accurately describes what the question is asking. Please make sure you answer each question. There is no time limit associated with answering the questions. You will be working independently. Finally, when you are finished, please, turn in your answer sheet.

The definitions of each leadership style are as follows:

1. Supportive leadership: taking into account the needs of subordinates, exhibiting concern for their well-being, and creating an amicable environment in the work unit.

2. Directive leadership: letting subordinates know what is expected by presenting explicit directions, asking subordinates to follow guidelines and procedures, scheduling and arranging the work.

3. Participative leadership: deliberation with subordinates and taking their ideas and proposals into account.

4. Achievement-oriented leadership: setting goals that stimulate the subordinates, discovering performance enhancements, emphasizing performance quality, and showing assurance that subordinates will achieve high standards.

5. Not relevant: does not fit any leadership dimension. Use this category only if the question seems unrelated to one of the four categories defined above.

Appendix B: Corporate Culture Survey

(1) People in my work group believe every person's role is important.

(2) I feel comfortable talking to my supervisor regarding concerns and issues I have in

the work place.

(3) My supervisor seldom rewards individual accomplishments.

(4) I investigate things that do not look right.

(5) People in my work group have mutual respect

(6) My supervisor gives people the information and explanations they need to do their

jobs.

(7) People in my work group follow through on assigned action.

(8) People in my work group feel comfortable sharing information and giving feedback.

(9) My supervisor's behavior support XXX's values.

(10) I help to train and mentor others by sharing experiences and best practices.

(11) I am an active participant in continuous improvement.

(12) When a mistake is made people in my work group admit mistakes and promptly

correct them.

(13) I feel that Fab XXX is open and honest about health and safety issues.

(14) People in my work group recognize and value diversity of opinions and

backgrounds.

(15) My supervisor does not provide opportunities for me to use my training.

(16) My work group is actively seeking ways to reduce costs.

(17) I practice skills learned in training.

(18) I receive enough information throughout a shift to help me know what I need in
order to meet shift goals.

(19) If I observed someone not following spec'd procedures or protocol I would bring it
to their attention.

(20) My work group does not contribute in a meaningful way to the success of other
teams.

(21) I follow XXX specifications 100% of the time.

(22) My supervisor seldom rewards hard work.

(23) I have actively pursued job-related training in the last six months.

(24) My supervisor recognizes our work group for continuous improvement efforts and
achievements

(25) I consider how my actions affect the team as a whole.

(26) We avoid confronting and managing conflict with in our work group.

(27) I encourage and enable others to make contributions to the team.

(28) In our efforts to provide large quantities of parts we never sacrifice quality.

(29) The MHz program is an effective way to reward my peers for supporting XXX
values.

(30) Recently roles and responsibilities were clarified and a higher level of expectations
and requirements for success communicated. I have seen positive changes in my work
group as a result.

(31) Once training has been received, individuals in the Natural Work Group

a) Practice what they have learned and reference training materials when a specific item is forgotten

b) Practice what they have learned and remembered.

c) Practice only select skills they thought were important.

d) Practice only select skills for a while then revert to old methods.

e) Do not exercise training received.

(32) When new information becomes available, management

a) openly shares the new information to all relevant parties as soon as it becomes available.

b) shares the information to select people as soon as it becomes available.

c) shares the information with the group after some time has passed.

d) shares the new information to anyone when asked about it.

e) each person retains their own findings.

(33) Whenever an abnormal problem occurs, most people in my group

a) ignore it and go on about their business.

b) investigate the cause with out telling anyone else

c) inform their supervisor and go on about their business

d) communicate the issue and work with others in the group to investigate the problem.

(34) Which of the following best describes what would happen if someone in my area suggested a new idea.

a) it would be fairly evaluated and implemented if practical.

b) it would be resisted but listened to.

c) it would be strongly resisted.

d) the idea would be stolen.

e) new ideas are not listened to at all.

(35) In my area promotions are awarded

a) according to merit.

b) according to seniority.

c) based on who the person in charge likes best.

d) none of the above.

(36) If someone in my work area were to make a mistake, they would

a) promptly admit their mistake and provide as much insight as possible so they and the group can learn from it.

b) admit the mistake when the issue gets brought up.

c) not admit the mistake for fear of negative repercussions.

d) try to blame someone else.

37) My supervisor encourages my personal development.

a) by allowing me to go to training classes.

b) by providing resources for on the job training as required.

c) by offering advice on career development.

d) my supervisor encourages my personal development in other ways.

e) my supervisor does not encourage my personal development.

COMMENTS: (please use reverse side for comments)

Appendix C: Categorization Task Answer Sheet

The leadership styles (House, 1971) are as follows:

1. **Supportive leadership** deals with the relationship between supervision and rank-and-file worker in areas such as courtesy, concern for well-being of employees, and openness and approachability.

2. **Directive leadership** looks at the tasks that need to be completed by telling what is expected, how and when to do it, schedules and norms, and procedures and regulations that are required to complete the task.

3. **Achievement-oriented leadership** deals with demanding and supporting in areas such as setting challenging goals, continuous improvement, and expectation of higher performance. It also deals with confidence in effort and achievement, and workers assuming more responsibility.

4. **Participative leadership** deals with consulting with the group in areas such as soliciting suggestions and concerns, sharing work problems, and inclusion in decision making.

Please circle the letter to indicate the leadership dimension to which the survey item is best matched.

S = Supportive Leadership

D = Directive Leadership

A = Achievement- Oriented Leadership

P = Participative Leadership

If the item is not relevant to any of the dimensions, circle **NR (Not Relevant)**

1. ___S___D___A___P___NR_____   16. ___S____D____A____P__ NR___

2. ___S___D___A___P___NR_____   17. ___S____D____A____P___ NR____

3. ___S___D___A___P___NR_____   18. ___S____D____A____P___ NR____

4. ___S___D___A___P___NR_____   19. ___S____D____A____P___ NR____

5. ___S___D___A___P___NR_____   20. ___S____D____A____P___ NR____

6. ___S___D___A___P___NR_____   21. ___S____D____A____P___ NR____

7. ___S___D___A___P__ NR_____   22. ___S____D____A____P___ NR____

8. ___S___D___A___P___NR_____   23. ___S____D____A____P___ NR____

9. ___S___D___A___P___NR_____   24. ___S____D____A____P___ NR____

10. __S___D___A___P___NR_____   25. ___S____D____A____P___ NR____

11. __S___D___A___P___NR_____   26. ___S____D____A____P___ NR____

12. __S___D___A__ P___NR_____   27. ___S____D____A____P___ NR____

13. __S___D___A___P___NR_____   28. ___S____D____A____P___ NR____

14. __S___D___A___P___NR_____   29. ___S____D____A____P___ NR____

15. __S___D___A___P___NR_____   30. ___S____D____A____P___ NR____

31. a. __ S__D__A___P___NR_____   35. a. __ S__D__A___P___NR_____

    b. __ S__D__A___P___NR_____   b. __ S__D__A___P___NR_____

    c. __ S__D__A___P___NR_____   c. __ S__D__A___P___NR_____

    d. __ S__D_ A___P___NR_____   d. __ S__D_ A___P___NR_____

32. a. __ S__D__A___P___NR_____   36. a. __ S__D__A___P___NR

b. __ S__D__A___P___NR_____   b. __ S__D__A___P___NR_____

c. __ S__D__A___P___NR_____   c. __ S__D__A___P___NR_____

d. __ S__D__A___P___NR_____   d. __ S__D__A___P___NR_____

33. a. __ S__D__A___P___NR_____   37. a. __ S__D__A___P___NR_____

b. __ S__D__A___P___NR_____   b. S__D__A___P___NR_____

c. __ S__D__A___P___NR_____   c. S__D__A___P___NR_

d. S__D__A___P___NR   d. __ S__D__A___P___NR_____

e. __ S__D__A___P___NR_____   e. __ S__D__A___P___NR_____

34 a. __ S__D__A___P___NR_____

b. __ S__D__A___P___NR_____

c. __ S__D__A___P___NR_____

d. __ S__D__A___P___NR_____

e.   __ S__D__A___P___NR_____

Appendix D: Mean Scores for 1999 and 2000

Table 11

Means and Standard Deviations for Supportive Leadership: 1999 and 2000

Supportive leadership	1999		2000	
	m	*SD*	*m*	*SD*
Rank-and file	28.55	5.950	25.29	7.400
Supervisor	25.60	4.9888	23.39	8.760
Total	28.21	5.920	25.22	7.455

Table 12

Means and Standard Deviations for Directive Leadership: 1999 and 2000

Directive leadership	1999		2000	
	m	*SD*	*m*	*SD*
Rank-and file	14.78	3.929	16.38	3.384
Supervisor	15.90	2.948	15.77	4.177
Total	14.92	3.839	16.36	3.414

Table 13

Means and Standard Deviations for Achievement-Oriented Leadership: 1999 and 2000

Achievement-oriented leadership	1999		2000	
	M	SD	m	SD
Rank-and file	20.59	4.000	17.84	5.153
Supervisor	19.49	3.538	15.63	5.107
Total	20.46	3.960	17.76	5.165

Table 14

Means and Standard Deviations for Participative Leadership: 1999 and 2000

Participative leadership	1999		2000	
	m	*SD*	*m*	*SD*
Rank-and file	7.85	2.107	6.05	2.212
Supervisor	7.66	1.966	5.60	2.668
Total	7.83	2.094	6.03	2.229

Curriculum Vitae

Arthur J. Smith

Employment History

June 2010-Present   Intensive Case Manager

2008-2009   Hospital Registrar

2003-2008   Treatment Center Mental Health Associate

1987-2001   Wafer FAB Manager

1978-1987   Wafer FAB Manager

Education

2010   Ph.D. Candidate, Counseling Psychology Program, Walden

University, Minneapolis, MN

1997   MAHS, Psychology/Social Services, St. Edwards University

1995   BA, in Psychology, St. Edwards University