Research Project:
The Relationship between Personality Type, Leadership Style, and Job Tenure of Asphalt Pavement Construction Project Managers

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Most trade-disciplines in the construction industry have key management personnel such as estimators or project managers that have high-level knowledge and expertise instrumental to a construction company’s success. Estimators and project managers are particularly important in the asphalt pavement construction industry. These specialists simultaneously perform multiple job functions that include company sales representative, project estimator, and project manager. It appears that these unique, multi-disciplined personnel (hereafter project manager) should have personalities and leadership styles that enable them to successfully develop and sustain professional working relationships with field personnel, project supervisors, project owners, political representatives, and their company’s administrative and accounting staff.

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CHAPTER 1: OVERVIEW

Most trade-disciplines in the construction industry have key management personnel such as estimators or project managers that have high-level knowledge and expertise instrumental to a construction company’s success (Dukerich & Ammeter, 1999). Estimators and project managers are particularly important in the asphalt pavement construction industry. These specialists simultaneously perform multiple job functions that include company sales representative, project estimator, and project manager (Albanese, 1993). It appears that these unique, multi-disciplined personnel (hereafter project manager) should have personalities and leadership styles that enable them to successfully develop and sustain professional working relationships with field personnel, project supervisors, project owners, political representatives, and their company’s administrative and accounting staff (Rogge, Weber, Leever, & Elliott, 1996).

An asphalt pavement construction project manager is skilled in analyzing the design specifications and physical site environment then compiling and analyzing data that may influence costs and profits of a construction project. In addition, this person plans and coordinates construction projects, frequently manages field workers, and obtains construction materials, equipment, and subcontractor services. The construction firm’s success frequently depends on how well a project manager’s matches the unique capabilities his or her firm to the requirements of a construction project. The ability to properly match company capabilities to construction project requirements is developed over time as the project manager becomes acquainted with the unique capabilities of their firm. Therefore, it appears important for asphalt pavement construction companies to find and retain project managers that are technically skilled as well as relationally comfortable with their colleagues. Smith (2001) states, “The more time an
organization invests in finding employees who understand and have values, drives, and motivations that match the company’s, the more successful the organization becomes” (p. 46).

Problem Statement

According to the National Asphalt Pavement Association (hereafter NAPA) and the U.S. Department of Labor (Proceedings of the third Construction Industry Executive Forum, 2004), project manager retention is a problem within the asphalt pavement construction industry. In fact, research conducted by Liska and Piper (1999) for the Construction Industry Institute showed that nation-wide employee turnover has been as high as 20% per year. The Construction Industry Executive Forum believes that in order for a construction firm to achieve long-term success, employee retention should be greater than 80%. Unfortunately, lucrative financial compensation alone does not appear to insure long-term employee retention. NAPA has expressed concern that non-financial, factors may influence project manager dissatisfaction and job tenure to a greater extent than previously considered. Factors might be differences in leadership style and personality type between project managers, their executive managers, and the organization’s support staff. The intent of this quantitative research is to survey project managers who have three or more years experience and are employed by 30 NAPA-member asphalt pavement construction firms in the Western United States located between the Mississippi River and the Pacific coast. The validated instruments, DiSC® Personal Profile System and Leadership Behavior Analysis II™, will be used to gather data in order to examine leadership style and personality type as possible factors that might impact employee retention of project managers.
Background

Asphalt pavement construction contractors develop a significant portion of the country’s ground-based transportation infrastructure in the form of roadways, bridges, automobile parking areas, airport runways and aircraft ground traffic areas. When these types of high-profile projects are poorly constructed, it can present a danger to ground-based transportation vehicles and potentially result in property damage, accidents that lead to human injury or death, and litigation against the construction firm. It is important to have knowledgeable, experienced project managers who can lead a project team to complete their projects on time, within budget, and in compliance with government specifications, while maintaining high standards of workmanship.

A NAPA corporate representative (Lawler, 2004) believes employee tenure is unacceptably short for many talented project managers. In addition, the third Construction Industry Executive Forum in which NAPA was a key participant declared that employee retention was one of the major problems being confronted by the heavy construction industry and represents a barrier to developing an excellent construction workforce (Hooper, 2004). The problem may be that short-tenure project managers lack flexibility in their personality and leadership skills to successfully manage the situations created by the many role sets involved in an asphalt pavement construction project. Hage and Powers (1992) state,

The role sets we are allocated, or in some cases we choose, determine what persons we will come in contact with, what demands we will confront, and how our interaction with others will be structured. Role-sets provide a linkage between the individual and society. (p.118)

Short tenure may be due to tension created by personality type and leadership style differences between company owners, field personnel and the project manager. To date, there has been no study conducted to determine if there is significant correlation between personality, leadership, and project manager retention.
Purpose

The purpose of this quantitative study is to examine the extent to which personality type and situational leadership styles affect job tenure among asphalt pavement construction project managers that have three or more years experience and are employed by NAPA-member companies in the Western United States located between the Mississippi River and the Pacific coast. The validated instruments, DiSC® Personal Profile System and Leadership Behavior Analysis II™, will be used to survey participants to gather the independent variable data, personality type and leadership style. The dependent variable in this study is job tenure. Correlation analysis will be used to examine the relationship of personality type and situational leadership styles to job tenure.

Personality and leadership tests will be administered four project managers in each of NAPA’s member organizations located in the United States. These member organizations are based in multiple geographic regions from the east coast to west coast of the country and include firms that range in size from $20 million to $1 billion in yearly sales. Survey results, therefore, should represent an appropriate cross section of firms by location and size.

Findings derived from this study might assist company owners and executive managers in selecting personnel who have high probability to remain as a project manager for long tenure with a single company. In addition, by identifying effective leadership style Findings derived from this study might assist company owners and executive managers in selecting personnel who have high probability to remain as a project manager for long tenure with a single company. In addition, by identifying effective leadership styles and personality types, organization executives might be more successful in selecting personnel that will have a high probability of being effective in the project manager role. In addition, NAPA might use the research findings to
establish guidelines to assist member organizations in implementing management and leadership development programs.

Significance of the Study

Asphalt pavement construction project managers should have personalities and leadership styles that enable them to develop and sustain collaborative working relationships with field personnel, project supervisors, project owners, political representatives, and their company’s administrative and accounting staff. Farren and Kaye (1996) state,

Traditional organizational structures that were characterized by autocratic forms in which workers were directed or ‘told’ what to do, how to do, and when to do (with little, if any, attention paid to why to do) are giving way to democratic forms of organizations that are characterized by a collaborative, participative style”. (p. 176)

If a supervisor is confident in his own competence, the message should be well received by his or her subordinates. If the supervisor, however, is not confident in his or her competence and managerial position, the message may not be well received and may increase tension between subordinate and supervisor. This phenomenon can possibly be mitigated if the discussion participants have similar personality type and leadership style. In fact, Bass (1990) provides research evidence that supports the contention that supervisors and colleagues of similar personality tend to work more cooperatively in a team environment. Therefore, it seems logical to assume that similar cooperation will exist between project managers, their project teams, and upper managers, given similar personality type and leadership skill. The result may be greater job satisfaction and longer job tenure.

Significance of Study to Leadership

One of the major issues to be addressed by this study concerns task- verses relations-oriented leadership. Blake and Mouton’s Managerial Grid III (Bass & Stogdill, 1990; Blake & Mouton,
1985) is one of several popular models of leadership style and behavior. The model compares a leader’s degree of concern for people, or relations-orientation, to the leader’s degree of concern for production, or task-orientation. Blake and Mouton (1982) posit that a leader’s skills should be matched to the properties in the situation. Another popular leadership model is the Hersey-Blanchard Situational Leadership II model (hereafter SLII®) (Blanchard, 2001b). The model is based on Hersey and Blanchard’s interpretation of propositions derived from empirical research. These propositions include:

1. “The most effective behavioral style of leaders is one that varies with the situation.”

2. “The job and psychological maturity of the followers is most crucial in determining which behavioral style of leaders will result in the most effectiveness” (Bass & Stogdill, 1990, p. 488).

Personalities may indeed make the difference in determining the right job fit for leaders.

McGregor (1960) states,

It is quite likely that there is a single basic pattern of abilities and personality traits characteristic of all leaders. The personality traits of the leader are not unimportant, but those, which are essential, differ considerably depending on the circumstances. (p. 180)

Bass (1990), Hesselbein (1996), and Wren (1995) support the idea that what constitutes essential core leadership characteristics vary by situation and leader’s personality. In addition, Greer (1961) conducted studies that showed military personnel had better performance when leaders and followers have similar personalities than when there is a mismatch between the two. Therefore, it might be important to match follower and leader personality types with supportive leadership characteristics in order to develop effective work teams.
Nature of the Study

Quantitative research involves a process of developing narrow research questions, obtaining numerical data through the use of surveys or validated measurement instruments, using statistical methods to determine the relationship between variables, and making predictions based on the statistical results (Aczel, 1996; Creswell, 1994, 2002). Creswell states, “Quantitative research is used to study research problems requiring a description of trends or an explanation of the relationship among variables” (p. 50). Quantitative research has been used in many studies to determine the relationship between leadership style and personality (MacDonald, 1995), personality and occupation types (Barrick, Mount, & Gupta, 2003; Larson, Rottinghaus, & Borgen, 2002), personality and job performance (Barrick & Mount, 1991; Barrick et al., 2003; Hurtz & Donovan, 2000), leader performance and personality (Lowe & Galen, 1996; Silverthorne & Wang, 2001), and personality and personnel selection (Guion, 1965; Smith, 2001). Considering that this study will use validated survey instruments to obtain numerical data regarding personality type and leadership style, it appears justifiable to apply a quantitative approach to this research project.

This quantitative research study is designed to determine the degree to which personality type and situational leadership types correlate to job tenure among asphalt pavement construction project managers that have three or more years job experience working in NAPA-member organizations located in the Western United States. The following validated instruments will be utilized in this study. The DiSC® personality profile instrument shown in Appendix C will ascertain personality type. DiSC® measures four primary personality dimensions: (a) dominance, (b) influence, (c) steadiness, and
(d) conscientiousness. The Leadership Behavior Analysis II™ (hereafter LBAII®) assessment tool will define leadership style.

The choice of personality test instrument is made based on instrument cost, ease of administration, complexity of scoring process, and theoretical relevance. The DiSC® Personal Profile System, shown in Appendix B, is selected because best satisfies this researcher’s requirements for a detailed but manageable instrument. In addition, has been in use for over 24 years and is statistically validated. DiSC® provides assessment information across four behavior dimensions: dominance, influence, steadiness, and conscientiousness, and this information can be logically compared to the dimensions described in several leadership models such as the Five-Factor Model, Blake and Mouton’s (1985) Managerial Grid, and Hersey and Blanchard’s (2001b) Situational Leadership II model (hereafter SLII®).

LBAII® measures four major leadership styles: (a) directing, (b) coaching, (c) supporting, (d) delegating. In addition, LBAII® identifies the respondent’s primary leadership style as well as indicating the respondent’s leadership style flexibility and leadership style effectiveness. Leadership flexibility is a leader’s readiness to use multiple leadership styles depending on the situation being encountered relative to the follower’s level of competence and commitment. Leadership effectiveness is a leader’s tendency to use the appropriate leadership style in a particular situation (Blanchard, 2001a).

Job tenure will be defined as the length of time a project manager stays in an asphalt pavement company in the job role of estimator or project manager. A demographic survey, Appendix E, will gather job tenure information relative to the number of years the project manager has been with their present company, the number of firms in which the respondent has
served as a project manager, and the total number of years the respondent has served as a project manager.

The intent of this research, therefore, is to develop an understanding of possible cause and effect patterns among personality type and job tenure, leadership style and job tenure, and demographic variables and job tenure as shown in the path-goal association of Appendix D. The data from each assessment area will be processed using the Pearson product-moment correlation coefficient (Creswell, 2002) to determine if the association for each relationship is positive or negative, and then assess the strength of the relationship.

In this research project, 30 asphalt pavement construction firms located in the Western United States located between the Mississippi River and the Pacific coast will be chosen for the survey and will be randomly selected, using the Minitab random number generator, from NAPA’s membership list. Four project managers will receive a test package consisting of a letter of transmittal, a demographic questionnaire, and one each of the DiSC® and LBAII® assessment instruments. The questionnaire and test instruments will be enclosed in a separate envelope identified as containing the returnable items. The back of each returnable item will have attached a white package-identification number while the front of each item will have a bright orange sticker identifying the form as a returnable item. A stamped return envelope will be included in each survey package. Reminder letters will be sent to survey recipients as the return deadline approaches and a follow up telephone call will be made as a last effort to retrieve the survey items. The goal is to receive 180 to 360 responses.

Hypothesis and Research Question

The central research question of this study is:
How does personality type and situational leadership style relate to job tenure among American asphalt pavement construction project managers?

In order to answer this question, validated instruments will be used to gather data for the independent variables, personality type and leadership style. Correlation analysis will be used to examine the relationship of the independent variables to the dependent variable, job tenure. Personality and leadership tests will be administered to four project managers in each of NAPA’s member organizations located in the United States.

According to NAPA, employee retention is a serious problem for asphalt pavement construction organizations (Lawler, 2004; Proceedings of the third Construction Industry Executive Forum, 2004). Research conducted by Liska and Piper (1999) for the Construction Industry Institute showed that nation-wide employee turnover has been as high as 20% per year. Lucrative financial compensation alone does not appear to insure long-term employee job-retention. NAPA has expressed concern that non-financial, intrinsic factors may influence project manager dissatisfaction and job tenure to a greater extent than previously considered. These factors include differences in leadership style and personality type between project managers, their executive managers, and the organization’s support staff. It is important, therefore, to determine to what extent personality type and leadership style affect project manager job tenure in the asphalt pavement construction industry.

The hypotheses relate directly to personality and leadership dimensions. The personality dimension is part of the foundation for establishing successful relationships with colleagues. Chemers (1997) states,

A person does not become a leader by virtue of the possession of some combination of traits, but the pattern of personal characteristics of the leader must bear some relevant relationship to the characteristics, activities, and goals of the followers. (p. 20)
In addition, personality may make the difference in establishing a positive relationship between the leader and followers (Chemers, 1997). Therefore, the hypothesis for the personality dimension is:

\[ H_{01}: \text{The project manager’s personality type is not related to job tenure.} \]

\[ H_{11}: \text{The project manager’s personality type is related to job tenure.} \]

Fiedler (2000) states, “The effectiveness of a group is contingent upon the relationship between leadership style and the degree to which the group situation enables the leader to exert influence” (p. 97). Supervisors that have a leadership style appropriate to the situation tend to be more productive than those who have conflicting leadership styles. In addition, supervisors that have leadership styles relative to the situation that is expected by their subordinates tend to achieve successful results (Bass, 1990).

The LBAII® leadership instrument measures a leader’s flexibility and effectiveness. The Flexibility Score is a numerical indicator of how often the respondent used a different leadership style to solve each of the twenty hypothetical situations presented in the LBAII®. The more often a respondent chooses a single style to solve the twenty situations, the lower the respondent’s leadership flexibility. Conversely, the more frequently a respondent chooses different leadership styles appropriate to a particular situation, the greater the respondent’s leadership flexibility. In addition, the LBAII® measures leadership effectiveness. The Effectiveness Score represents the number of times a respondent uses the appropriate leadership style in each of the twenty situations (Blanchard, 2001). Therefore, the hypotheses for leadership type, flexibility, and effectiveness are:

\[ H_{02}: \text{The Primary Leadership Type score is not related to job tenure.} \]

\[ H_{22}: \text{The Primary Leadership Type score is related to job tenure.} \]
H₀³: Leadership style Flexibility score is not related to job tenure.

H₃: Leadership style Flexibility score is related to job tenure.

H₀⁴: Leadership style Effectiveness score is not related to job tenure.

H₄: Leadership style Effectiveness score is related to job tenure.

The Project Manager Questionnaire, presented in Appendix E, is designed to gather personal demographic data from each respondent. These data will be used to build a demographic profile of project managers in order to ascertain common characteristics other than leadership style and personality profile.

**Theoretical Framework**

Prior to the 1940s, leadership theory was oriented toward social class characteristics, and human physical and psychological traits as the basis for selecting leaders. During the 1950s, however, leadership theories became distinctly human relations oriented (Bass, 1990). This human relations perspective appears to have laid the foundation for leadership theories that are oriented toward group dynamics and employee needs-satisfaction. This general category became known as group theory and included subsidiary theories such as McGregor’s (1960) Theory X-Y; Maslow’s needs hierarchy, and Argyris’ (1957) maturity-immaturity theory. The nexus of these theories is emphasis on the leader’s relationship with followers to improve interpersonal communications while initiating structure of the group’s tasks.

From the mid-1950s to the mid-1970s Contingency Theory supplanted group theory. This theory focused on the idea that leadership is contingent on the situations leaders must address at a particular time. Depending on the characteristics of the situation and the experience of the followers involved, the leaders may use a democratic, authoritarian, coercive, affiliative, or coaching style moving seamlessly between styles as the situation changes (Goleman, 2000).
Cognitive leadership theories became popular from the mid-1970s to present day. These theories, which include attribution theory, transactional, and transformational theory, focus less on situational characteristics but more on the perceptions of the leader and follower. Leadership is based on social exchange, political considerations, agreement on a mutual purpose, and achieving organization goals in a dynamic state of change. Cognitive leadership theories recognize “leadership as a complex interaction between the leader and the social and organizational environment . . .” (Fiedler, 2000).

Although each major leadership theory presents criteria for selecting capable leaders, leadership efficacy is most likely to be achieved when consideration is given to both personal characteristics as well as situational conditions. Chemers (2000) states,

> The fit between the leader’s personal characteristics and situational parameters is an important determinant of a leader’s confident and efficacious behavior – behavior that is the basis for the critical functional elements of leadership. (p. 36)

Furthermore, the great diversity of situations and experience levels of subordinates appears to emphasize that leaders be cognizant that no single leadership style will be effective in all situations. Leadership style must be adjusted to accommodate situation and personnel dynamics.

This study will address the diverse work environment of the asphalt pavement project manager. For any construction project, the project manager should provide effective leadership to field personnel, project supervisors, project owners, political representatives, as well as the organization’s administrative and accounting staff. The project manager’s interaction with each of these groups constitutes a role-set. Each role-set may require a leader to apply different leadership styles to effectively guide the members to achieve their organizational goals. Further, consideration to providing effective leadership may include the time scheduling restrictions of the construction project. If complications are encountered that cause the project to fall behind
schedule, the project manager may need to use an authoritative or coercive leadership style in order to bring the project under control (Bass, 1990). Afterward, the project manager may increase his or her effectiveness by becoming more flexible in their leadership style relative to the leadership situation.

The SLII® leadership model focuses both on the leadership situation and the leader’s relationship to organization members. The leader may be more directive or supportive depending on the situation or skill maturity of personnel. The leadership style should vary by degree of directing, coaching, supporting, and delegating as described in the leadership style curve in Appendix A. Consider for example a construction project that is behind schedule. The project manager may have used a delegating style with his construction personnel while the project was on schedule but may switch to a directing style in order to regain control of the project. After the project is back on schedule, the project manager should return to a supporting or delegating leadership style.

An important factor to using the SLII® model to increase leadership effectiveness may be flexibility of the project manager’s personality. House (1997) states, “Leader flexibility is likely to be most predictive of leader effectiveness when leaders function in unstable environments, or when leaders are required to lead different people performing different tasks over time” (p. 416). A high dominant personality, therefore, may make the project manager less flexible in using multiple leadership styles consequently limiting his or her leadership effectiveness.

This study, therefore, will address aspects of group, contingency, transactional, and transformational leadership theories. It will functionally integrate the key tenets of each major leadership theory by showing that leaders are a product of the situation in which they operate,
that power is derived from the leadership situation, and that leadership style should change according to the situation dynamics (Bass, 1990).

Definitions

Construction firms generally have two key staff positions for organizing and managing construction projects. The estimator staff position is generally assigned to a person who is skilled in analyzing the design specifications and physical site environment then compiling and analyzing data that may influence costs and profits of a construction project. The second key position is the project or construction manager. This person plans and coordinates construction projects, manages field workers, construction materials, and equipment. In addition, the project manager may be the construction firm’s primary contact with the project’s owners and government contacts. It is not uncommon in the asphalt pavement construction industry to meld the duties of estimator and project manager make them the responsibility of a single person.

Personality traits refer to two basic groups of trait characteristics. The first group, source traits, is internal traits that remain consistent over a person’s lifetime and are manifested through the person’s general behavior. The second group, surface traits, is personality characteristics that change as new behaviors are acquired or as the person’s environment changes. Surface traits are situationally dependent and are the primary focus of the DiSC® personality profile system. Surface traits relate directly to a person’s ability to adapt to situational change. “There is evidence that individuals vary by how they adapt to changing environments, and the way they adapt may be the most consistent feature of their personalities” (Inscape, 1996b, p. 8).

Personality dimensions, as derived by the DiSC® personality profile system, refer to the combination of the dominance, influence, steadiness, and conscientiousness personality characteristics (Inscape, 1996c). Intensity of each characteristic is measured on a seven-point
scale to generate a segment number range that corresponds to specific personality dimensions as shown in Appendix B.

Leader behavior relates to a person’s leadership style relative to situational conditions and the job maturity level of a subordinate or work group. For instance, if a subordinate is new to a job position or is encountering task requirements of which he or she is inexperienced, a leader should assume a directive leadership style that would be more oriented toward coaching or encouraging their subordinate (Blanchard, 1999, 2001). As the subordinate’s capability improves, or becomes more job-mature, the leader can adopt a leadership style that is less directive and more supportive as shown in Appendix A. In order to be effective, the leader’s behavior should move seamlessly between styles as situational and personnel conditions change.

Assumptions

Thirty asphalt pavement construction firms located in the Western United States between the Mississippi River and the Pacific coast will be chosen for the research survey. The senior manager of each selected firm will be contacted to determine if he or she will agree to participate in this study. If the senior manager agrees he or she will be asked to submit the names of four project managers. Each participant will receive a test package consisting of a letter of transmittal, the informed consent form shown in Appendix F, a demographic questionnaire as shown in Appendix E, and one each of the DiSC® and LBAII® assessment instruments. It is assumed that the participants will honestly answer the questions and not collaborate with each other in an effort to match their answers or produce answers the participants believe will be more favorable than another answer. In addition, it is assumed that the test participants have the ability, intelligence, and experience to properly perform their job assignments.
Selecting potential test companies from NAPA’s producer membership roster rather than from a commercially supplied contact list may provide test companies that are consistent in terms of management and operation. The producer member companies are asphalt pavement contractors or a combined enterprise that manufactures asphalt as well as using the material to build roadways. NAPA members are generally involved in state and national politics as related to highway funding legislation and focus on high quality construction that will support long-term business continuity. Therefore, it is important for NAPA producer firms to retain experienced estimators and project managers.

Using standardized test instruments for determining personality type and leadership style, and by applying them to a homogeneous test group places the limits to the generalizability of the study under the researcher’s control. Results of the study, therefore, should have practical application for most NAPA producer member companies as well as similar non-NAPA member firms.

Scope and Limitations of the Study

The DiSC® personality assessment instrument only measures the respondent’s dominant personality, which is a single dimension of personal characteristics. It does not measure other important personal characteristics such as intelligence, ability, or work experience (Leonard, 1997). In order to develop a more comprehensive mosaic of a project manager’s personal characteristics, additional tests should be administered in order to assess intelligence and aptitude for construction management. In addition, results from additional personality assessment instruments may provide a more complete description of the project manager’s personality.

This study will test a small set of project managers from many asphalt pavement construction companies. Greater understanding of the project manager’s leader-follower relationships may be
achieved by testing a larger sample of personnel at different organization levels within each company. In addition, testing key customers and subcontractors as well may provide valuable insight into the project manager’s leadership relationship outside of his or her organization.

The testing results will provide a snapshot of the project manager’s personality and leadership style. A more accurate assessment may be developed if testing is administered over the long-term such as three to five years. The project manager’s personality and leadership style may change as job experience and personal maturity increases. These changes may have a mitigating affect on job tenure.

Delimitations

This research is limited in scope by measurement of personality, leadership style, job tenure, and number of test companies. In particular, the study of personality may be made in great depth if conducted solely as a research project. It is beyond the practical and financial capabilities of this study to analyze personality type beyond the results produced by the DiSC® personality profile system. Future research may focus on long-term personality analysis of some asphalt pavement construction companies by conducting personal interviews with study participants. In addition, personality assessment of company personnel beyond the project manager and executive management level may be beneficial. Other non-executive management personnel would include administrative staff, field supervisors, and field workers.

Personality traits and leadership style may be positively correlated to project manager retention but an analysis of communication style may provide additional insight into this problem. Assessment instruments such as the Forte’ Interpersonal Communications System (Morgan, 2000) might provide results that positively correlate to project manager retention. DiSC® and LBAII® focus on the behavior of people in particular situations but the way a leader
communicates might directly affect the situational characteristics and consequently, his or her leader effectiveness.

Using validated test instruments and focusing the study on situational aspects of project manager personality and leadership style will mitigate the limitations of this research. This approach should produce results that might be generally applicable to the NAPA producer member companies.

Summary

Estimators and project managers are particularly important personnel in the asphalt pavement construction industry. The project manager must have personalities and leadership styles that enable them to successfully develop and sustain professional working relationships with field personnel, project supervisors, project owners, political representatives, and their company’s administrative and accounting staff. Project manager employee retention, however, is a problem for asphalt pavement construction organizations. Factors contributing to employee retention include differences in leadership style and personality type between project managers, their managers, and support staff. Therefore, the intent of this study is to estimate the effect of leadership style and personality type on the employee retention of project managers.

The project manager may increase his or her effectiveness by becoming more flexible with their leadership style relative to the leadership situation. The Blanchard SLII® leadership model focuses both on the leadership situation and the leader’s relationship to organization members. The leadership style should vary by degree of directing, coaching, supporting, and delegating as described in the SLII® leadership style curve. If used with conviction, the situational leadership model may help project managers, their supervisors, and their followers to better understand
each other’s personality and dominant leadership style while being cognizant of the necessity to adjust their leadership style to suit the situation.

An important factor to using the SLII® model to increase leadership effectiveness may be flexibility of the project manager’s personality. A high dominant personality may make the project manager less flexible in using multiple leadership styles consequently limiting his or her leadership effectiveness.

This study will address aspects of trait, group, contingency, transactional, and transformational leadership theories. It will functionally integrate key tenets of each major leadership theory. The literature review presented in Chapter 2 will show that leaders are a product of the situation in which they operate, that power is derived from the leadership situation, and that leadership style should change according to the situation dynamics.
CHAPTER 2: LITERATURE REVIEW

People who have task-oriented personality types tend to have considerable focus on details. They are not comfortable initiating an action-plan until they are satisfied they have all the necessary facts. On the other hand, people who have relations-oriented personality types tend to have considerable focus on the result and are comfortable initiating an action-plan when they have just the essential facts (Blake & Mouton, 1982). Therefore, it is important for a leader to understand personality and accurately adjust leadership style to the management situation. Bass (1990) states,

Personality theorists tended to regard leadership as a one-way effect: Leaders possess qualities that differentiate them from followers. But these theorists did not acknowledge the extent to which leaders and followers have interactive effects by determining which qualities of followers are of consequence in a situation. (p. 12)

Personality predicted leadership emergence across a variety of people and settings. Lord (1986) states, “In short, personality traits are associated with leadership emergence to a higher degree and more consistently than popular literature indicates” (p. 407). In addition, Barrick and Mount (1993) have found a significant association between personality and job performance.

The combination of leadership style and personality type appears to meld into a psychological combination that produces the ethos of a leader. “Leaders are not just identified by their leadership styles, but also by their personalities, their awareness of themselves and others, and their appreciation of diversity, flexibility, and paradox” (Handburl, 2001, p. 11). In addition, McGregor (1960) states, “It is quite unlikely that there is a single basic pattern of abilities and personality trait characteristics of all leaders. The personality characteristics of the leader are not unimportant, but those which are essential differ considerably depending on the circumstances” (p. 180). Therefore, it may
indeed, make a difference in ascertaining personality type in order to determine the correct job match between an asphalt pavement construction project manager and his colleagues.

Title Searches

Primary and secondary sources of data were incorporated into this literature review. Sources included electronically generated documents via the Internet, dissertations, conference reports, university publications, peer-reviewed journal articles, book-based research studies and essays, and handbooks. Bass and Stogdill’s 1990 *Handbook of Leadership* served as the foundation of the title and literature search. The copious bibliographic sources of significant leadership and social psychological research listed in the handbook provided initial direction for this literature review. The bibliography of books and journal articles employed in this study expanded the literature sources to the point where bibliographic references became redundant and further literature search became tautological.

Many books were obtained through the interlibrary loan service of the City and County of Broomfield, Colorado Library. This interlibrary loan service provides access to every state college and almost all municipal libraries located in Colorado. Academic institutions including as the University of Colorado at Boulder, the University of Northern Colorado, Metropolitan State University in Denver, the University of Denver, and Colorado State University proved to be good sources of research documents.

The Internet was not used to obtain research documents due to the questionable validity of open query Internet-based information. The Internet was used, however, to access electronic research libraries at the University of Phoenix, Metropolitan State
University, and the Educational Resources Information Center (ERIC) of the U.S. Department of Education. Major databases used to obtain documents for this study included EBSCOhost, InfoTrak, and ProQuest. These databases provided access to a liberal supply of journal articles that included meta-analysis of leadership-personality studies, major leadership theory research, personality assessment methodologies, dissertations, and leadership-organization dynamics. In addition, direct access was made to publishers of several journals in order to obtain backdated articles.

**Historical Overview**

The ancient era of leadership theory, from about 2300 B.C. to 1 A.D., was characterized by the idea of leaders being great men who were sources of authority and justice. Leaders were expected to behave in a manner imagined by their society and culture as appropriate for a particular role such as a king, chief, prince, or prophet. They were considered to be heroic, inspirational and endowed with special leadership power that enabled them to capture their follower’s imagination (Bass, 1990). So powerful was this effect that when Woods (1913) examined the evolution of leadership in 14 countries over a 14-century period, he concluded that the great-man leaders made their nation and shaped it in accordance with their abilities.

The classical era of leadership range from 1 A.D. to 1869 and the neoclassical era range from 1870 to 1939 encompassing a substantial portion of the industrial era. During the Industrial era, organization theories were based on social, demographic, and economic issues that related to a relatively stable command-and-control, production-oriented environment. These theories provided a foundation for establishing procedures for managing personnel and equipment as well as creation of formal organization
structures to insure production stability. This produced an environment characterized by large organizations that were regionally located and predominantly employed local male workers. These workers composed a homogeneous group that typically had little or no formal education, conducted their life activities within a few miles of their work site, and had personal familiarity with most of their colleagues (Hatch, 1997; Jacques, 1996; Shafritz & Ott, 2001). However, as organizations developed interests outside of their regional areas, especially interests in foreign countries, demographic homogeneity gave way to diversity of personnel that included different ethnic, racial, and gender groups. In addition, increased globalization and cultural diversity led to greater information generation and dissemination. The result has been an increasingly open environment, heterogeneous demographics and greater knowledge of non-local affairs, all of which has increased the feeling of uncertainty (Handy, 1996).

The industrial era of organization theory is characterized by its focus on stability, authoritarian management, and formal structure and appears to have spawned leadership theories where leadership was a product of the emerging effect of leader and follower interaction, differentiated roles, and compliance-induction. In fact, the compliance-induction theory appears most prevalent during this period because its authoritarian, directive approach enabled leaders to accomplish the most work with the least friction and greatest cooperation (Munson, 1921).

The American Civil War from 1861 to 1865 had a profound effect on American industry and government by virtue of the fact that war production in the northern states stimulated manufacturing activity to high production levels. The southern states, however, suffered considerable damage to manufacturing infrastructure and civil
government. The positive consequence, however, is that after southern industry was rebuilt it became a major contributor to the country’s modern industrial resource (Hummel, 1996).

In the post-Civil War period of 1869 to the World War II period beginning in 1940, the United States significantly increased its influence as a world political power and manufacturing producer (Hummel, 1996; Jacques, 1996). This environment appears to have created a new leadership focus that included greater reliance on trait theory where ideal leaders were considered to have the greatest number of personality traits and attributes (Bass, 1990). Through the end of the nineteenth century up to mid-twentieth century leadership theorists appeared to focus less on compliance-induction theory and more on the concept of leadership as a product of group processes and as a form of persuasion where there is a reciprocal relationship between leaders and followers. This approach is espoused by Cowley (1928), who posited that a leader as a person who moved followers toward a mutual objective. In addition, Tead (1935) states that a leader should influence people to cooperate to attain a desired common goal.

There appears to be no single universal definition of leadership but rather definitions relate to various leadership perspectives such as personal traits, power-influence, behavioral aspects, or situational environment. Hogan (1994) defines leadership, “Leadership involves persuading other people to set aside for a period of time their individual concerns and to pursue a common goal that is important for the responsibilities and welfare of a group” (p. 494). Yukl (1989) posits, “Leadership includes influencing task objectives and strategies, influencing commitment and compliance in task behavior
to achieve these objectives, influencing group maintenance and identification, and influencing the culture of an organization” (p. 253).

In an effort to develop a comprehensive definition of leadership, Bowers and Seashore (Bowers, 1966, p. 247) formulated four basic dimensions of leadership:

1. Support: Behavior that enhances someone else’s feeling of personal worth and importance.
2. Interaction Facilitation: Behavior that encourages members of the group to develop close, mutually satisfying relationships.
3. Goal Emphasis: Behavior that stimulates an enthusiasm for meeting the group’s goal or achieving excellent performance.
4. Work Facilitation: Behavior that helps achieves goal attainment through activities such as scheduling, planning, and providing resources such as tools, materials, and technical knowledge.

Leadership is frequently defined in terms of transactional and transformational dimensions. The paradigm of transactional-transformational leadership has universal applicability across all continents and cultures. In terms of universality, Bass (1997, p. 137) declares, “Transformational leadership tends to be more effective and satisfying than contingent rewarding, contingent rewarding is more effective and satisfying than managing by exception, and managing by exception is more effective and satisfying than laissez-faire leadership.”

During the 1980’s theorists began to recognize the importance of personal and national cultural influence on leadership paradigms. In the global economy of the 21st century, occidental management theories and techniques in some form will be adapted to
countries around the world. In order to be effective, however, the theories must incorporate cultural variations and will be combined with oriental management theories thereby producing management techniques that have near-universal applicability (Hofstede, 1984). “Feedback from subordinates should be part of an organization’s leadership performance assessment program. Such feedback, along with self-assessment, provides useful information for leadership development purposes and may help in closing the gap between actual and desired performance” (Kolb, 1995, p. 244).

Current Findings

**Leader Effectiveness**

Leader effectiveness is dependent on the leadership problem-situation, team-dynamics, organization culture, and strategy. Consequently, the leader must employ a multiple level of leadership skills in order to be effective (Yammarino, 2000). Hogan (1994, p. 497) submits that there are five categories that may be used to evaluate leader effectiveness:

1. Actual performance of the organization unit or team
2. Ratings by peers, subordinates, and superiors
3. Results of interviews, simulations, or assessment centers
4. Self-ratings
5. Perceptions of people whose careers are in jeopardy.

Team dynamics and processes generally provide rapid and measurable results for determining leader effectiveness. Team processes have a reciprocal relationship in which leadership processes and team processes influence each other as team members become more experienced in their job related skills or in other words, the team members become
gain job-skill maturity. Zaccaro (2001) states, “We have also suggested that as teams become more experienced and achieve a significant level of expertise, other members take over more of the leadership functions while designated leaders retain their boundary spanning responsibilities” (p. 477). In addition, leader effectiveness may be increased when the leader takes a relationship or partnership approach. The leader-follower relationship is reciprocal because as the leader influences the subordinate to become more effective and as this effectiveness increases, the subordinate requires less direct leader intervention (Hamilton & Schriesheim, 2001; Higgs & Roland, 2001).

When a leader uses a partnership approach with his or her team, leadership assumes functional characteristics. A functional perspective of leadership focuses on the essential functions of a work group, and the ancillary organizations supporting the work group. Leadership functions should be functionally equivalent to those of the work group. In addition, functional leadership recognizes the skill maturity of the work group. At low levels of job maturity, employees performing new tasks require encouragement and support. As employees gain job maturity, they require less direct leader intervention (Behling & Rauch, 1985).

In some situations, indirect leadership may increase effectiveness. Leaders often directly apply their problem solving skills, knowledge, solution formulating skills, and social judgment to a leadership situation. Effective leadership may be achieved by using more of an indirect approach. Mumford (2000, p. 167), states, “. . . leadership may sometimes be a rather indirect phenomenon where influence is exercised through cognition and performance as well as through interpersonal interaction.”
In a study for the U.S. Army, Connelly (2000) determined criteria for leader effectiveness using both military and civilian subjects. Connelly (2000, p. 77) declares, “The Army study emphasizes the importance of creative thinking, complex problem-solving skills, and social judgment skills, while the civilian study serves as a reminder that other leader attributes, such as personality and motivation, are critical to a leader’s success.”

Hater and Bass (1988) conducted a study of highly educated workers and discovered that a transformational leadership approach, displaying various amounts of participative decision making, generated high motivation and work effectiveness. Transactional leadership, on the other hand, did not produce high motivation from workers who expected personal enrichment from their job-related activities. Transformational leadership is frequently considered to be most effective at higher levels within an organization’s hierarchy. A transformational leadership style, however, may be more effective at lower management levels. Effective leaders will not rely solely on a transactional leadership style but will move between transformational and transactional styles as required by the situation and subordinate characteristics (Howell & Avolio, 1993; Lowe & Galen, 1996).

It is difficult to predict leader effectiveness by using only single measurement criteria. A multi-criteria measurement system has greater probability of predicting leader effectiveness. Hogan (1994) states, “In our judgment, the best way to forecast leadership is to use a combination of cognitive ability, personality, simulation, role play, and multi-rater assessment instruments and techniques” (p. 497). It appears that personality measures are efficacious in predicting effective leadership. Personality typing using
validated instruments such as the Myers-Briggs Type Indicator may improve leader-subordinate communication and increase leader effectiveness (Witt, 2000). In addition, leader traits and behavior influence leader success across a variety of situations. Using the 16 Personality Factor Questionnaire, Hartman (1999) found that personalities high in “Factor A, Warmth,” were more effective in their leadership roles.

In research conducted by Day and Stogdill (1972) it was determined that that there was no appreciable gender difference in leader effectiveness. Male and female leaders in parallel leadership positions exhibited similar patterns of leader behavior and were regarded by their superiors as being similar in leader effectiveness.

**Job Satisfaction**

Job satisfaction depends on a plethora of elements. Measuring only one or two elements such as leadership style, personality, or least preferred co-worker may not produce a full explanation of the most effective leadership style to use in a particular situation. Analysis of subordinate’s cultural, career progress perceptions, relationship between job characteristics and attitude, and non-job related characteristics in order to produce a more comprehensive assessment of job satisfaction (Chan & Drasgow, 2001; Glick, Jenkins Jr., & Gupta, 1986; Scarpello & Campbell, 1983).

In a study of the relationship of job satisfaction to job performance Petty (1984) proved there is a positive relationship to individual job satisfaction to individual job performance. Popular books such as *Theory X* (Ouchi, 1981), *In Search of Excellence* (Peters & Waterman, 1984), and *The One Minute Manager* (Blanchard & Johnson, 1985) suggest a direct relationship between job satisfaction and performance. It seems logical,
therefore, to conclude that Blanchard’s (2001b) Situational Leadership II theory will be applicable to the study of leadership style and project manager job tenure.

In expressing concern that the benefits of the social scientific study of leadership are not being applied enough in practical situations, Hogan (1994) states, “…what we know about leadership seems to have little impact on the people who actually make decisions about leadership” (p. 494). This may provide a partial explanation of why the Managerial Grid and Situational Leadership II form the basis of popular commercial leadership training programs. These programs appear to be intuitively appealing to non-academics. That is, non-leadership researchers immediately perceive or mentally understand, without intermediate explanation, the practical application of leadership concepts.

Using monozygotic twins reared apart, Arvey (1989) studied the genetic predispositions of a person gravitating toward staying in a particular type of job environment and the person’s concept of job satisfaction as measures by the Minnesota Job Satisfaction Questionnaire. Results of the study indicated that there are significant inherited traits that cause people to seek and remain in certain types of jobs. Therefore, it appears important for organizations to accurately define the personal characteristics required for a person to be successful in a particular leadership role and to test candidates to insure they will be a proper fit for the job.
Certain personality traits are positively related to leader effectiveness and team performance. These personality traits include surgency, emotional stability, conscientiousness, and agreeableness. Even though there are no universal personality traits that are predictors of leader effectiveness in all situations, some situations and organization cultures require specific personality traits and leadership styles relative to the follower’s expectations of a leader (Hogan et al., 1994). “Personality traits, such as agreeableness, conscientiousness, extroversion, openness, neuroticism, and self-monitoring influence implicit leadership theories. Specifically, individuals characterize a leader similar to self as ideal” (Keller, 1999).

Hollenbeck (2000) developed an integrated theory of person-organization fit in which the structure of an organization is compared to the personality traits of the organization’s people. Typically, organizations develop a functional structure that enables it to successfully integrate with its external environment. The functional structure characteristics create unique internal environment conditions that require organization members of particular personality traits in order to attain organization efficiency. In addition, Hollenbeck (2000) suggested that successful organizations employ people that have personality traits that enable the workers to fit well into both the organization’s internal and external environments.

Senior executives often select people for a leadership role solely based on the criteria of the candidate’s operational efficiency or experience. Sorcher (2002) suggests that the selection should be made on a broad range of soft leadership criteria including personal integrity, cultural background, and personality. Hogan (1994) states, “In our judgment,
the best way to forecast leadership is to use a combination of cognitive ability, personality, simulation, role play, and multi-rater assessment instruments and techniques” (p. 497). In addition, personality measures are efficacious in predicting effective leadership.

Proactive personality was positively associated with both self-reported objective success-criteria of salary and promotions as well as the subjective success-criteria of career satisfaction (Seibert, 1999). In a study of six hundred fifty-two employees composing 51 work teams it was determined that relationships of team member’s ability, personality and social cohesion contributed positively to team viability and team performance. “With respect to composition variables, teams higher in general mental ability, conscientiousness, agreeableness, extroversion, and emotional stability received higher supervisor ratings for team performance” (Barrick, 1998, p. 377). In addition, the three personality characteristics of autonomy, control, and motivation orientation influence performance and achievement through achievement goal patterns, goal level, and mental focus. “Research suggests that global personality traits can help researchers to understand and predict the motivational strategies that people use while working toward goals in achievement settings” (Lee, 2003, p. 256).

A U.S. Army study examined criteria for leader effectiveness using both military and civilian subjects and discovered the importance of personality and leadership. Connelly (2000, p. 77) declares, “The Army study emphasizes the importance of creative thinking, complex problem-solving skills, and social judgment skills, while the civilian study serves as a reminder that other leader attributes, such as personality and motivation, are critical to a leader’s success.” Military and civilian senior executives often select people
for a leadership role solely based on the criteria of the candidate’s operational efficiency or experience. Sorcher (2002) suggests that the selection should be made on a broad range of soft leadership criteria including personal integrity, cultural background, and personality.

Prior research has shown that personality characteristics can be accurately assessed using of the Meyers-Briggs Type Indicator (Witt, 2000; Young, 2001), DiSC®, (Morgan, 2000), Multidimensional Personality Questionnaire (George, 1990), and the Five Factor Model (Barrick, Mount, & Judge, 2001; Larson et al., 2002). Judge (2002, p. 1) declared, “Overall, the five-factor model had a multiple correlation of .48 with leadership, indicating strong support for the leader trait perspective when traits are organized according to the five-factor model”. In fact, considerable personality-leadership effectiveness research has been conducted using the Big Five Personality Model or Five Factor Model (hereafter referred to as FFM). Barrick and Mount (2001) summarized the results of 15 meta-analytic studies, conducted over the prior 50 years that focused on the relationship of FFM personality characteristics to prediction of job performance. Results, summarized in Table 1, indicated that there is a positive relationship of FFM dimensions to job performance. In particular, conscientiousness and emotional stability were positively correlated to job performance in all jobs while the other FFM dimensions only had positive correlation to specific occupations. Salgado (2003) reached a similar conclusion in a study of Western European firms.
Table 1:  
*Correlation Between the FFM Dimensions and Job Performance.*

<table>
<thead>
<tr>
<th>FFM Dimension</th>
<th>Correlation to Job Performance</th>
</tr>
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<tbody>
<tr>
<td>Conscientiousness</td>
<td>Positive correlation in all jobs</td>
</tr>
<tr>
<td>Emotional stability</td>
<td>Positive correlation in all jobs</td>
</tr>
<tr>
<td>Extraversion</td>
<td>Correlation for specific occupations only</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>Correlation for specific occupations only</td>
</tr>
<tr>
<td>Openness to experience</td>
<td>Not relevant to most jobs</td>
</tr>
</tbody>
</table>

Larsen (2002) declared, “For understanding an individual’s total personality, it is absolutely necessary to know something about the kinds and intensity of his interests” (p.217). In fact, for decades researchers have suggested there is a direct link between personality and vocational interests. In an effort to determine correlation between personality and vocational interests, studies were conducted using Holland’s Big Six domains of vocational interest and the Big Five model of personality traits (Barrick et al., 2003; Furnham, 2001; Larson et al., 2002). Results of the study showed a clear link between personality type and vocational interests. Larson declared, “Of the 30 correlations, five appeared to be substantial for both men and women and across interest measures. They are Artistic-Openness (r = .48), Enterprising-Extraversion (r = .41), Social-Extraversion (r = .31), Investigative-Openness (r = .28), and Social-Agreeableness (r = .19)” (Larson, 2002, p. 217). Barrick’s (2003) research yielded similar results with Enterprising-Extraversion (r = .41) and Experience-Openness (r = .39). Overall
conclusions of these studies, however, indicate that while Big Five personality traits are directly related to the Big Six vocational interests, they are not substitutes for each other.

Five Factor Model of Personality

The Five Factor Model of Personality consists of five primary personality traits: Neuroticism, Extraversion, Openness to Experience, and Agreeableness. Although this model cannot account for all aspects of human personality, it is relevant to gaining a macro understanding of a person’s personality (McCrae & John, 1992). Even though the Big Five is not a complete theory of personality, it serves as a practical framework to bring cohesion to the myriad of personality theories (Digman, 1997).

Ployhart (2001) conducted a study to determine if the Five Factor Model of Personality (hereafter FFM) could predict transformational ratings of transformational leadership. Results of the study showed a strong relationship between personality and transformational leadership. Furthermore, research conducted by Judge and Bono (2000) showed direct relationship between the Five Factor Model and transformational leadership. Extraversion and agreeableness positively predicted transformational leadership. Openness and Experience were positively correlated to transformational leadership. Neuroticism and Conscientiousness were unrelated to transformational leadership. Bono states, “. . . organizations might benefit from selecting leaders on the basis of certain personality traits” (2000, p. 763).

Even though Block (1995) questioned the validity the Five Factor personality model he declared, “. . . the contemporary Big Five represents a clarifying and advancing framework that can provide needed integration for the archaic field of personality assessment” (p. 207). Smith (2001) investigated criticism that the Big Five model was an
inadequate tool for personnel selection. Research, however, showed that the Big Five was an accurate predictor of performance and that personality testing is an effective tool in personnel selection methods (Salgado, 2003; Tett, Jackson, & Rothstein, 1991).

The Big Five personality dimensions of Consciousness and Extraversion are significantly related to job performance and are a useful tool for examining the relationship between personality and job performance criteria (Barrick, 1993; Hurtz & Donovan, 2000). Barrick and Mount (1991) performed a meta-analysis to determine the correlation of the Big Five personality dimensions to three job performance criteria: job proficiency, training proficiency, and personnel data. The meta-analysis showed a direct correlation with all performance criteria. Although personality assessment has utility for predicting job performance, researchers should be cognizant that their analysis should address the relations between the personality and contextual performance (Bryman & Stephens, 1996; Hurtz & Donovan, 2000).

Hollenbeck (2000) developed an integrated theory of person-organization fit in which the structure of an organization is compared to the personality traits of the organization’s people. Typically, organizations develop a functional structure that enables it to successfully integrate with its external environment. The functional structure characteristics create unique internal environment conditions that require organization members of particular personality traits in order to attain organization efficiency. The five factor model of personality has proven to be effective to derive predictions of person-organization fit. In addition, Hollenbeck (2000) suggested that successful organizations employ people that have personality traits that enable the workers to fit well into both the organization’s internal and external environments.
The research with the FFM clearly shows the efficacy of using a well-structured, validated method to assess personality characteristics. Using FFM methods, however, to determine major personality characteristics is a more complex process than the self-administered DiSC® method proposed for this research project. The two methods are closely related as shown in the brief taxonomy of Table 2.

Table 2
*Comparison of the Five Factor Model and DiSC® Personality Dimensions.*

<table>
<thead>
<tr>
<th>Five Factor Dimensions</th>
<th>DiSC® Dimensions</th>
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<tbody>
<tr>
<td>Extraversion</td>
<td>Dominance</td>
</tr>
<tr>
<td>Agreeableness and Open-to-experience</td>
<td>Influence</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>Conscientiousness</td>
</tr>
<tr>
<td>Steadiness</td>
<td>Emotional stability</td>
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</table>

The FFM dimension of Extroversion is a characteristic of having keen interest in other people, external events, and venturing forth confidently into the unknown while the DiSC® dimension of Dominance is characterized by a person that accepts challenges and is comfortable with ambiguity. Agreeableness measures how compatible people are with other people. Open-to-Experience refers to how willing people are to making adjustments to accommodate new ideas or situations. Juxtaposed to Agreeableness and open-to-experience is the DiSC® dimension of influence in which emphasizes personal compatibility with other people as well as viewing situations with optimism. The personality dimension of Conscientiousness for both the FFM and DiSC® emphasize diplomacy in working with people while adhering to key directives and concentrating on
task details. Dimensions of Steadiness and Emotional Stability refer to cooperation with other people while performing in a consistent, predictable manner (John, 1996; MacDonald, 1995; *DiSC Classic and models of personality*, 1996).

**Modern Leadership Theories**

Leadership theory has evolved from a focus on personal traits in the early 20th century to a 21st century integration of personal traits, leader-follower behaviors, and situational environment characteristics. By the 1940’s it was becoming evident that personal traits alone could not reliably predict leadership success. Stogdill (1990) and Chemers (2000) found that some traits could be associated with leader success but in general, personality and physical traits were not solely predictive of leadership emergence or success. Consequently, leadership theorists changed their attention to the study of leader behavior and leadership style. This resulted in creation of comprehensive, empirically based leadership research programs at the University of Michigan and Ohio State University.

The Ohio State University studies focused on leader behavior and leadership style and produced a comprehensive 150-question instrument, the Leader Behavior Description Questionnaire (hereafter LBDQ), designed to assess leadership style in terms if consideration and initiating structure (Bass & Stogdill, 1990; Chemers, 2000; House & Aditya, 1997). “Consideration included behaviors such as showing concern for the feelings for subordinates, making sure that minority viewpoints were considered in decision making, and attempting to reduce conflict in the work environment…Initiation of Structure includes items measuring the leader’s use of standard operating procedures, criticism of poor work, and emphasis on high levels of performance” (Chemers, 2000, p. 28). LBDQ evolved into several variations, each of which incorporated statements that
increased the instrument’s reliability. Eventually, leadership theorists suspected additional factors affected leadership style beyond what LBDQ identified. The new approach to leadership theory incorporated contingency or situational factors. LBDQ, however, formed the genesis for several leader behavioral assessment theories such as the Managerial Grid, the Situational Leadership Model, and Least Preferred Coworker.

**Contingency Theory**

Contingency theory addresses the relationship of a leader’s personality and leadership style to situational variables. In addition, contingency theory addresses the interaction between situational variables and a leader’s task-motivation verses relationship-motivation. Nebeker (1975) declared, “The best organizational form or leadership style is contingent upon its appropriateness to a situation or environment” (p. 281). In an effort to provide credibility for this statement, Nebeker (1975) devised a study to integrate Fielder’s contingency model with Lawrence and Lorsch’s contingency organizational theory. Fiedler’s (1971) contingency model of leadership effectiveness emphasizes three salient leadership characteristics: leader-member relations, task structure, and position power. Lawrence and Lorsch (1969) posited that the environment in which the organization conducts its activities influenced an organization’s form or structure, and Nebeker’s (1975) research showed that there is a significant relationship between decision uncertainty and situation environment.

The Vroom-Yetton contingency model of leader behavior (Vroom, 2000) is based on the hypothesis that in order for a leader to be effective, he or she must employ different decision-making processes including autocratic, consultative, or group-oriented, contingent to a particular leadership situation (Goleman, 2000; Jago, Etting, & Vroom, ...)
1985). Situational characteristics mitigate differences between leaders and their natural leadership style (Schriesheim, Tepper, & Tetrauld, 1994). Managers behave situationally and adapt their behavior to the situations in question. In addition, Fiedler (1976) states, “The research on the contingency model shows that effective leadership depends on maintaining the right match of personality and of situation” (p. 15).

Kanuk (1976) hypothesized that the effectiveness of managers could be attributed to his or her affiliation with employees and as well as using a leadership style appropriate to the situation. A study was conducted using the Least Preferred Coworker (hereafter referred to as LPC) method to measure effectiveness of managers in a retail store chain. Results showed that managers with a mid-LPC score were effective in balancing their leadership style to address employee relations and task orientation. The least effective managers had high-LPC scores for employee relationship orientation at the expense of task orientation or had high-LPC scores for task orientation at the expense of employee relationship orientation.

The Contingency Theory of leadership provided the foundation for studies that proved there is a definite link between situational variables, personality, and leadership style. Not only do these components interact, there must be a correct match of personality to a particular situation in order to increase leader effectiveness (Fiedler, 1976). The matching aspect of contingency theory paved the way for leadership theories that focused more intensely on situational phenomenon.

**Situational Leadership**

“Whether a person is successful in a leadership job seems to depend as much on the situation as on the personality and skills he or she brings to the job” (Fiedler, 1981, p.
Consequently, a higher probability of organizational effectiveness may be achieved if the leader can adjust his or her leadership style to the demands of the management situation. Guion and Gottier (1965) submit that using personality measures without considering work situation factors will not produce an accurate prediction of job performance. In order to be consistent and accurate, personality measures should be carefully developed for specific situations.

“Do individual dispositions significantly influence behavior, or are situational forces alone sufficient to predict and explain behavior?” (Tolstoy in House, 1996, p. 1). Tolstoy’s question is important because effective leadership does not depend solely on the person but is influenced by multiple factors including demographics, personal and organizational culture, and situation characteristics. Interaction of these factors and their affect on leadership became the basis for situational leadership research. In particular, the Ohio State University leadership studies of the 1940’s showed that there is a positive link between leader-traits, situational environment, and leadership styles to mitigate situational effects to produce greater leader effectiveness (Hollander, 1979). When studying a situational environment it is important to consider a person’s external needs, self-esteem, motives, and satisfiers like those discovered by Maslow (1998). In addition, it is important to determine a person’s disposition as expressed in personality characteristics (House, 1996).

Yukl (1989) states, “The situational approach emphasizes the importance of contextual factors such as the leader’s authority and discretion, the nature of the work performed by the leader’s unit, the attributes of the subordinates, and the nature of the
external environment” (p. 261). Major situational leadership approaches include the following theories:

1. Path-Goal Theory (House, 1971)
2. Situational Leadership Theory (i.e. Life-Cycle theory of leadership) (Blanchard, 2001a; Blanchard & Hersey, 1996)
3. Managerial Grid Theory (Blake & Mouton, 1985)
4. Leader Substitute Theory (Jermier & Kerr, 1997)
5. Normative Decision Theory (Yukl, 1989)
7. Leader Member Exchange Theory (Bass & Stogdill, 1990)
8. Cognitive Resources Theory (Fiedler & Garcia, 1987)
9. Multiple Linkage Theory (Yukl, 1989)
10. Leader-Environment-Follower-Interaction Theory (Yukl, 1989)

There is a fundamental question in leadership theory as to whether or not there is a single effective leadership style for all situations (Argyris, 1957; Blake & Mouton, 1982; McGregor, 1960) or if leadership style should change with the situation (Blanchard, 2001b; Fielder, 1998; House, 1971). Goleman (2000) discovered six important leadership styles that have a positive effect on organization performance. These leadership styles include coercive, authoritative, affiliative, democratic, pacesetting, and coaching. Effective leaders will use a combination of these leadership styles, moving seamlessly from one style to another, depending on the task situation and subordinate characteristics.

Regarding situational leadership, Graeff (1997) states, “...the continued absence of a well-thought-out rationale to support its existence makes prescriptions regarding leader
behavior vulnerable to a variety of criticisms including ambiguity, a lack of consistency and incompleteness” (p. 162). Situational Leadership Theory however continues to be popular as a commercial leadership-training tool because it appears to be easily understood by many people (Graeff, 1997). Pre-dating Hersey and Blanchard’s Situational Leadership Theory, Tannenbaum and Schmidt (1973) proposed a “continuum of leadership behavior” (p. 164) that incorporates a bipolar scale from authoritative to democratic leadership styles. Use of a particular leadership style depends on situational conditions and subordinate involvement in the problem-solving process. Furthermore, Tannenbaum (1973) states that a successful leader “. . . is one who maintains a high batting average in accurately assessing the forces that determine what his most appropriate behavior at any time should be and in actually being able to behave accordingly” (p. 180).

Blake and Mouton (1982, 1985) posit that the most desirable leadership dimension or attitude is team management where the leader is equally task oriented and people oriented. In this perspective, the leader would have consistent leadership style that will be effective at all levels of a subordinate’s maturity. Hersey and Blanchard (1996), on the other hand, submit that the managerial grid focuses on a leader’s attitudinal dimensions of task-orientation, people-orientation, concern for production, and concern for people while SLII® focuses on leadership style. Blanchard (1996) declares,

We argued that there could be best attitudes for managers but the there was no best leadership style. For example, all managers should be concerned about production and people. But that concerned attitude can be expressed in different leadership styles, depending on the situation. (p. 43)
Path-Goal & Exchange Theories

The primary premise of the exchange and path-goal theories is that leadership effectiveness and subordinate motivation are a manifestation of the benefits derived from a leader-member relationship verses the effort required to create and maintain the relationship. Therefore, the greater the leader’s rewards to followers, the greater the motivation and loyalty of members in exchange for the rewards under consideration (Bass & Stogdill, 1990). Key to effective leader-member exchange (hereafter LMX), however, is member’s trust in their leader (Deluga, 1994; Kouzes & Posner, 1993, 2002). In studies conducted by Deluga (1994) it was suggested that the higher the level of leader trust, the greater the LMX that was connected with organizational effectiveness and employee motivation.

In Path-Goal Theory is a functional approach to leadership that calls for the leader to diagnose the situation and select the functions that will satisfy and motivate subordinates (Schriesheim & Neider, 1996). Primarily the leader’s role is to increase “...personal pay-offs to subordinates for work-goal attainment, make the path to these pay-offs easier to travel by clarifying it, reducing roadblocks and pitfalls, and increasing the opportunities for personal satisfaction en route” (House, 1971; p. 324). These leader tasks appear to relate to the Situational Leadership II model in that these are the types of activities a leader may use along the leadership curve depending on the subordinate’s job maturity and situation environment.

The types of decision-making processes used in an organization are contingent on the organization’s environment and structure. Environment variables stem from both present and anticipated internal and external forces. In order to achieve effectiveness, therefore,
an organization’s management and decision methods, and usually individual leadership styles, are framed by situational factors (Kimberly & Rottman, 1987).

*Management Grid Leadership Model*

The Ohio State University and the University of Michigan studies of the 1940’s formed the genesis of Blake and Mouton’s Managerial Grid III (Bass & Stogdill, 1990; Blake & Mouton, 1985) and it is one of several popular models of leadership style and behavior. The model compares a leader’s degree of concern for people, or relations-orientation, to the leader’s degree of concern for production, or task-orientation. Blake and Mouton (1982) posit that a leader’s skills should be matched to the properties in the situation. The Managerial Grid displays five major leadership styles as follows (Blake & Mouton, 1982, p. 23):

1. “Authority-Obedience management: Maximum concern for production, minimum concern for people.

2. *Country Club* management: Maximum concern for people, minimum concern for production.

3. Impoverished Management: Minimum concern for production, minimum concern for people.

4. *Organization Man* Management: Middle concern for production, middle concern for people.

5. Team management: Maximum concern for production, maximum concern for people.”

According to Blake (1982) if the management situation is concerned with activities of a manufacturing shop floor the most effective management style will probably be style
Authority-Obedience. A management situation involving sales activities may be more successful if a Country-Club style is used. In an environment like the project teams lead by an asphalt pavement construction project manager, the most effective results may be achieved through style five, Team Management. Blake (1966) states, “The Managerial Grid is an intellectual framework of ways that men manage. It is used to summarize management practices and compare them with behavioral science theories” (p. 30).

Bernardin and Alvares (1976) questioned the validity of the Managerial Grid as a predictor of leadership. A study was conducted where test subjects took the Managerial Grid self-assessment before attending an appropriate training session. One week later, after participating in a Managerial Grid training program, the test subjects retook the assessment. Results showed a 32% decline in participant’s rating of their leadership style. Consequently, Bernardin (1976) concluded that the Managerial Grid theory was not a predictor of leadership effectiveness. In rebuttal, Blake and Mouton (Blake & Mouton, 1976) pointed out that it is critical for test participants to attend the appropriate training session before taking any type of leadership self-assessment test; this is especially true for the Managerial Grid assessment.

An important contribution of leadership assessment theories such as the Managerial Grid, Situational Leadership II, and Least Preferred Co-worker is that they link behavioral science concepts to an employee’s learning ability and total organization development (Blake, Mouton, Barnes, & Greiner, 1964). Through the comprehensive research at a large parent firm whose name was disguised as Piedmont and its divisional plant disguised as Sigma, Blake (1964, p. 155) concluded that behavioral science concepts could be transferred into organizational action. Some management scholars
have questioned the efficacy of applying modern management theories to both managerial levels and line levels of an organization. Conventional wisdom dictated that people essentially do not want to work and therefore, have no motivation to self-direct themselves (Blake, Mouton, Sloma, & Loftin, 1968). Studies have showed, however, that training involving modern management theories such as the Managerial Grid, can be efficacious to employees at all levels of an organization. When line employees and upper managers understand the Managerial Grid method, synergy is generated that produces greater organization productivity and efficiency.

In expressing concern that the benefits of the social scientific study of leadership are not being applied enough in practical situations, Hogan (1994) states, “. . . what we know about leadership seems to have little impact on the people who actually make decisions about leadership” (p. 494). This may provide a partial explanation of why the Managerial Grid and Situational Leadership II form the basis of popular commercial leadership training programs. These programs appear to be intuitively appealing to non-academics. That is, non-leadership researchers immediately perceive or mentally understand, without intermediate explanation, the practical application of leadership concepts.

**Situational Leadership II Leadership Model**

Another popular leadership model that has its roots in the Ohio State leadership studies is the Hersey-Blanchard Situational Leadership II model (hereafter SLII®) (Blanchard, 2001b). The model is based on Hersey and Blanchard’s interpretation of propositions derived from empirical research. The propositions are (Bass & Stogdill, 1990, p. 488):
1. “Leadership varies considerably from leader to leader.

2. Some leader’s behavior primarily involves initiating structure to accomplish tasks, other leaders behave to build and maintain good personal relationships, and still others do both or do neither.

3. The most effective behavioral style of leaders is one that varies with the situation.

4. The best altitudinal style is a high task- and a high relations orientation.

5. The job and psychological maturity of the followers is most crucial in determining which behavioral style of leaders will result in the most effectiveness.

6. Maturity relates to the stage in a group’s lifecycle or to the previous education and training of the followers.”

Bass (1990) states, “The most effective leadership is conceived to depend on whether the leader’s task-oriented or relations-oriented behavior matches the subordinate’s maturity” (p. 489).

Situational leadership recognizes the subordinate as the most important factor in determining the most appropriate leader behavior as well as the need for leader flexibility as the leadership situation changes (Graeff, 1983; Blake, 1990). The problem with the SLII® model, however, has been ambiguity regarding what constitutes maturity and lack of theoretical relevance justifying the SLII® task-maturity curve. In SLII® job-level maturity is defined as “… the capacity to set high but attainable goals, the willingness and the ability to take responsibility, and the education and experience of an individual or group” (Blanchard, 1974, p. 27). Research has show that SLII® is useful in predicting leader-follower interaction at low to moderate degrees of job-level maturity but is less effective for high degree of follower job-level maturity (Norris & Vecchio, 1992).
Empirical research has shown that lower job-level employees responded well to monitoring while higher job-level employees responded well to consideration (Fernandez & Vecchio, 1997). Furthermore, it is important to consider other factors such as employee age, employee job tenure, and job-specific personality requirements (Tett et al., 1991).

Leadership effectiveness depends on leadership style as well as the situation environment. Changes to some situational variables may influence other situational variables thus keeping the leadership challenge in a state of flux. Therefore, leaders should anticipate situation changes and proactively adjust their leadership style (Fielder, 1998). Because leaders need to adjust their leadership style over time to match the development changes of work groups, Situational Leadership Theory is useful in instructing leaders in the importance of changing leadership style as group job maturity changes (Blanchard & Hersey, 1996; Kivlighan, 1997; Norris & Vecchio, 1992).

Dhar and Mishra (2001) studied leadership effectiveness and productivity of workers in India. Results of the study showed that a variety of leader behaviors such as coaching, mentoring, and explaining were important in developing subordinate work skills and improving organization productivity. Furthermore, Dhar (2001) concluded that leaders should change their leadership style to encourage subordinates to improve their skill and increase their confidence.

Silverthorne (2001) conducted research on the effect of adaptive and non-adaptive leadership styles on six variables of productivity: absenteeism, turnover rate, quality of work, reject rates, profitability, and units produced. The research study showed that Hersey and Blanchard’s (Bass & Stogdill, 1990) Leadership Effectiveness and
Adaptability Description (hereafter LEAD) to be an accurate predictor of leadership success at using adaptive or non-adaptive leadership styles. Shoda (2001) states, “Over the last ten years, a growing body of research and theory has accumulated that indicates the utility of conceptualizing personality structure and coherence in terms of Person X Situation interactions” (p. 533). It appears, therefore, that there will be efficacy in using personality assessment in conjunction with situational management theories such as the Management Grid or Situational Leadership II in order to accurately predict leadership effectiveness.

Conclusion

The central research question of this study is how does personality type and situational leadership style relate to job tenure among American asphalt pavement construction project managers? Guion and Gottier (1965) submit that using personality measures without considering work situation factors will not produce an accurate prediction of job performance. In order to be consistent and accurate, personality measures should be carefully developed for specific situations. Leader behavior depends on the way a person’s personality interacts with his or her leadership situation. It is important for a leader to move seamlessly between leadership styles as situational variables change.

The evidence presented in this literature review shows that there is precedence for using personality assessment as a predictor of leadership success and that leadership assessment instruments, especially those based on leadership models derived from Ohio State University studies and University of Michigan research, can effectively predict prominent leadership style and leadership success. The Ohio State studies formed the
genesis for two prominent leadership models, the Managerial Grid III and Situational Leadership II. For the Managerial Grid theory, Blake and Mouton emphasize attitudinal dimensions such as concern for people and concern for production, task orientation, and people orientation. Hersey and Blanchard (1996), however, place emphasis on the dynamic state of leadership style and declare, “We argue that there could be one best attitude. . .but no best leadership style” (Blanchard, 1996, p. 43). For instance, Goleman (2000) posits that there are six major leadership styles: coercive, authoritative, affiliatative, democratic, pacesetting, and coaching. The key to leadership effectiveness is determining under which situations to employ a given style and when to switch to a different style. Goleman (2000) recommends that leaders master as many of the six leadership styles as possible and use them to create a state of fluid leadership as situation variables change. It appears that Hersey and Blanchard’s Situational Leadership model may help construction project managers to clearly understand fluid leadership as it relates to subordinate’s job-level maturity and situational states. It could, therefore, be efficacious in improving project manager leadership success, increase job satisfaction, and lengthening job tenure.

Summary

Leadership is often defined relative to our perspectives of particular people we admire, believe and are willing to support. In this great man leadership theory, leaders appeal to our specific ethnic, religious, cultural, political, or national characteristics. This relatively one dimensional approach allows the leadership process to be less demanding because the homogeneity of the followers allows a leader to generate energy that will naturally move his or her followers toward their common goal. A calm, tenacious
individual can organize the followers and easily lead them to achieve their goal. This same individual, however, may fail as a leader if he or she had to organize a multi-dimensional group.

Leadership theory became more comprehensive and distinctly occidental in nature after British colonization of North America and development of a federalist mentality within the colonies. The successful American Revolution against England and American Civil War created the foundation for an industrial revolution in the United States. Bureaucratic organization structure, a homogeneous work force, and authoritarian leadership theories typified American leadership (Jacques, 1996). In the early 20th century, leadership theory began to incorporate a personality trait perspective as well as job related skills-based attributes as the basis of determining leadership qualifications. When it became evident that job skills and personality traits were not adequate predictors of leadership success, leadership theorists began to consider behavioral and situational characteristics as well. The result was the establishment of research organizations at notable academic institutions such as Ohio State University and the University of Michigan that focused studies on the interaction between personality, psychological characteristics, and situational variables to produce leadership success (Barrick et al., 2001; House & Aditya, 1997). Ultimately, the Ohio State studies served as the genesis for popular leadership theories such as the Managerial Grid III and Situational Leadership II.

The Managerial Grid III and Situational Leadership II sought to provide a basis for understanding leader behavior relative to situational variables and follower’s characteristics. In particular, the Hersey and Blanchard (2001b) Situational Leadership II model lends itself as an effective device for understanding leader behavior relative to
variations in situational characteristics and subordinate’s behavior. Therefore, SLII® may be an effective tool to improving a construction project manager’s understanding of his or her job environment variables. The ultimate goal will be to improve the project manager’s job satisfaction and increase his or her job-tenure while enabling the project manager to become a leader that can kindle the vision and energy of their co-workers through sincerity and enthusiasm while providing direction to achieve a common goal.
CHAPTER 3: RESEARCH DESIGN

The National Asphalt Pavement Association (hereafter NAPA) declared that project manager employee retention is a problem within the asphalt pavement construction industry. In prior years turnover has been as high as 20% (Liska, 1999). Concern that non-financial, factors may influence project manager dissatisfaction and job tenure to a greater extent than previously considered. Factors might be differences in leadership style and personality type between project managers, their managers, and support staff. The intent of this quantitative research is to survey project managers who have three or more years experience and are employed by 30 NAPA-member asphalt pavement construction firms in the Western United States located between the Mississippi River and the Pacific coast. The validated instruments, DiSC® Personal Profile System and Leadership Behavior Analysis II™, will be used to gather data in order to examine leadership style and personality type as possible factors that might impact employee retention of project managers.

Personality type predicted leadership emergence across a variety of people and settings. Furthermore, Lord (1986) states, “In short, personality traits are associated with leadership emergence to a higher degree and more consistently than popular literature indicates” (p. 407). Barrick and Mount (1993) have found a significant association between personality and job performance. In addition, the combination of leadership style and personality type/communication style appears to meld into a psychological combination that produces the ethos of a leader. “Leaders are not just identified by their leadership styles, but also by their personalities, their awareness of themselves and
others, and their appreciation of diversity, flexibility, and paradox” (Handbury, 2001, p. 11). McGregor (1960) states, “It is quite unlikely that there is a single basic pattern of abilities and personality trait characteristics of all leaders. The personality characteristics of the leader are not unimportant, but those which are essential differ considerably depending on the circumstances” (p. 180). Therefore, it may indeed, make a difference in ascertaining personality type/communication style in order to determine the correct job match between a construction project manager and his or her colleagues.

Research Design

According to NAPA and the U.S. Department of Labor (Hooper, 2004), project manager retention is a problem within the construction industry. The Construction Industry Executive Forum believes that in order for a construction firm to achieve long-term success, employee retention must be greater than 80% per year. Lucrative financial compensation alone does not appear to insure long-term job retention and NAPA has expressed concern that non-financial, intrinsic factors may influence project manager dissatisfaction and job tenure to a greater extent than previously considered. These factors include differences in leadership style and personality type between project managers, their managers, and support staff. It is important, therefore, to determine the extent to which the independent variables, personality type, leadership style, and personal demographics affect the dependent variable, project manager job tenure.

The hypotheses of this research study relate directly to personality and leadership dimensions. The personality dimension is part of the foundation for establishing successful relationships with colleagues. Chemers (1997) states,

A person does not become a leader by virtue of the possession of some combination of traits, but the pattern of personal characteristics of the leader must bear some
relevant relationship to the characteristics, activities, and goals of the followers. (p. 20)

In addition, personality may make the difference in establishing a positive relationship between the leader and followers (Chemers, 1997). Therefore, the hypothesis for the personality dimension is:

Ho1: Personality type is not related to job tenure.

H1: Personality type is positively related to job tenure.

Fiedler (2000) states, “The effectiveness of a group is contingent upon the relationship between leadership style and the degree to which the group situation enables the leader to exert influence” (p. 97). Supervisors who have a leadership style similar to their managers tend to be more productive than those who have conflicting leadership styles. In addition, supervisors who have leadership styles relative to the situation that is expected by their subordinates tend to achieve successful results (Bass, 1990).

The LBAII® leadership instrument measures a leader’s flexibility and effectiveness. The Flexibility Score is a numerical indicator of how often the respondent used a different leadership style to solve each of the twenty hypothetical situations presented in the LBAII®. The more often a respondent chooses a single style to solve the twenty situations, the lower their flexibility. Conversely, the more frequently a respondent chooses different leadership styles the greater their flexibility. In addition, the LBAII® measures leadership effectiveness. The Effectiveness Score represents the number of times a respondent uses the appropriate leadership style in each of the twenty situations (Blanchard, 2001). Therefore, the hypotheses for leadership flexibility and effectiveness are:
Ho2: Leadership style Flexibility score is not related to job tenure.

H2: Leadership style Flexibility score is positively related to job tenure.

Ho3: Leadership style Flexibility score is not related to job tenure.

H3: Leadership style Effectiveness score is positively related to job tenure.

The Project Manager Questionnaire, presented in Appendix E, is designed to gather personal demographic data from each respondent. These data used in a multiple regression formula in order to determine if there is correlation between demographics and job tenure.

Instruments

The choice of personality test instrument is made based on instrument cost, ease of administration, complexity of scoring process, and intuitive appeal. The DiSC® Personal Profile System (Marston, 2001; The Personal Profile System 2800 series, 1996) has been selected for this research project because it best satisfies the requirements for a detailed but manageable instrument and has earned a statistically reliable reputation over 20 years of use. Furthermore, it provides acceptable information across four behavior dimensions: dominance, influence, steadiness, and conscientiousness. This information can be logically compared to the dimensions described in several leadership models such as the Five-Factor Model (A comparison of the Personal Profile System, 1996), Blake and Mouton’s (1985) Managerial Grid, and Hersey and Blanchard’s (Blanchard, 2001b) Situational Leadership II Model (hereafter SLII®).

The DiSC® Personal Profile System uses a 28-point index to measure the intensity of the four behavior dimensions and relates the measurements in a four-segment number. The segment number corresponds to one of 18 possible personality patterns as shown in
Appendix C. The four-segment number may easily be incorporated into multiple regression analysis to relate personality profile to project manager job tenure.

In 1974, Hersey and Blanchard developed the Leader Adaptability and Style Inventory or LASI (Bass, 1990). The goal was to create a test instrument to provide data that could be applied to the Situational Leadership Model. Refinement of the instrument over several years produced the Leadership Effectiveness and Adaptability Description or LEAD. Since the 1970’s, LEAD has been refined continuously to become what is now known as the Leader Behavior Analysis II instrument (hereafter LBAII®). Research has found that the results of the instrument correlate significantly with the progress of manager’s careers (Bass, 1990). The LBAII® leadership effectiveness and flexibility scores are represented as a four-digit measure of leadership intensity in the same four dimensions used in the SLAI® model:

- **S1**: High directive and low supportive behavior
- **S2**: High directive and high supportive behavior
- **S3**: Low directive and high supportive behavior
- **S4**: Low directive and low supportive behavior.

The Project Manager Questionnaire, Appendix E, is designed to gather personal demographic data from each respondent. These data used in a multiple regression formula in order to determine if there is significant correlation between demographics and job tenure. In addition, questionnaire data will provide information regarding company size in sales revenue, gender, race, and level of education. A specific demographic element, performance evaluations, may have significant correlation to job tenure.
Validity

The DiSC® Personal Profile System and LBAII® are primarily designed to be self-administered test instruments that provide consistent, accurate results (The Personal Profile System 2800 series, 1996). An important aspect of self-administered instruments is that a specialized or certified administrator is not required to supervise or interpret the test results. This aspect improves the ease of simultaneously conducting a survey over a wide geographic area. Furthermore, the test instruments are of short duration so that survey participants may more likely complete and return the survey in a timely fashion.

The DiSC® Personal Profile System describes how people view themselves in their various environments whereas test instruments like the “. . . Myers-Briggs Type Indicator describes how people approach the environment intellectually and attitudinally and how they process the information” (A comparison of the Personal Profile System, 1996). DiSC® helps explain a person’s response to a particular situation thereby making the instrument well suited for this research project. In addition, previously obtained personality scores have shown to consistently and accurately predict personality type (DiSC Classic and models of personality, 1996; A comparison of the Personal Profile System, 1996).

LBAII® is specifically designed to measure leadership type relative to various situations. Previous tests have shown consistent results in predicting leadership type. Furthermore, LBAII® has a reputation for being easily understood by non-academic people (Bass, 1990), which should make the test instrument well suited for self-administration.
DiSC® and LBAII® have a reputation for accurately measuring personality type and leadership style. Results produced by the test instruments have proven to be valid and consistent for a variety of organizations (Blanchard, 1999; DiSC Classic and models of personality, 1996). In addition, being self-test instruments mitigates behavioral and test environment conditions. DiSC® and LBAII® should produce consistent, objective test results that can effectively be subjected to correlation analysis to produce meaningful data for analyzing employee retention of project managers employed by Western United States-based asphalt pavement firms.

Methodology Appropriateness

Correlational analysis has been used successfully to show the relationship between personality characteristics, leadership style, and job satisfaction or career success (Barrick & Mount, 1991; Hurtz & Donovan, 2000; Judge & Higgins, 1999; Salgado, 2003). Industries studied in prior research include nursing, education, sales, government, and military. There is no evidence of similar research being conducted in the heavy construction or asphalt pavement construction industries. Therefore, based on the success of prior studies and ease of replication, correlation analysis using data derived from validated test instruments appears appropriate for this research project.
This quantitative study will systematically progress through five stages of activity as follows:

1. Develop problem statement and hypothesis
2. Review of relevant literature concerning personality type/communication style and leadership style
3. Obtain signed permission form to act as a research participant.
4. Distribute test instruments and demographic questionnaire to research participants in targeted test organizations
5. Data compilation and analysis
6. Formulate conclusions and suggest recommendations.

Using NAPA’s membership list, 30 asphalt pavement construction companies located in the Western United States between the Mississippi River and the Pacific coast will be chosen for the research survey. Four project managers will receive a test package consisting of a letter of transmittal, the informed consent form shown in Appendix F, a demographic questionnaire as shown in Appendix E, and one each of the DiSC® and LBAII® assessment instruments. If the research results generated from this initial sample show positive correlation between leadership style and personality type to job tenure, it may be possible justify expanding the study to include all members of NAPA.

The questionnaire and test instruments will be enclosed in a separate envelope identified as containing the returnable items. Strict confidentiality will be maintained. Names of participants will not be publicized or shared with any organization. Participant’s responses and corresponding data files will be stored in a locked container that will be maintained by the researcher for two years after the conclusion of this
research study. In order to maintain confidentiality while organizing participant’s responses, each test subject will be assigned a unique identification number. This number will be displayed on a white label attached to the back of each returnable item. The front of each test document will have a bright orange sticker identifying the form as a returnable item. A stamped return envelope will be included in each survey package. Reminder letters will be sent to survey recipients as the return deadline approaches and a follow up telephone call will be made as a last effort to retrieve the survey items. The following preliminary project schedule shows the order of specific research activities:

1. Obtain NAPA’s membership list
2. Order DiSC® and LBAII® test booklets
3. Select firms for survey
4. Mail letters and survey-document packets containing the following documents:
   a. Letter of transmittal
   b. DiSC® and LBAII® assessment booklets, and demographic survey
5. Survey follow up
   a. First follow up letter two weeks after survey-document mailing
   b. Second follow up letter three weeks after survey-document mailing
   c. Telephone call four weeks after survey-document mailing
6. Data preparation and tabulation
   a. Check DiSC® and LBAII® assessment booklets, and demographic survey for data errors and omissions
   b. Enter responses into database
7. Compute descriptive statistics
8. Perform hypothesis testing and develop research conclusions

After the survey response forms are received, the survey instruments will be inspected for errors and omissions and then entered into a multi-table database for preliminary statistical analysis. The analysis application, PM-Analysis, was developed using Microsoft Access 2007 Database Management System and specifically designed for this research project. The database consists of four tables. Database table 1, Subject_ID_Xref, will contain the test subject’s basic identification data consisting of the person’s name, contact data, and a unique alphanumeric identification that will be associated with the person’s survey responses. The Subject_ID will be the primary data key for all database tables. Using this process, anonymity will be preserved by preventing the test subject’s name from being directly associated with any of their responses.

Database table 2, DISC_Response, will contain responses from the DiSC® Personality Profile System. The test subject’s responses will consist of a four-segment number as shown in Appendix C, ranging in value from one to 28. Each data record will consist of a column for each segment of the DiSC® response, a column for the corresponding Personality Profile Pattern, and a Personality Profile Index. The Personality Profile Index number as shown in Table 3 is a numeric cross-reference to personality type. Using a numeric index will enable the personality type data to be easily processed during correlation analysis.
After responses from the Leader Behavior Analysis questionnaire are tabulated, the numeric scores will be stored in database table 3, *LBAII_Response*. Each data record will contain a Subject-ID, leader effectiveness score, leader flexibility score, and primary leadership type.

The fourth database table, *PM_Questionnaire*, will contain the data from the Project Manager Questionnaire shown in Appendix E. Many of the questions are numeric values such as the number of years a person has worked as a project manager. Questions that have bi-polar answers such as strongly-agree or strongly-disagree will be coded using a scale of 1-5 where the value 1 will indicate strongly-disagree responses while the value 5 will indicate strongly-agree responses.

<table>
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<tr>
<th>Segment Number Range</th>
<th>Personality Profile Pattern</th>
<th>Personality Profile Index</th>
</tr>
</thead>
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<td>Inspirational</td>
<td>1</td>
</tr>
<tr>
<td>7677-5151</td>
<td>Achiever</td>
<td>2</td>
</tr>
<tr>
<td>7647-5115</td>
<td>Creative</td>
<td>3</td>
</tr>
<tr>
<td>7559-5411</td>
<td>Results-Oriented</td>
<td>4</td>
</tr>
<tr>
<td>7477-5155</td>
<td>Investigator</td>
<td>5</td>
</tr>
<tr>
<td>7244-5111</td>
<td>Developer</td>
<td>6</td>
</tr>
<tr>
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<td>Appraiser</td>
<td>7</td>
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<tr>
<td>5774-1551</td>
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<td>5544-3343</td>
<td>Tight</td>
<td>11</td>
</tr>
<tr>
<td>4777-1545</td>
<td>Practicioner</td>
<td>12</td>
</tr>
<tr>
<td>4744-1511</td>
<td>Promoter</td>
<td>13</td>
</tr>
<tr>
<td>4477-1155</td>
<td>Perfectionist</td>
<td>14</td>
</tr>
<tr>
<td>4474-1151</td>
<td>Specialist</td>
<td>15</td>
</tr>
<tr>
<td>4447-1115</td>
<td>Objective-Thinker</td>
<td>16</td>
</tr>
<tr>
<td>7777-5555</td>
<td>Overshift</td>
<td>17</td>
</tr>
<tr>
<td>3333-1111</td>
<td>Undershift</td>
<td>18</td>
</tr>
</tbody>
</table>
The PM_Analysis application program will serve as a central repository for all survey data. Because the application program is a relational database, reports can be generated based on various perspectives as required to interpret the data. In addition, reports will be generated in Microsoft Excel spreadsheet format in order to be used as input data for the Minitab® 15.1.30.0 statistical analysis software for producing descriptive statistical results and for performing correlation analysis.

Data will be cross tabulated in the following categories: leadership effectiveness, leadership flexibility as measured by LBAII®, personality type as measured by DiSC®, and average job tenure. The descriptive statistics include measures of central tendency, variability, and relative standing. Correlation analysis, using the Pearson product-moment correlation coefficient (Aczel, 1996; Creswell, 2002) will be used to determine the strength of the relationship between the data from each category. Results of the correlation analysis will show if the null hypothesis should be rejected and show if a statistically significant difference or relationship is found between personality type, leadership effectiveness, leadership flexibility, and job-tenure.

After computation of descriptive statistics and correlation analysis, the data will be presented in a correlation table, charts and graphs to portray the relationship between the dependent and independent variable. A detailed explanation will accompany the graphical and tabular results.

Conclusion

Short job tenure of project managers has been a problem in the heavy construction industry. Typically, lucrative financial rewards have failed to retain these key personnel. The job retention problem may relate to tension caused by incompatible personalities and
leadership styles between project managers and their managers. This research project will focus on these factors to determine the correlation between personality, leadership style, and job tenure. Validated survey instruments, the DiSC® Personal Profile System and LBAII® will be used to gather personality type, leadership style, and demographic data from asphalt pavement construction firms based in the Western United States between the Mississippi River and the Pacific coast. The findings may assist managers to effectively match project managers and supervisors thereby, increasing job tenure, and increasing the organization’s leadership capability.
CHAPTER 4: PRESENTATION AND ANALYSIS OF DATA

Long-term retention of project managers is a problem within the construction industry with turnover frequently as high as 20% (Liska, 1999). Concern has been expressed that non-financial factors may influence project manager dissatisfaction and job tenure to a greater extent than previously considered. Factors might be differences in leadership style and personality type between project managers, their managers, and support staff. The intent of this quantitative research was to survey project managers who have three or more years experience and were employed by 30 NAPA-member asphalt pavement construction firms in the Western United States located between the Mississippi River and the Pacific coast. The validated instruments, DiSC® Personal Profile System and Leadership Behavior Analysis II™, were used to gather data in order to examine leadership style and personality type as possible factors that might impact employee retention of project managers. This chapter presents the descriptive statistics and summary of the data acquired from the instruments used in this project.

General Survey Results

Survey packets were distributed to 300 participants and 191 were returned. Of the returned survey packets 98 were materially incomplete thereby making the results unusable for analysis. In addition, nine packets were missing some of the survey instruments and therefore could not be considered for analysis. Consequently, 84 survey packets contained all of the requested survey documents and were completed according to instructions thereby qualifying them for inclusion in this study. These documents were used as the basis for the quantitative analysis in this project. Statistical results were generated with the computer statistical software Minitab® 15.1.30.0.
Company size, Appendix E question nine, was based on annual sales volume. Size ranged from firms as small as $20 Million to organizations over $100 Million as shown in Table 4 and displayed in Figure 1. The data indicate that the mean company size was $50-$60 Million, standard deviation of 1.76, with the smallest firm in the $20-$30 Million range and the largest firm in the $100-$150 Million range.

Table 4

<table>
<thead>
<tr>
<th>Total Count</th>
<th>Mean</th>
<th>SE Mean</th>
<th>StDev</th>
<th>Minimum</th>
<th>Median</th>
<th>Maximum</th>
<th>Mode</th>
<th>N for Mode</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>84</td>
<td>$59M</td>
<td>0.191</td>
<td>1.755</td>
<td>$20M-$30M</td>
<td>$40M</td>
<td>$100M-$150M</td>
<td>$40M</td>
<td>27</td>
<td>0.32</td>
<td>-1.36</td>
</tr>
</tbody>
</table>

Figure 1

Annual Sales Volume of Subject’s Company

Leadership Dimension

The leadership dimension of this study was based on the Hersey-Blanchard Situational Leadership II model (hereafter SLII®) (Blanchard, 2001b). The model is
based on Hersey and Blanchard’s interpretation of propositions derived from empirical research. The propositions are (Bass & Stogdill, 1990, p. 488):

A. “Leadership varies considerably from leader to leader.

B. Some leaders’ behavior primarily involves initiating structure to accomplish tasks, other leaders behave to build and maintain good personal relationships, and still others do both or do neither.

C. The most effective behavioral style of leaders is one that varies with the situation.

D. The best altitudinal style is a high task- and a high relations orientation.

E. The job and psychological maturity of the followers is most crucial in determining which behavioral style of leaders will result in the most effectiveness.

F. Maturity relates to the stage in a group’s lifecycle or to the previous education and training of the followers.”

The SLI® model measures leadership along two dimensions, directive behavior and supportive behavior. The degree of directive and supportive behavior indicate which of four primary leadership styles is practiced by a leader. These primary leadership styles are Directing, Coaching, Supporting, and Delegating as displayed in Appendix A and Table 5. The Directing leadership style is characterized by the leader – subordinate relationship being guided by the leader defining goals, setting priorities, and teaching job functions. As a subordinate gains job experience, the Coaching leadership style is employed to involve the subordinate in goal setting and developing action plans. With increased job experience the leader may adopt a Supporting leadership style where the subordinate is encouraged to take the lead in goal setting, action setting, and problem solving. When a subordinate ascends to a high level of job maturity, their leader can use
the Delegating leadership style where the subordinate is expected to take charge of the job situation and maintain good communication with organization members. The salient characteristics of each leadership style are summarized in Table 5 (Blanchard, K., 2001b).

Table 5
*SLII® Primary Leadership Style Characteristics*

<table>
<thead>
<tr>
<th>Primary Leadership Style (S)</th>
<th>Style Characteristics</th>
<th>Behavior Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>S1 - Directing</strong></td>
<td>Defining, Planning, Orienting, Teaching, Showing, Checking, Monitoring, Giving Feedback</td>
<td>High Directive, Low Supportive</td>
</tr>
<tr>
<td><strong>S2 - Coaching</strong></td>
<td>Exploring, Asking, Explaining, Clarifying, Redirecting, Sharing Feedback, Encouraging, Praising</td>
<td>High Directive, High Supportive</td>
</tr>
<tr>
<td><strong>S3 - Supporting</strong></td>
<td>Asking, Listening, Reassuring, Facilitating self-reliant, problem solving, Collaborating, Encouraging Feedback, Appreciating</td>
<td>Low Directive, High Supportive</td>
</tr>
<tr>
<td><strong>S4 - Delegating</strong></td>
<td>Allowing, Trusting, Confirming, Empowering, Acknowledging, Challenging</td>
<td>Low Directive, Low Supportive</td>
</tr>
</tbody>
</table>
Using the Leader Behavior Analysis II (hereafter LBAII\textsuperscript{\textregistered}) instrument, it was possible to determine a survey participant’s primary leadership style, leadership style flexibility, and leadership style effectiveness. Leadership flexibility is based on a score determined by LBAII\textsuperscript{\textregistered} and is a numerical indicator of how often the respondent used different leadership styles to solve each of 20 unique leadership situations presented in the assessment instrument. The more frequently the survey respondent selected the same style in each leadership situation the lower their flexibility. Conversely, the more frequently the respondent selected a different leadership style for each leadership situation, the greater the degree of flexibility. LBAII\textsuperscript{\textregistered} incorporates a style flexibility graph that measures leader flexibility on a scale of zero to 30 with 14 to 20 considered the norm. Scores greater than the norm indicate a high degree of leader flexibility and scores less than 20 indicating a low degree of leadership flexibility.

Leadership flexibility scores are further used to determine the respondent’s primary and secondary leadership styles. The leadership style most used in answers to the LBAII\textsuperscript{\textregistered} scenarios is identified as the primary leadership style. The second most frequently used leadership style is identified as the secondary leadership style.

Leadership effectiveness is based on a score determined by LBAII\textsuperscript{\textregistered} and is a numerical indicator of how often the respondent used the correct leadership styles to solve each of 20 hypothetical leadership situations. The more frequently the survey respondent selected the correct style in each leadership situation the greater their leader effectiveness. LBAII\textsuperscript{\textregistered} incorporates a style effectiveness graph that measures leader effectiveness on a scale of 20 to 80 with 50 to 59 considered the norm. Scores greater than the norm indicate a high degree of leader effectiveness.
Tabular data for primary leadership styles of the respondents in this study are presented in Table 6 and graphically represented in Figure 2.

Table 6
*Frequency Table of Primary Leadership Styles*

<table>
<thead>
<tr>
<th>Primary Leadership Style</th>
<th>Count</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1 - Directing</td>
<td>7</td>
<td>8.33%</td>
</tr>
<tr>
<td>S2 - Coaching</td>
<td>7</td>
<td>8.33%</td>
</tr>
<tr>
<td>S3 - Supporting</td>
<td>69</td>
<td>82.14%</td>
</tr>
<tr>
<td>S4 - Delegating</td>
<td>1</td>
<td>1.19%</td>
</tr>
<tr>
<td>Total N</td>
<td>84</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

Average 8
Median 8
Mode 7
SD 1.472

Figure 2
*Primary Leadership Styles*

The data clearly indicate that at 82%, the majority of project manager personnel exhibited a Supporting leadership style to their subordinates. The minority of project manager’s exhibited Coaching or Directing leadership styles at 8.33% each.
Secondary leadership style was more evenly distributed than the primary leadership style. Table 7 and Figure 3 presents data that show almost 37% of the respondents had a Coaching secondary leadership score while about 31% exhibited a Supporting style.

Table 7
Frequency Table of Secondary Leadership Styles

<table>
<thead>
<tr>
<th>Secondary Leadership Style</th>
<th>Count</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1 - Directing</td>
<td>19</td>
<td>22.62%</td>
</tr>
<tr>
<td>S2 - Coaching</td>
<td>31</td>
<td>36.90%</td>
</tr>
<tr>
<td>S3 - Supporting</td>
<td>26</td>
<td>30.95%</td>
</tr>
<tr>
<td>S4 - Delegating</td>
<td>8</td>
<td>9.52%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>84</strong></td>
<td><strong>100.00%</strong></td>
</tr>
</tbody>
</table>

Figure 3
Secondary Leadership Style

LBAII® leadership style flexibility scores varied from 9 to 26 with 51% of the respondents scoring above the norm thereby indicating a high degree of leader flexibility.

Slightly over 14% of the respondents scored within the LBAII® norm while only 2%
scored below the norm of 14 to 20. The leadership style flexibility data are summarized in Table 8 and presented graphically in Figure 4.

Table 8
Frequency Table of Leadership Style Flexibility

<table>
<thead>
<tr>
<th>Flexibility Score</th>
<th>Count</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>1</td>
<td>1.19%</td>
</tr>
<tr>
<td>13</td>
<td>1</td>
<td>1.19%</td>
</tr>
<tr>
<td>14</td>
<td>6</td>
<td>7.14%</td>
</tr>
<tr>
<td>15</td>
<td>7</td>
<td>8.33%</td>
</tr>
<tr>
<td>16</td>
<td>9</td>
<td>10.71%</td>
</tr>
<tr>
<td>18</td>
<td>1</td>
<td>1.19%</td>
</tr>
<tr>
<td>19</td>
<td>7</td>
<td>8.33%</td>
</tr>
<tr>
<td>20</td>
<td>9</td>
<td>10.71%</td>
</tr>
<tr>
<td>21</td>
<td>15</td>
<td>17.86%</td>
</tr>
<tr>
<td>22</td>
<td>7</td>
<td>8.33%</td>
</tr>
<tr>
<td>23</td>
<td>11</td>
<td>13.10%</td>
</tr>
<tr>
<td>26</td>
<td>10</td>
<td>11.90%</td>
</tr>
<tr>
<td>Total N</td>
<td>84</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

Average 20
Median 21
Mode 21
SD 3.83

Figure 4
Leadership Style Flexibility with Normal Curve
The leadership effectiveness scores ranged from 46 to 69 with 69% of the respondent scores being above normal thereby indicating a higher than normal degree of effectiveness where the normal range is 50 to 59. Approximately 30% of the respondent scores were in the LBAII® norm range. The leadership style effectiveness data is summarized in Table 9 and graphically displayed in Figure 5.

Table 9
*Frequency Table of Leadership Style Effectiveness*

<table>
<thead>
<tr>
<th>Effectiveness Score</th>
<th>Count</th>
<th>Percent</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>46</td>
<td>1</td>
<td>1.19%</td>
<td>Below Normal</td>
</tr>
<tr>
<td>50</td>
<td>1</td>
<td>1.19%</td>
<td></td>
</tr>
<tr>
<td>53</td>
<td>1</td>
<td>1.19%</td>
<td></td>
</tr>
<tr>
<td>54</td>
<td>4</td>
<td>4.76%</td>
<td></td>
</tr>
<tr>
<td>55</td>
<td>7</td>
<td>8.33%</td>
<td></td>
</tr>
<tr>
<td>56</td>
<td>3</td>
<td>3.57%</td>
<td></td>
</tr>
<tr>
<td>57</td>
<td>3</td>
<td>3.57%</td>
<td></td>
</tr>
<tr>
<td>58</td>
<td>6</td>
<td>7.14%</td>
<td></td>
</tr>
<tr>
<td>59</td>
<td>9</td>
<td>10.71%</td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>4</td>
<td>4.76%</td>
<td>Normal</td>
</tr>
<tr>
<td>61</td>
<td>11</td>
<td>13.10%</td>
<td></td>
</tr>
<tr>
<td>62</td>
<td>5</td>
<td>5.95%</td>
<td></td>
</tr>
<tr>
<td>63</td>
<td>4</td>
<td>4.76%</td>
<td></td>
</tr>
<tr>
<td>64</td>
<td>3</td>
<td>3.57%</td>
<td></td>
</tr>
<tr>
<td>65</td>
<td>6</td>
<td>7.14%</td>
<td>Above Normal</td>
</tr>
<tr>
<td>66</td>
<td>7</td>
<td>8.33%</td>
<td></td>
</tr>
<tr>
<td>67</td>
<td>6</td>
<td>7.14%</td>
<td></td>
</tr>
<tr>
<td>68</td>
<td>1</td>
<td>1.19%</td>
<td></td>
</tr>
<tr>
<td>69</td>
<td>2</td>
<td>2.38%</td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>84</td>
<td>100.00%</td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td>61</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median</td>
<td>61</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mode</td>
<td>61</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>4.665934</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Personality Dimensions

Personality type predicted leadership emergence across a variety of people and settings. Furthermore, Lord (1986) states, “In short, personality traits are associated with leadership emergence to a higher degree and more consistently than popular literature indicates” (p. 407). Barrick and Mount (1993) have found a significant association between personality and job performance. In addition, the combination of leadership style and personality type appears to meld into a psychological combination that produces the ethos of a leader. McGregor (1960) states, “It is quite unlikely that there is a single basic pattern of abilities and personality trait characteristics of all leaders. The personality characteristics of the leader are not unimportant, but those which are essential differ considerably depending on the circumstances” (p. 180). Therefore, it may indeed, make a
difference in ascertaining personality type/communication style in order to determine the potential of a project manager having long job tenure in the heavy-construction industry.

The DiSC® Personal Profile system measures four personality dimensions as listed in Table 10: Dominance (D), Influence (i), Steadiness (S), and Conscientiousness (C). The intensity of each dimension is displayed vertically on a bi-polar scale, as displayed in Appendix C, consisting of negative to positive values that correspond to the respondent’s answers to the DiSC® test instrument.

Table 10

**Personality Dimensions of Behavior**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Salient Characteristic</th>
<th>Scale Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dominance (D)</td>
<td>Empahsis is on shaping the environment by overcoming opposition to accomplish results</td>
<td>-27 to +27</td>
</tr>
<tr>
<td>Influence (i)</td>
<td>Empahsis is on shaping the environment by influencing or persuading others.</td>
<td>-26 to +28</td>
</tr>
<tr>
<td>Steadiness (S)</td>
<td>Empahsis is on cooperating with others within the existing circumstances to carry out the task</td>
<td>-26 to +24</td>
</tr>
<tr>
<td>Conscientiousness (C)</td>
<td>Empahsis is on working conscientiously within existing circumstances to ensure quality and accuracy.</td>
<td>-27 to +26</td>
</tr>
</tbody>
</table>

In addition, the vertical scales are divided into seven horizontal segments that have values that range from one to seven. Depending on the respondent’s answers to the DiSC® questionnaire, each of the personality dimension values will correspond to a segment specific segment number. These segment numbers form a four digit identifier that are listed in a table that corresponds with one of 18 “Classic Profile Patterns” as displayed in Appendix C (Inscape, 1996) and listed in Table 3. A segment number of
2167 for example, would indicate the following relative personality dimension values:

A. Dominance (D) = 2 (Low)

B. Influence (i) = 1 (Low)

C. Steadiness (S) = 6 (High)

D. Conscientiousness (C) = 7 (Very High).

The corresponding Classical Profile Pattern 2167 indicates the respondent is a “Perfectionist” according to the Personality Profile Patterns listed in Table 3. The salient characteristics of this personality profile are: displaying competence, is restrained, and cautious (Inscape, 1996).

This study measured the personality profiles of 84 respondents. The consolidated results are presented in Table 11 and displayed graphically in Figure 6.

Table 11

<table>
<thead>
<tr>
<th>Segment Number</th>
<th>Classical Profile Pattern</th>
<th>Count</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>4445</td>
<td>Tight</td>
<td>7</td>
<td>8.33%</td>
</tr>
<tr>
<td>5227</td>
<td>Creative</td>
<td>8</td>
<td>9.52%</td>
</tr>
<tr>
<td>5343</td>
<td>Developer</td>
<td>11</td>
<td>13.10%</td>
</tr>
<tr>
<td>5615</td>
<td>Appraiser</td>
<td>7</td>
<td>8.33%</td>
</tr>
<tr>
<td>6225</td>
<td>Creative</td>
<td>8</td>
<td>9.52%</td>
</tr>
<tr>
<td>6234</td>
<td>Developer</td>
<td>7</td>
<td>8.33%</td>
</tr>
<tr>
<td>6316</td>
<td>Creative</td>
<td>15</td>
<td>17.86%</td>
</tr>
<tr>
<td>6424</td>
<td>Results-Oriented</td>
<td>7</td>
<td>8.33%</td>
</tr>
<tr>
<td>6523</td>
<td>Results-Oriented</td>
<td>7</td>
<td>8.33%</td>
</tr>
<tr>
<td>6532</td>
<td>Inspirational</td>
<td>7</td>
<td>8.33%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>84</td>
<td>100.00%</td>
</tr>
</tbody>
</table>
The data listed in Table 11 indicates duplicate personality profile patterns for the Creative (5227, 6225, 6316), Developer (5843,6234), and Result-Oriented (6424,6523) patterns. As presented in Table 12, these Classical Profile Patterns have similar characteristics thereby enabling the patterns to be consolidated without distorting the data. Consolidated results are displayed in Figure 7.

**Table 12**  
*Classical Profile Pattern Similarities*

<table>
<thead>
<tr>
<th>Classical Profile Pattern</th>
<th>Segment Number</th>
<th>D</th>
<th>i</th>
<th>S</th>
<th>C</th>
<th>Segment Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creative</td>
<td>5227</td>
<td>5</td>
<td>2</td>
<td>2</td>
<td>7</td>
<td>High Dominance (D) &amp; Conscientiousness (C)</td>
</tr>
<tr>
<td></td>
<td>6225</td>
<td>6</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>Low Influence (i) &amp; Steadiness (S)</td>
</tr>
<tr>
<td></td>
<td>6316</td>
<td>6</td>
<td>3</td>
<td>1</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Developer</td>
<td>5343</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>High Dominance (D) &amp; Conscientiousness (C)</td>
</tr>
<tr>
<td></td>
<td>6234</td>
<td>6</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>Low Influence (i) &amp; Steadiness (S)</td>
</tr>
<tr>
<td>Results-Oriented</td>
<td>5615</td>
<td>6</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>High Dominance (D) &amp; Conscientiousness (C)</td>
</tr>
<tr>
<td></td>
<td>6234</td>
<td>6</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>Low Influence (i) &amp; Steadiness (S)</td>
</tr>
</tbody>
</table>
The consolidated data show that the predominant Classical Profile Patterns are Creative, Developer, and Result-Oriented with Creative being the most predominant personality. In order to determine if a particular personality profile was dominate in companies of specific size the data was cross-tabulated between company size and personality profile pattern. The comparison is presented in Table 13 and graphically displayed in Figures 8 to 11.
Table 13
Personality Pattern by Company Size

<table>
<thead>
<tr>
<th>Segment Number</th>
<th>Personality Profile Pattern</th>
<th>Company Size ($ Millions)</th>
<th>Count</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>4445</td>
<td>Tight</td>
<td>$20-$30</td>
<td>1</td>
<td>4.35%</td>
</tr>
<tr>
<td>6234</td>
<td>Developer</td>
<td></td>
<td>14</td>
<td>60.87%</td>
</tr>
<tr>
<td>6316</td>
<td>Creative</td>
<td></td>
<td>6</td>
<td>26.09%</td>
</tr>
<tr>
<td>6523</td>
<td>Results-Oriented</td>
<td></td>
<td>2</td>
<td>8.70%</td>
</tr>
<tr>
<td>5343</td>
<td>Developer</td>
<td></td>
<td>3</td>
<td>15.79%</td>
</tr>
<tr>
<td>5615</td>
<td>Appraiser</td>
<td>$40-$50</td>
<td>8</td>
<td>42.11%</td>
</tr>
<tr>
<td>6225</td>
<td>Creative</td>
<td></td>
<td>6</td>
<td>31.58%</td>
</tr>
<tr>
<td>6523</td>
<td>Results-Oriented</td>
<td></td>
<td>2</td>
<td>10.53%</td>
</tr>
<tr>
<td>6316</td>
<td>Creative</td>
<td>$50-$60</td>
<td>8</td>
<td>80.00%</td>
</tr>
<tr>
<td>6532</td>
<td>Results-Oriented</td>
<td></td>
<td>2</td>
<td>20.00%</td>
</tr>
<tr>
<td>5227</td>
<td>Creative</td>
<td>$60-$80</td>
<td>7</td>
<td>43.75%</td>
</tr>
<tr>
<td>5615</td>
<td>Appraiser</td>
<td></td>
<td>1</td>
<td>6.25%</td>
</tr>
<tr>
<td>6234</td>
<td>Developer</td>
<td>$80-$100</td>
<td>7</td>
<td>43.75%</td>
</tr>
<tr>
<td>6532</td>
<td>Results-Oriented</td>
<td></td>
<td>1</td>
<td>6.25%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>84</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

Figure 8
Predominant Personality Profile in Companies $20M-$30M Revenue

![Bar Chart: Predominant Personality Profiles in Companies $20M - $30M Revenue]
Figure 9
*Predominant Personality Profile in Companies $40M-$50M Revenue*

![Bar chart showing frequency of personality profiles in companies with $40M-$50M revenue.]

Figure 10
*Predominant Personality Profile in Companies $60M-$80M Revenue*

![Bar chart showing frequency of personality profiles in companies with $60M-$80M revenue.]

In all but the largest company size group the Creative personality pattern was either the most or second most predominant personality pattern. The Developer pattern is highest in companies in the $20-$30 million size but lowest in the $80-$100 million size range. Interestingly, the Results-Oriented personality pattern was most dominant in companies of the $80-$100 size group and Creative and Developer patterns were lowest. This observation suggests that perhaps there are more role-sets and more complex projects in large construction firms such that a Results-Oriented personality may be necessary for project managers to produce optimum results.

**Questionnaire Responses**

**Tenure as a Project Manager**

Demographic information was compiled from the Project Manager Questionnaire. Presented in Appendix E. Many of the questions are numeric values such as the number
of years a person has worked as a project manager. Questions that have bi-polar answers such as strongly-agree or strongly-disagree were coded using a scale of 1-5 where the value 1 will indicate strongly-disagree responses while the value 5 will indicate strongly-agree responses.

The first three questions were designed to ascertain the number of years a respondent had served in the position of project manager in their professional career as well as with the PM’s present company. The goal of these questions was to determine the job tenure stability of the test group with emphasis on identifying specific project managers that show a pattern of frequently moving to new companies. The data listed in Table 14 show that for question one and displayed in Figure 12, the respondents had served as a project manager with their present company from two to 11 years with a mean of almost five years. For question two, Figure 13, the respondents indicated that they had served as a project manager with as few as a single firm and as many as nine firms with a mean of slightly under four firms. Question three, Figure 14 requested the total years a respondent had served as a project manager. Results indicate that respondents served from three to 19 years as a project manager with a mean of almost nine years. The data suggest that most project manager’s job tenure with a specific company is fairly low at 4.8 years and, with a mean of almost four years that they tend to frequently switch companies. This could account for the rather low number of years, 8.9 that a respondent devotes to a career in asphalt paving project management.

Table 14

<table>
<thead>
<tr>
<th>Question</th>
<th>Total Count</th>
<th>Mean</th>
<th>SE Mean</th>
<th>StDev</th>
<th>Minimum</th>
<th>Median</th>
<th>Maximum</th>
<th>Mode</th>
<th>N for Mode</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>84</td>
<td>4.893</td>
<td>0.268</td>
<td>2.454</td>
<td>2</td>
<td>4</td>
<td>11</td>
<td>4</td>
<td>33</td>
<td>1.44</td>
<td>1.31</td>
</tr>
<tr>
<td>2</td>
<td>84</td>
<td>3.714</td>
<td>0.226</td>
<td>2.069</td>
<td>1</td>
<td>3</td>
<td>9</td>
<td>3</td>
<td>26</td>
<td>1.26</td>
<td>1.27</td>
</tr>
<tr>
<td>3</td>
<td>84</td>
<td>8.952</td>
<td>0.544</td>
<td>4.982</td>
<td>3</td>
<td>7</td>
<td>19</td>
<td>6</td>
<td>19</td>
<td>0.84</td>
<td>-0.55</td>
</tr>
</tbody>
</table>
Figure 12
Question 1: Years as a Project Manager in Present Company

![Years as Project Manager in Present Company graph]

Figure 13
Question 2: Number of Firms where Served as a Project Manager

![Number of Firms where Served as a Project Manager graph]
Questions four, five, and seven were designed to survey the study respondent’s perceptions of whether the PM’s manager valued the PM’s leadership style and personality type. These questions four and five provided a 5-point scale for responses where one indicated strong disagreement and five indicated strong agreement while question seven used a 10-point scale to measure the same perception. Although the answers are strictly subjective, they provided additional insight into factors that may be contribute to a project manager’s job tenure. Additional insight may be gained by surveying the executive managers in a respondent’s company then comparing their responses to the project manager’s answers.
Question four asked if the subject’s personality type agrees with the expectation of the subject’s manager. The response data presented in Table 15 and graphically displayed in Figure 15. A mean of 3.56 and mode of four with a standard deviation of .65 shows that 64% of PM’s generally agreed that their personality type agreed with the expectations of their manager.

Table 15
Basic Statistics for Questions Four, Five, and Seven

<table>
<thead>
<tr>
<th>Question</th>
<th>Total Count</th>
<th>Mean</th>
<th>SE Mean</th>
<th>StDev</th>
<th>Minimum</th>
<th>Median</th>
<th>Maximum</th>
<th>Mode</th>
<th>N for Mode</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>84</td>
<td>3.56</td>
<td>0.0706</td>
<td>0.647</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>54</td>
<td>-1.19</td>
<td>0.27</td>
</tr>
<tr>
<td>5</td>
<td>84</td>
<td>3.571</td>
<td>0.0704</td>
<td>0.645</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>55</td>
<td>-1.24</td>
<td>0.39</td>
</tr>
<tr>
<td>7</td>
<td>84</td>
<td>6.06</td>
<td>0.14</td>
<td>1.283</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>6</td>
<td>34</td>
<td>-0.15</td>
<td>-0.78</td>
</tr>
</tbody>
</table>

Figure 15
Question 4: Subject’s Personality Type Agrees with the Expectation of the Subject’s Manager

When asked if the PM’s manager valued the PM’s leadership style the responses were similar to question three. A mean of 3.57 and a mode of four with a standard deviation of .65 indicate that 64% of PM’s, as displayed in Figure 16, agree that their manager values the PM’s leadership style.
Question seven asked if the PM’s personality type matched their manager’s personality type. In this instance, a mean of 6.06, mode of six with a standard deviation of 1.28, suggest that 40% of the respondent’s appeared to have a neutral perception while only 9% agreed. The results are displayed graphically in Figure 17.
Age, Education, and Ethnic Race Analysis

The median age of the PM’s was 37 with a standard deviation of 5.38, where the youngest respondent was 28 years old and the oldest PM at 47 years as shown in Table 16 and displayed graphically in Figure 18. The data indicate that about 50% of the PM’s are in their thirties and 42% in their forties. Having over 90% of the respondent’s ages between 30 and 50 supports the assumption that the position of project manager is generally attained by personnel that have acquired several years of job-related experience or that have earned a construction project management degree.

Table 16
Basic Statistics for Question 10: Age at Last Birthday

<table>
<thead>
<tr>
<th>Question</th>
<th>Total Count</th>
<th>Mean</th>
<th>SE Mean</th>
<th>StDev</th>
<th>Minimum</th>
<th>Median</th>
<th>Maximum</th>
<th>Mode</th>
<th>N for Mode</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>84</td>
<td>37.83</td>
<td>0.587</td>
<td>5.384</td>
<td>28</td>
<td>37</td>
<td>47</td>
<td>36</td>
<td>21</td>
<td>-0.12</td>
<td>-0.81</td>
</tr>
</tbody>
</table>

Figure 18
Question 10: Age at Last Birthday

Survey results listed in Table 17 and displayed in Figure 19, Ethnic Race, indicate that 93%, the majority of PM’s are Hispanic (43%) or Caucasian (50%). This result...
corresponds well with census results for the western part of the United States in that the majority ethnic groups are Hispanic and Caucasian.

Table 17

<table>
<thead>
<tr>
<th>Question</th>
<th>Total Count</th>
<th>Mean</th>
<th>SE Mean</th>
<th>StDev</th>
<th>Minimum</th>
<th>Median</th>
<th>Maximum</th>
<th>Mode</th>
<th>N for Mode</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
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<tr>
<td>12</td>
<td>84</td>
<td>5.167</td>
<td>0.147</td>
<td>1.352</td>
<td>1</td>
<td>5.5</td>
<td>6</td>
<td>6</td>
<td>42</td>
<td>-2.41</td>
<td>5.15</td>
</tr>
<tr>
<td>13</td>
<td>84</td>
<td>4.905</td>
<td>0.169</td>
<td>1.549</td>
<td>3</td>
<td>4</td>
<td>8</td>
<td>4</td>
<td>29</td>
<td>0.76</td>
<td>-0.33</td>
</tr>
<tr>
<td>14</td>
<td>84</td>
<td>1.833</td>
<td>0.0409</td>
<td>0.375</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>70</td>
<td>-1.82</td>
<td>1.35</td>
</tr>
</tbody>
</table>

Figure 19

*Question 12: Ethnic Race*

![Ethnic Race](image)

Question 13 requested the number of years of education the responded completed beyond high school. Question 14 asked PM’s which academic degrees they had earned. The mean number of post-high school education years was computed to be 4.91 with a standard deviation of 1.55 and a maximum number of years of 8. At first observation, Figure 20, the number of education years may suggest a certain number of graduate and post-graduate degrees held by PM’s. Question 14, however, shows that the only academic degrees reported were either associate (14%) or baccalaureate (83%). Despite the fact that every PM surveyed held a post-high school academic credential it appeared that
many of the respondents devoted more time than allotted by a typical two or four year degree program.

Figure 20  
*Question 13: Years of Education Beyond High School*

![Years of Education Beyond High School](image)

Correlation Analysis and Hypothesis Testing

Bivariate correlation analysis was conducted using the Pearson correlation coefficient method in order to determine the direction and strength of the variables submitted in the hypotheses of this study. In addition, two-sample *t*-tests were conducted on each pair of variables in order to compute their confidence interval and *p*-value at an *α*-level of .05. Results of the *t*-tests are presented in Appendix G.

The correlation matrix, presented in Table 17, lists the correlation coefficients for the dependent variable Tenure and the secondary variables of Primary Leadership Style, Secondary Leadership Style, Leaders Flexibility, Leader Effectiveness, and Predominant Personality Profile.
Table 17

*Correlation Matrix*

<table>
<thead>
<tr>
<th></th>
<th>Tenure</th>
<th>Primary Leadership LBA</th>
<th>Secondary Leadership LBA</th>
<th>Leader Flexibility</th>
<th>Leader Effect</th>
<th>Predominant Personality Profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tenure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary Leadership Style</td>
<td>0.642</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary Leadership Style</td>
<td>-0.453</td>
<td>-0.137</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leader Flexibility</td>
<td>0.173</td>
<td>0.076</td>
<td>-0.173</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leader Effect</td>
<td>-0.010</td>
<td>0.043</td>
<td>-0.032</td>
<td>-0.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Predominant Personality Profile</td>
<td>0.381</td>
<td>-0.004</td>
<td>-0.201</td>
<td>-0.082</td>
<td>-0.037</td>
<td></td>
</tr>
</tbody>
</table>

Applying the correlation analysis results to the hypothesis submitted for this study, null hypothesis one states:

H₀₁: The project manager’s personality type is not related to job tenure.

The *t*-test produced a *p*-value of 0.000 which is significant at the *α*-level = .05 and indicates a relationship between the independent and dependent variables. Consequently, H₀₁ was rejected and H₁: The project manager’s personality type is related to job tenure, was accepted. Using the Pearson correlation coefficient, *r* = .381, the Coefficient of Determination, *r*², is .145. Although there is a relationship between personality and job tenure, the relationship is too weak to be a reliable predictor of job tenure.

The relationship between Tenure and Primary Leadership Style is expressed in null hypothesis two:

H₀₂: The Primary Leadership Type score is not related to job tenure.

*t*-test calculations produced a *p*-value of 0.000 which is significant at the *α*-level = .05 and indicates a relationship between the dependent variable, Tenure and the independent variable, Primary leadership Style. Consequently, H₀₂ was rejected and H₂: The Primary Leadership Style is related to job tenure, was accepted. Using the Pearson correlation...
coefficient, \( r = .642 \), the Coefficient of Determination, \( r^2 \), is .412 indicating that primary leadership may be useful as a predictor of job tenure.

The relationship of Tenure to Leadership Flexibility and Leadership Style Effectiveness is expressed in null hypothesis three and four:

\[ H_0^3: \text{Leadership Style Flexibility score is not related to job tenure} \]

\[ H_0^4: \text{Leadership Style Effectiveness score is not related to job tenure.} \]

\( t \)-tests produced a \( p \)-value of 0.000 for hypotheses \( H_0^3 \) and \( H_0^4 \), indicating significance at the \( \alpha \)-level = .05 and suggests a relationship between Tenure and Leadership Flexibility and Leadership Style Effectiveness. Consequently, \( H_0^3 \) and \( H_0^4 \) were rejected. The correlation coefficients, however, for Leadership Style Flexibility, \( r = .173 \), and Leadership Style Effectiveness, \( r = -.010 \), produced small Coefficients of Determination. Leadership Style Flexibility, \( r^2 = .03 \) and Leadership Style Effectiveness, \( r^2 = .00 \), indicate that these variables are not useful for determining Tenure.

Summary

The data presented in this chapter revealed that project manager’s generally exhibit a primary leadership style that is typified by encouraging subordinates to take the lead in goal setting, action planning, and problem solving (Blanchard, 2001b). In addition, data indicated that PM’s have a coaching secondary leadership style where the salient characteristics are involving subordinates in clarifying goals and action plans but retaining final authority over the goals (Blanchard, 2001b). In addition, data revealed the 84% of the PM’s showed above normal leadership flexibility, that is, they easily switched from one leadership style to another leadership style, depending on the situation.
encountered. Correspondingly, data indicate 58% of PM’s exhibited above normal leader effectiveness by choosing the leadership style most appropriate to the situation.

Project managers generally have a creative, developer, or results-oriented personality type. Data indicate the majority (32%) of project manager’s had a creative personality type. The salient characteristics of the creative personality type include accepting aggression, restraining expression with the goal of maintaining dominance and attaining unique accomplishments. The results-oriented personality type (29%) is characterized by the PM verbalizing ego strength and displaying rugged individualism with the goal of maintaining his or her dominance and independence (Inscape, 1996).

Project managers were generally Caucasian or Hispanic, the majority between 30 and 40 years of age (median age 37.8), had completed three to eight years of post-high school education and holds a bachelor’s degree. This suggests that the typical PM is relatively young and educated.

Correlation analysis and hypothesis testing indicate a relationship between the dependent variable, Tenure, and all of the independent variables at an \( \alpha \)-level of .05. The Coefficients of Determination, however, revealed that only three of the independent variables, Primary Leadership Type, were useful for predicting an effect on the dependent variable, Job Tenure.
CHAPTER 5: SUMMARY AND RECOMMENDATIONS

Most trade-disciplines in the construction industry have key management personnel such as estimators or project managers that have high-level construction knowledge and project management expertise that is instrumental to a construction company’s success (Dukerich & Ammeter, 1999). These specialists simultaneously perform multiple job functions that include company sales representative, project estimator, and project manager (Albanese, 1993). It appears, therefore, that the project manager should have personalities and leadership styles that enable them to successfully develop and sustain professional working relationships with field personnel, project supervisors, project owners, political representatives, and their company’s administrative and accounting staff.

This study has provided evidence that shows project managers having long tenures in the asphalt pavement construction industry have specific personality types and leadership styles and confirms the assertions made in Chapter 2 of this study that there is a significant association between personality and job performance (Lord, 1986; Bass, 1990; Barrick and Mount, 1993; Kouzes and Posner, 2002). In addition, these project managers appear to have demographic similarities in terms of education, ethnic race, and chronological age. Combining these characteristics creates a profile of the type of a person most likely to be successful in and therefore, be dedicated to a long career in the asphalt pavement construction industry.

Demographic Distinctiveness of Construction Project Managers

Evidence from this study reveal that respondents have served in a construction project management role for a mean of 4.8 years in their present company and have had a career
in project management for an average of nine years. In addition, project managers were generally Caucasian (50%) or Hispanic (43%), the majority between 30 and 40 years of age (median age 37.8), had completed three to eight years of post-high school education and holds an associate (14%) or baccalaureate (83%) degree. These results indicate that asphalt pavement construction project managers tend to be young, well educated, Caucasian or Hispanic, and tend to not stay with a single construction firm for a long time period.

Personality Profile

Barrick and Mount (1993) found significant association between personality and job performance and while there is no inferior personality type per se, there are personality types that are better suited to contributing toward a person’s success certain careers. This study revealed that there are indeed specific personality types that are predominant for project managers in the asphalt pavement construction industry.

Results of the DiSC® Personal Profile System confirm that the predominant Classical Profile Patterns are Creative (34%), Developer (31%), and Result-Oriented (17%) with Creative being the most predominant personality. Furthermore, the data was cross-tabulated between company size and personality profile pattern, Table 12, to confirm that these personality types were predominant in each company size group.

Each predominant personality profile pattern is characterized by a high degree of dominance that is mitigated by differing degrees of influence, steadiness, and conscientious components. A summary of each personality profile pattern reveals their
similarities and differences (Inscape Publishing, 2001):

Creative Classical Profile Pattern:

Persons with a Creative Pattern display opposite forces in their behavior. Their desire for tangible results is counterbalanced by an equally strong drive for perfection, and their aggressiveness is tempered by sensitivity. Although they think and react quickly, they are restrained by the wish to explore all possible solutions before making a decision. (p.15)

Developer Classical Profile Pattern:

Developers tend to be strong-willed individuals, continually seeking new horizons. As self-reliant, independent thinkers, they prefer to find their own solutions. Relatively free of the constraining influence of the group, Developers are able to bypass convention and often create innovative solutions. (p. 15)

Results-Oriented Classical Profile Pattern:

Results-Oriented people display self-confidence, which some may interpret as arrogance. They actively seek opportunities that test and develop their abilities to accomplish results. Results-Oriented persons like difficult tasks, competitive situations, unique assignments, and “important” positions. They undertake responsibilities with an air of self-importance and display self-satisfaction once they have finished. (p. 18)

The common characteristics of these personality profile patterns appear to emphasize personal drive and a task-oriented perspective. Other common characteristics of the Creative, Developer, and Results-Oriented profiles include, dominance, focus on unique accomplishments, and persistence in accomplishing goals (Inscape, 2001).

Correlation analysis confirmed there is a relationship between job tenure and personality type but with a coefficient of determination of .145, personality type will predict tenure only 14.5% of the time and therefore, is not statistically significant. Personality type may become more useful in predicting job tenure if the project manager’s personality type is compared to the personality types of colleagues within the organization.
Leadership Dimension

The SLI® model measures leadership along two dimensions, directive behavior and supportive behavior. As presented in chapters three and four, the degree of directive and supportive behavior indicate which of four primary leadership styles is practiced by a leader. These primary leadership styles are Directing, Coaching, Supporting, and Delegating. In fact, the majority of project managers surveyed in this study exhibited a Supporting primary leadership style (82%) and a Coaching secondary leadership style (37%).

This response should be expected because on projects involving many construction trades, project owners, engineers, government representatives, and administrative personnel, a project manager will be responsible for coordinating activities and communication of a diverse group. Because the Supporting and Coaching leadership style characteristics presented in Table 5 promote a highly supportive behavior, these styles would improve the project manager’s probability of success with the project. Therefore, it may be inferred that if the project manager achieves success in completing construction projects, he or she will have a high probability of staying employed with a particular company and seeking a long-term career in construction management.

Correlation analysis proved there is a direct relationship between primary leadership style and job tenure and with a coefficient of determination of .412, there is a 41% probability of primary leadership style predicting job tenure. While the degree of association between leadership style and tenure is not as strong as desired, it is useful for limited prediction.
Leadership Flexibility and Leadership Effectiveness were initially assumed to be predictors of job tenure. Correlation analysis, however, proved they were not. The coefficients of determination indicated that these two variables were not statistically significant for use in predicting an effect on the dependent variable, tenure. Obviously additional research should be conducted to test the effect of leader flexibility and effectiveness on employment duration before completely discounting these variables as useful predictors.

Implications of Research

One of the motives for embarking on this research project was due to the fact that there is a dearth of literature regarding the association of personality type, leadership style, and job tenure in the construction industry. It is hoped that this study will be a useful contribution to the existing body of research while encouraging other academicians and management practitioners to conduct similar studies of the construction industry. The result could be an improvement in matching the correct personnel to the project management employment position while introduction stability into what has thus far been a rather itinerant occupation.

In addition, construction trade associations could use information from personality-leadership research to compile personnel profiles of model candidates for various occupational positions within specific construction trade industries. This type of guidance could assist members to more effectively match personnel to complementary job assignments while improving the probability of successfully and profitably completing projects. The result should be greater satisfaction for the project managers and an improvement in occupational stability.
Individual construction firms could benefit from this study by conducting personality and leadership assessments within their organizations. It is highly recommended that human resource managers first administer the tests to existing personnel in order to determine the staff’s predominant personality type and leadership style. Smith (2001) states, “The more time an organization invests in finding employees who understand and have values, drives, and motivations that match the company’s, the more successful the organization becomes” (p. 46). Through the use of SLAI², LBAI², and DiSC®, human resource managers and organization managers could more accurately identify the employees envisioned by Smith (2001). Furthermore, instruments such as DiSC® not only determine predominant personality profiles but provide extensive functions that recommend effective ways for personnel of various personality types to efficiently interact and communicate with each other.

Suggestions for Further Research

In order to develop a more comprehensive mosaic of a project manager’s personal characteristics, additional tests should be administered in order to assess intelligence and aptitude for construction management. In addition, results from additional personality assessment instruments may provide a more complete description of the project manager’s personality.

This study tested a small set of project managers from many asphalt pavement construction companies but greater understanding of the project manager’s leader-follower relationships may be achieved by testing a larger sample of personnel and at various organization levels within each company, especially the project manager’s
supervisors. Managers that have a leadership style similar to their supervisors tend to be more productive than those that have conflicting leadership styles. (Bass, 1990).

Future research may focus on long-term personality analysis of some asphalt pavement construction companies by conducting personal interviews with study participants over a three to five year period. In addition, personality assessment of company personnel beyond the project manager level may be beneficial. Testing should be conducted with executive managers, administrative staff, field supervisors, field workers, key customers, and subcontractors.

An analysis of communication style may provide additional insight into the employee retention problem. Assessment instruments such as the Forte’ Interpersonal Communications System (Morgan, 2000) might provide results that positively correlate communication style to project manager retention. DiSC® and LBAII® focus on the behavior of people in particular situations but the way a leader communicates might directly affect the situational characteristics and consequently, his or her leader effectiveness.

Summary

Construction project managers should have personalities and leadership styles that enable them to successfully develop and sustain professional working relationships with field personnel, project supervisors, project owners, political representatives, and their company’s administrative and accounting staff (Rogge, Weber, Leever, & Elliott, 1996). This study has focused on the association of personality and leadership style within the asphalt pavement construction industry and the impact of this association on employee retention or Job Tenure.
Research results indicate the majority of project managers have either a Creative (34%), Developer (31%), or Result-Oriented (17%) personality profile. They were generally Caucasian or Hispanic, the majority between 30 and 40 years of, had completed three to eight years of post-high school education and hold a bachelor’s degree. The majority of project managers surveyed in this study exhibited a Supporting primary leadership style (82%) and a Coaching secondary leadership style (37%). In addition, statistical analysis revealed that there is a low correlation between Tenure and Personality Profile Pattern but there is a useful correlation between Tenure and Leadership Style.

This study has provided evidence that shows project managers having long tenures in the asphalt pavement construction industry have specific personality types and leadership styles and confirm the assertions made in Chapter 2 of this study that there is a significant association between personality and job performance. In addition, these project managers appear to have demographic similarities in terms of education, ethnic race, and chronological age. Combining these characteristics creates a profile of the type of a person most likely to be successful in and therefore, be dedicated to a long career in the asphalt pavement construction industry.
REFERENCES


Covey, S. (2009, January). A highly effective leader: Stephen Covey says we need to help more people find their own purpose and unique contribution. *Success, 68*-72.


Appendix A:

Situational Leadership II model

Figure 1. Situational Leadership II model.

Appendix B:

DiSC® Personal Profile System

Choose one MOST and one LEAST in each of the 28 groups of words. (See instructions on page 3)

<table>
<thead>
<tr>
<th>MOST</th>
<th>LEAST</th>
</tr>
</thead>
<tbody>
<tr>
<td>enthusiastic</td>
<td>poised</td>
</tr>
<tr>
<td>daring</td>
<td>observant</td>
</tr>
<tr>
<td>diplomatic</td>
<td>modest</td>
</tr>
<tr>
<td>satisfied</td>
<td>impatient</td>
</tr>
<tr>
<td>cautious</td>
<td>tactful</td>
</tr>
<tr>
<td>determined</td>
<td>agreeable</td>
</tr>
<tr>
<td>convincing</td>
<td>magnetic</td>
</tr>
<tr>
<td>good-natured</td>
<td>insistant</td>
</tr>
<tr>
<td>friendly</td>
<td>brave</td>
</tr>
<tr>
<td>accurate</td>
<td>inspiring</td>
</tr>
<tr>
<td>outspoken</td>
<td>submissive</td>
</tr>
<tr>
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<td>timid</td>
</tr>
<tr>
<td>talkative</td>
<td>reserved</td>
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<tr>
<td>controlled</td>
<td>obliging</td>
</tr>
<tr>
<td>conventional</td>
<td>strong-willed</td>
</tr>
<tr>
<td>decisive</td>
<td>cheerful</td>
</tr>
<tr>
<td>adventurous</td>
<td>stimulating</td>
</tr>
<tr>
<td>insightful</td>
<td>kind</td>
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<tr>
<td>outgoing</td>
<td>perceptive</td>
</tr>
<tr>
<td>moderate</td>
<td>independent</td>
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<td>gentle</td>
<td>competitive</td>
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<td>considerate</td>
</tr>
<tr>
<td>humble</td>
<td>joyful</td>
</tr>
<tr>
<td>original</td>
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<td>kind</td>
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<td>percept</td>
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<tr>
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<td>thorough</td>
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<tr>
<td>argumentative</td>
<td>competitive</td>
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<td>systematic</td>
<td>cooperative</td>
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Appendix C

DiSC® Personal Profile Patterns

<table>
<thead>
<tr>
<th>Personality Profile Pattern</th>
<th>Segment Number Range</th>
<th>Personality Profile Pattern</th>
<th>Segment Number Range</th>
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<tbody>
<tr>
<td>Inspirational</td>
<td>7777-7611</td>
<td>Agent</td>
<td>5564-1561</td>
</tr>
<tr>
<td>Achiever</td>
<td>7677-5151</td>
<td>Tight</td>
<td>5544-3343</td>
</tr>
<tr>
<td>Creative</td>
<td>7647-5115</td>
<td>Practitioner</td>
<td>4777-1545</td>
</tr>
<tr>
<td>Results-Oriented</td>
<td>7559-5411</td>
<td>Promoter</td>
<td>4744-1511</td>
</tr>
<tr>
<td>Investigator</td>
<td>7477-5155</td>
<td>Perfectionist</td>
<td>4477-1155</td>
</tr>
<tr>
<td>Developer</td>
<td>7244-5111</td>
<td>Specialist</td>
<td>4474-1151</td>
</tr>
<tr>
<td>Appraiser</td>
<td>6747-1515</td>
<td>Objective-Thinker</td>
<td>4447-1115</td>
</tr>
<tr>
<td>Counselor</td>
<td>5774-1551</td>
<td>Overshift</td>
<td>7777-5555</td>
</tr>
<tr>
<td>Persuader</td>
<td>5654-5611</td>
<td>Undershift</td>
<td>3333-1111</td>
</tr>
</tbody>
</table>

DiSC® Personal Profile Segment Grid

Appendix D

Path-Goal Analysis

Personality Type:
- Dominance
- Influence
- Steadiness
- Conscientiousness

Leadership Style:
- Directing
- Coaching
- Supporting
- Delegating

Demographics:
- Age
- Ethnicity
- Education
- Years in current job position
- Years as an asphalt pavement estimator-PM
- Salary range
- Job performance reviews

Job Tenure
Appendix E

Estimator-Project Manager Questionnaire

1. Based on your last anniversary date, how many years have you served as an estimator or project manager in your present company?

   0 1 2 3 4 5 6 7 8 9 10 or more years

   If greater than twelve years, please specify: ________ years.

2. During your professional career, how many firms have you served as an estimator or project manager?

   1 2 3 4 5 6 7 8 9 10 or more firms

3. During your professional career, how many years have you served as an estimator or project manager?

   1 2 3 4 5 6 7 8 9 10 11 12

   If greater than twelve years, please specify: ________ years.

4. Your personality type agrees with the expectations of your manager.

   Strongly Disagree  Disagree  No Opinion  Agree  Strongly Agree

5. Your manager values your leadership style.

   Strongly Disagree  Disagree  No Opinion  Agree  Strongly Agree

6. Do you have a minimum number of years that you plan to stay with any company before you move to your next company?

   No  Yes  If yes, how many years?

   1 2 3 4 5  If greater than five years, please specify: ________ years.

Please answer the questions on the back of this page.
7. To what extent do you feel that your personality type agrees with the personality type of your manager? (1 is least agreeable, 10 is highly agreeable)

[ ] 1  [ ] 2  [ ] 3  [ ] 4  [ ] 5  [ ] 6  [ ] 7  [ ] 8  [ ] 9  [ ] 10

8. Please give the results of the past performance evaluations given by your manager:

2001 – 2002: [ ] less than satisfactory [ ] satisfactory [ ] above satisfactory [ ] exemplary
2000 – 2001: [ ] less than satisfactory [ ] satisfactory [ ] above satisfactory [ ] exemplary
1999 – 2000: [ ] less than satisfactory [ ] satisfactory [ ] above satisfactory [ ] exemplary
1998 – 1999: [ ] less than satisfactory [ ] satisfactory [ ] above satisfactory [ ] exemplary
1997 – 1998: [ ] less than satisfactory [ ] satisfactory [ ] above satisfactory [ ] exemplary
I have not received an evaluation [ ]

9. What is the annual sales volume of your company?

[ ] < $5,000,000  [ ] $5 million - $10 million  [ ] $10 million - $20 million
[ ] $20 million - $30 million  [ ] $30 million - $50 million  [ ] $50 million - $60 million
[ ] $60 million - $80 million  [ ] $80 million - $100 million  [ ] $100 million - $150 million
[ ] $150 million - $200 million  [ ] $200 million - $250 million  [ ] >$250 million

10. What is your age as of your last birthday? ______

11. What is your gender?  [ ] Male  [ ] Female

12. What is your race?

[ ] American Indian or Alaskan Native  [ ] Asian  [ ] Black/African American
[ ] Black/Hispanic  [ ] Hispanic  [ ] White  [ ] Other

13. How many years of education have you completed beyond high school?

[ ] 1  [ ] 2  [ ] 3  [ ] 4  [ ] 5  [ ] 6  [ ] 7  [ ] 8  [ ] 9  [ ] 10 or more years

14. What academic degrees have you earned?

Associate of Arts or Science  [ ] Bachelor’s  [ ] Master’s  [ ] Doctorate

15. Additional comments:

___________________________________________________________________________________
___________________________________________________________________________________
___________________________________________________________________________________
Appendix F

Research Study

Informed Consent Form

The following information is provided to help you decide whether you wish to participate in a study to determine the relationship between personality type, leadership style, and job tenure of asphalt pavement project managers. You should be aware that you are free to decide not to participate or to withdraw at any time without affecting your relationship with your firm or the University of Phoenix.

Data will be collected using three devices: a brief demographic questionnaire, the Leader Behavior Analysis II questionnaire, and the DiSC® Personal Profile questionnaire. The survey data will be the only data collected in this study.

Do not hesitate to ask questions about the study before participating or during the study. I will be pleased to share the findings with you after the research is completed. Your name will not be associated with the research findings in any way, and only the researchers will know your identity. There are no known risks or discomforts associated with this study.

Please sign this consent form. You are signing it with full knowledge of the nature and purpose of the procedures. A copy of this form will be given to you to keep.

Signature: ___________________________ Date: ________________

Andrew J. Marsiglia,
Doctoral Candidate
303-478-0023
Appendix G

Two-Sample \( t \)-test and Confidence Interval
of Dependent and Independent Variables

(\( \alpha \)-level = .05)

1. Tenure vs. Primary Leadership Style

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>StDev</th>
<th>SE Mean</th>
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<tbody>
<tr>
<td>Tenure</td>
<td>84</td>
<td>9.00</td>
<td>4.99</td>
<td>0.54</td>
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<tr>
<td>Primary Leadership Style</td>
<td>84</td>
<td>2.68</td>
<td>1.13</td>
<td>0.12</td>
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</tbody>
</table>

Difference = \( \mu \) (Tenure) - \( \mu \) (Primary Leadership Style)
Estimate for difference: 6.321
95% CI for difference: (5.212, 7.431)
\( T \)-Test of difference = 0 (vs. not =): \( T \)-Value = 11.32 P-Value = 0.000 DF = 91

2. Tenure vs. Secondary Leadership Style

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>StDev</th>
<th>SE Mean</th>
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<tr>
<td>Tenure</td>
<td>84</td>
<td>9.00</td>
<td>4.99</td>
<td>0.54</td>
</tr>
<tr>
<td>Secondary Leadership Style</td>
<td>84</td>
<td>2.51</td>
<td>1.18</td>
<td>0.13</td>
</tr>
</tbody>
</table>

Difference = \( \mu \) (Tenure) - \( \mu \) (Secondary Leadership Style)
Estimate for difference: 6.488
95% CI for difference: (5.377, 7.599)
\( T \)-Test of difference = 0 (vs. not =): \( T \)-Value = 11.59 P-Value = 0.000 DF = 92

3. Tenure vs. Leader Flexibility

<table>
<thead>
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<th>Mean</th>
<th>StDev</th>
<th>SE Mean</th>
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</thead>
<tbody>
<tr>
<td>Tenure</td>
<td>84</td>
<td>9.00</td>
<td>4.99</td>
<td>0.54</td>
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<tr>
<td>Leader Flexibility</td>
<td>84</td>
<td>23.36</td>
<td>2.62</td>
<td>0.29</td>
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Difference = \( \mu \) (Tenure) - \( \mu \) (Leader Flexibility)
Estimate for difference: -14.357
95% CI for difference: (-15.574, -13.140)
\( T \)-Test of difference = 0 (vs. not =): \( T \)-Value = -23.34 P-Value = 0.000 DF = 125
4. Tenure vs. Leader Effectiveness

<table>
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<th>SE Mean</th>
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<tr>
<td>Tenure</td>
<td>84</td>
<td>9.00</td>
<td>4.99</td>
<td>0.54</td>
</tr>
<tr>
<td>Leader Effectiveness</td>
<td>84</td>
<td>60.46</td>
<td>4.86</td>
<td>0.53</td>
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</table>

Difference = \( \mu \) (Tenure) - \( \mu \) (Leader Effectiveness)
Estimate for difference: -51.464
95% CI for difference: (-52.964, -49.964)
T-Test of difference = 0 (vs. not =): T-Value = -67.73  P-Value = 0.000  DF = 165

5. Two-sample T for Tenure vs. Predominant Personality Profile

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>StDev</th>
<th>SE Mean</th>
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<td>9.00</td>
<td>4.99</td>
<td>0.54</td>
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<td>Predominant Personality Profile</td>
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<td>13.15</td>
<td>2.22</td>
<td>0.24</td>
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</table>

Difference = \( \mu \) (Tenure) - \( \mu \) (Primary Personality Profile)
Estimate for difference: -4.155
95% CI for difference: (-5.336, -2.974)
T-Test of difference = 0 (vs. not =): T-Value = -6.97  P-Value = 0.000  DF = 114