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Understanding Leader Problem-Solving Style Preferences in an Organizational Hierarchy

By

Heath H Frisch

An Abstract of a Thesis
In
Creative Studies

Submitted in Partial Fulfillment
of the Requirements
for the Degree of
Master of Science
August 2009

Buffalo State College
State University of New York
Department of Creative Studies

ABSTRACT OF THESIS

Understanding Leader Problem-Solving Style Preferences in an Organizational Hierarchy

This study explored the problem solving styles of individuals in leadership positions in an attempt to identify whether specific problem solving preferences existed among leaders. The results indicated that in this organization the leadership team did exhibit a preference toward the Ideator style of problem solving.

In addition to identifying problem solving preferences of leaders, this study also attempted to support other research (Mann 2003) and ascertain whether problem solving is a component of leadership. According to the results of the study and related literature, evidence supports the theory that creative problem solving is an important component of leadership and that it can be enhanced by training (Wheeler 2001).

This study demonstrates its significance as there are various benefits an organization or an individual may gain by understanding problem-solving preferences. For example, organizations can align similar or different styles when creating workforce teams, demands of specific positions may be examined and compared against individual preferences, and personal/professional development may include awareness to preferences as well as provide recommendations on improving areas of weakness and sensitivity to other styles. Overall, “people should become aware of their Creative Problem Solving preferences so they can better understand their strengths and weaknesses when solving problems creatively” (Puccio, 1999 p. 172).

September 1, 2009

Buffalo State College
State University of New York
Department of Creative Studies

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A Thesis
In
Creative Studies

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of the Requirements
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Master of Science

August 2009

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DEDICATION AND ACKNOWLEDGEMENTS

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TABLE OF CONTENTS

CHAPTER ONE: DEFINING THE PROBLEM

Introduction	p. 1
Leadership Behaviors	p. 1
Measuring Personality Types and Problem Solving Styles	p. 6
Purpose of Study	p. 9
Significance of Study	p. 9
Summary	p. 10

CHAPTER TWO: LITERATURE REVIEW

Introduction	p. 11
Understanding Thinking Styles and Problem Solving Styles	p. 11
The Implications of Style in Organizations	p. 15
Creativity and Creative Problem Solving	p. 17
FourSight	p. 19
FourSight Research	p. 21
Summary	p. 24

CHAPTER THREE: METHODOLOGY

Introduction	p. 25
Sample	p. 25
Procedures	p. 26
Instrumentation	p. 27
Summary	p. 28

CHAPTER FOUR: PRESENTATION and ANALYSIS of DATA

Introduction	p. 29
Descriptive Statistics	p. 29
Summary	p. 35

CHAPTER 5: CONCLUSIONS, RECOMMENDATIONS, IMPLICATIONS

Introduction	p. 37
Conclusions	p. 37
Recommendations	p. 39
Implications	p. 40
Summary	p. 41

REFERENCES

	p. 42
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TABLES and FIGURES

Figure 1: Sample Group, Employee Hierarchy Distribution	p. 27
Table 1: Mann 2003 - Clarifier Preference, participant group	p. 23
Table 2: Demographics, Sample Groups	p. 25
Table 3: Descriptive Statistics for <i>FourSight</i> Across All Levels	p. 30
Table 4: Cronbach Alpha Analysis – Clarifier	p. 31
Table 5: Cronbach Alpha Analysis – Ideator	p. 31
Table 6: Cronbach Alpha Analysis – Developer	p. 32
Table 7: Cronbach Alpha Analysis – Implementer	p. 32
Table 8: Item-Total Statistics – Implementer	p. 33
Table 9: Analysis of Variance (ANOVA) Among All Groups	p. 34
Table 10: Post Hoc Assessment of Differences Among Groups	p. 35

Chapter One

Defining the Problem

Introduction

The purpose of this chapter is to discuss leadership behaviors and address whether problem solving is a behavioral component of leadership, introduce research regarding personality traits and problem solving styles of those in leadership positions, and present processes for the measurement of personality type and creative problem solving. The chapter continues with a discussion of problem solving as a leadership competence and concludes with the statement of significance, the purpose for the study, the guiding research question, and the chapter summary.

Leadership Behaviors

Leadership has been defined by many and investigation into the qualities which comprise effective leadership is an ongoing practice in the world of science and business. Although research has been performed on many variables related to leadership, such as the examination of personality traits and the analysis of historical experiences of present and past leaders, there is no single answer to the question of what constitutes effective leadership.

In an attempt to understand more about leadership behaviors, Roush and Atwater (1992) evaluated results from the Myers Briggs Type Indicator (MBTI) and found similar personality traits among a select group of transformational leaders. The study found transformational leaders used more positive reinforcement with followers than their transactional counterparts and transformational leaders are more representative of the sensing, feeling types of the MBTI. According to Bass (1985), transactional leaders promote creative problem solving, inspire loyalty,

and treat followers as individuals. In a similar study where MBTI scores were used to understand leadership traits, Hellreigel and Slocum (1975), discovered similarities among those in leadership positions in that “the managerial occupation seems to be disproportionately represented by extroverts” (p 31).

Of many human behaviors, problem solving has been repeatedly associated with leadership and has been defined by some as “a form of skilled performance grounded in the leaders’ capability to solve complex and ill defined organizational problems”, (Mumford, Zaccaro, Harding, Jacobs, & Fleishman, 2000; Mumford, Zaccaro, Harding, Fleishman, & Reiter-Palmon, 1991; Zaccaro, Mumford, Marks, Connelly, Threlfall, Gilbert, and Fleishman, 1997). Additionally, Zaccaro, Mumford, Connelly, Marks, & Gilbert (2000) assessed leader problem solving capabilities and argue that “leader problem solving skills and knowledge are the most potent of leader capabilities” (p. 38). Zaccaro, et al. (2000) found that among four leadership behavioral constructs (complex problem solving skills, knowledge and cognitive abilities, motives and personality, and criteria) the highest correlation existed in the problem solving skills measure. According to their study, “the two correlations between the problem solving skills measure were .55 and .60, the highest in the matrix of correlations” (p. 59).

Other studies and articles researching leader problem solving are also available such as Mosley, Obrien, & Pietri (1999) who said, “If one process in particular characterizes the manager’s or entrepreneur’s job it is that of making decisions or solving problems. And the higher the managerial position, the more complex and costly the decisions faced” (p. 6). In a book review for the IIMB Management Review, Banerjee (2004) said that decision making has become one of the more important issues in business studies. Williams (2004) provides the reader with discussion regarding the process of decision making and provides a framework for making better decisions.

While Williams (2004) does not focus on leadership behaviors he states the importance of problem solving as a component for making better business decisions. Marshall (2008), claims, “leaders are drawn from the best problem solvers” (p. 12) and Population Reports (2008) lists problem solving as “one of five essential management functions of any healthcare program” (p. 10.). Finally, Government Executive (2007) also lists problem solving as one of the criteria to leading a company when it was said, “You don't have to be an expert in what an organization does in order to lead it. But if you aren't, it helps to know where the operation fits in the larger enterprise; how to interact with experts, other organizations and employees; what to do to solve problems; and how to win over employees and get them to talk” (p. 9).

In a study investigating the relationship between head-teacher leadership behaviors and their problem solving skills, Izgar (2008) lists problem solving (among other skills) as a component of leadership and said “to be effective leaders, school head-teachers must possess these leadership skills” (p. 536) and claims “the value of an administrator is measured according to his success in solving problems” (p. 536). Izgar’s research identified significant differences between problem-solving skills and school type where head-teachers were employed in that “vocational high school head-teachers are more sensible and confident in dealing with problems” (p. 542). The study also found significant differences between problem solving skills and leadership behaviors in that “head-teachers who use authoritarian behavior deal with problems in a more rational way” (p. 543).

In another attempt to research characteristics of leaders and leadership behavior, Mumford, O’Conner, Clifton, Connelly, and Zaccaro (1993) examined background information of adolescent leaders as a predictor of future leadership behavior. While evidence supporting the study’s claim in identifying similar traits of early leadership emerged, Mumford, et al (1993) investigation was a

significant step towards gaining an understanding of leadership behavior, in that specific qualities of leadership were identified. Among many qualities and skill sets that necessitate effective leadership, problem solving, according to Mumford et al (1993), “may represent a crucial determinant of effective leadership” (p 154).

Shull and Anthony (1978) measured the way in which African American and Caucasian supervisors solve problems in order to measure supervisory behavior. They determined, “problem solving behavior is a key ingredient of supervisory behavior” (p. 763). Following this line of study into problem solving styles and the importance of problem solving as an ingredient of supervisory behavior, Ganster (2005), described decision making as “the most critical component of an executive’s job (492). In Harris’ (2003) article, *I Was Born To Be a CEO*, he admits the value of problem solving to management and said, “the MBA exposed me to a wide range of disciplines and business programs, but it didn’t teach me how to solve problems” (p. 55).

Additional evidence supporting the suggestion that problem solving is a component of effective leadership comes from Burstiner (2001), who found organizations agree problem solving as an essential characteristic of leadership as “many large corporations now provide special training for their management-level personnel in creative approaches to problem-solving” (p 47). Burstiner’s findings demonstrate the need for more research into understanding problem solving styles and identifying the problem solving styles of those in leadership positions in order to better understand leader effectiveness, creativity, problem solving style, and the relationships among these facets. Burstiner addressed potential results of creative workshops by stating that “Research also indicates that the creative thinking and problem solving abilities of secondary school department chairmen (educational leaders) can be improved through an in-service workshop” (p.

47). This statement supports the theory that Creative Problem Solving is not only a core component of leadership (in an educational environment) but can be improved with training.

Evans and Evans (2001), created Leadership Workshop, a workshop where high school and college students could learn about leadership and develop leadership skills. Problem solving is integrated into the curriculum and as preparation for the course, the teacher, leader, or counselor is provided with a leadership need situation, pre-workshop questions, leadership styles and approaches information, leadership characteristics information, problem solving definitions and processes, and group activities prior to the workshop. The fact that problem solving processes are provided as pre-work supports the theory that problem solving is a key component of individuals in leadership positions. Other colleges and schools who offer leadership or management training are also seeing the need to provide problem solving training to students and in Kosicek's (2008) essay on teaching leadership to college undergraduates, he said, "the teaching of management exposes the student to analytical skills for problem solving" (p. 67). Heijitjes (2007) discusses the MBA and MSc programs at Universiteit Maastricht, Netherlands where problem solving is part of the curriculum. In her article, Heijitjes adds that not only is problem solving a skill for leadership, but also that, "programs that emphasize problem solving, self-directed learning, and self-awareness, aims to help students chart their own course toward becoming more responsible leaders" (p. 32).

By utilizing a problem-solving style inventory, called *FourSight*, which was designed to measure preferences for the key aspects of Creative Problem Solving, the current study furthers previous lines of research in that styles of leaders are examined, and specifically investigated answering whether a unique problem solving profile exists among those in a leadership position. If

a unique profile exists then new insights may be gained relative to how leaders prefer to approach problems that require creative thinking.

Measuring Personality Types and Problem Solving Styles

Understanding personality type is not a new phenomenon and much research can be found that has examined different aspects of one's personality. Early investigation into this field can be attributed to Carl Jung and his study into the orientation of personality.

According to Jungian theory there are two personality orientations, extroversion and introversion and four psychological functions, thinking, feeling, sensing, and intuition. Significant research into Jungian personality type theory has been performed by Isabel Briggs Myers, and her mother Katharine Cook Briggs. They developed a tool called the Myers Briggs Type Indicator (MBTI) which has been used numerous times in business, education and science. Through the years, extensive use of this typology has supported its validity and reliability. In its use of examining leader personality traits and the insight into leadership that can be gained by studying psychological preferences, Roush and Atwater's (1992) study found the Myers Briggs Type indicator can be used to understand transformational and transactional leadership behaviors as well as the leader's self perception accuracy. They discovered transformational leaders were more of the sensing and feeling types. The study "suggests avenues for improved leadership study and demonstrates the usefulness of the MBTI in understanding how psychological preferences can provide research into leadership behavior" (p. 32). They further stated the MBTI is a useful tool that should be utilized in future leadership research. Cabral and Joyce (1991) also found the MBTI a valuable tool and said, "The MBTI has become increasingly accepted and used in management

and organizational settings” (p. 40). According to Tucker (1991), “The Myers Briggs Type has had considerable heuristic value for both theoretical and applied research with over 1700 theses, dissertations, and articles currently listed in the MBTI Bibliography of research”(p. 571). Carr (2006) used the MBTI to distinguish personality types between managers and non-managers. The study found no significant differences between managers of different nationalities, sex or industry sector, however, there was a difference in type between managers as a whole and non-managers. Managers tended to fall into four main MBTI types - ESTJ, ENTP, ISTJ and ENTJ. This is different from the most common types found in the [general](#) population. Data collected by the Office for National Statistics found these to be ISTJ, ISFJ, ESFJ and ESTJ” (p 48).

One dimension of personality type studied by Dr. Michael Kirton (1977) identifies individual problem solving styles. In his Adaption-Innovation (AI) theory, Kirton claims all people solve problems and are creative. The theory, in summary, states that people differ in the cognitive styles in which they are creative, solve problems, and make decisions. These style differences range on a continuum, from high adaption to high innovation. The more adaptive prefer their problems to be associated with more structure. The more innovative prefer solving problems with less structure. The KAI has been used to enhance individual awareness, facilitate problem solving in teams, and help resolve conflict between two people or two teams. AI theory sharply distinguishes between level (how much) and style (what type) of creativity and Kirton’s KAI is the instrument used to measure one’s cognitive style. The current study claims problem solving is a key component of leadership and examining various styles or levels of problem solving is an important part to understanding leadership behaviors. Although previous research specific to understanding and identifying the creative problem solving styles of executives was not prevalent similar research such as studies using the KAI and AI are available and have been used extensively

throughout business to measure one's style of creativity and provide valuable insight into the way people prefer to solve problems, make decisions, and display their creativity. As a result, previous research which utilized the KAI and AI theory has been valuable in completing the current study.

Tullet (1995) measured the KAI scores of 133 project managers, leaders in the realm of project planning and found a mean score of 109 which indicates a strong preference towards the innovative style of decision-making and problem solving. Another study utilizing the KAI and Kirton's A-I theory conducted by Buttner and Gryskiewicz found entrepreneurs were more innovative with a mean score of 113.9. Begley and Boyd (1986) found risk taking more prevalent among entrepreneurs than managers and Smith, Gannon, Grimm, and Mitchell (1988) found entrepreneurs less rational in their decision making than managerial counterparts.

Prior studies have utilized thinking style measures, personality tests, and creativity style inventories to help identify behaviors and preferences common among leaders. This study provides additional information into leader decision-making styles by examining the way in which leaders of an organization prefer to solve problems. Past research has provided a glimpse into some key differences in creativity and personality styles of leaders versus others, however since some authors (Mumford, et. al 2000, Puccio, Murdock & Mance, 2006, Mosley, O'Brien, & Pietri 1991, Buttner, Gryskiewicz, & Hidore 1999) maintain that problem solving, and more specifically creative problem solving, is a crucial leadership skill for leadership success, it makes sense to carry out a study that examines whether those in leadership positions express unique preferences within the fundamental stages of the creative process.

Purpose of Study

If problem solving is a key component of leadership then the results from this study may prove valuable in defining the way leaders approach problems, provide insight into characteristics of leaders, and offer areas to explore for further research.

The purpose of this study was to further research into the examination of individual preferences for aspects of the creative process among those in leadership positions. The study examined the problem solving styles of leaders within one specific organization and asked the question “Is there a unique problem solving style that is prevalent among leaders?” More specifically, this study investigated the distribution of *FourSight* Profiles among employees in different levels of an organization’s hierarchy.

Significance of the Study

There are several reasons why the research question posed by this study makes a significant contribution to the field of creativity. First, as it would appear that no previous study has investigated this specific question, it fills a gap in the literature. Second, and more importantly, by exploring problem solving styles of those in leadership positions and identifying whether specific leadership problem solving preferences exist, this study will add to the existing research performed by Mumford and his colleagues (2000) in which they claim that for leaders to be successful they must use creative problem solving to address complex organizational problems.

Summary

This study attempted to understand the problem solving styles of leaders in one organization and also identify similarities or differences among those styles within the leaders at varying levels of an organizational hierarchy. It has been suggested that problem solving is critical to leadership success; therefore, the results will present valuable insight into the problem solving styles of leaders, identify the implications of problem solving styles in organizations, and support future leadership research and development.

Mosley, O'Brien, and Pietri (1991), found "a concept gaining rapidly in popularity as a tool for developing managers in areas such as decision making and communication focuses on the elements of an individual's problem solving style" (p. 6). The purpose of this study was to further examine this area of leadership research, support problem solving style research, and add to the literature within the realm of leadership behaviors.

Chapter Two

Literature Review

Introduction

Similar to trait and personality-based research, understanding thinking styles has become another area of significant study. The following chapter provides the reader with a general understanding of thinking styles, measuring styles, and implications of identifying style in organizations. In addition, creativity and Creative Problem Solving (CPS) are introduced. The instrument utilized for this study, *FourSight*, and supporting literature for the measure is also presented.

Understanding Thinking and Problem Solving Styles

Many organizations attempt to identify personality characteristics of their workforce and the use of paper-and-pencil surveys has proliferated. Other than these typologies, psychology has also tried to map thinking styles, a component of personality type. To better understand personality type and thinking style, Balkis & Isiker (2005), define personality type as “a remarkable system which may be used in order to understand purposes and actions of people” (p.286) while thinking styles, according Balkis & Isiker (2005), are “an advisable method of using and expressing one or more abilities” (p. 285). According to their study, Balkis & Isiker (2005) state “this research identified even closer relationships between the concepts of the thinking styles and of the personality types” (p. 291) and predications they made about the relationship between a participant’s thinking style and the individual’s personality type “generally corresponded to the results of the correlation analysis” (p. 290). For example, persons with an artistic personality type

share similar characteristics with liberal, legislative, and anarchic thinking styles because individuals with these thinking styles prefer to do things their own way and enjoy tasks that require creative strategies (Balkis & Isiker, 2005).

In a study performed in 1981, Coulson and Strickland employed the use of an instrument called the Herrmann Brain Dominance Instrument (HBDI) to determine thinking styles of leaders within school administration. The Herrmann instrument used by Coulson and Strickland (1981) is constructed around the brain's cerebral and limbic systems and yields data in four quadrants; (a) cerebral left, (b) limbic left, (c) cerebral right and (d) limbic right (Boer, 1999). The HBDI makes use of a paper-and-pencil questionnaire that was developed from results of electroencephalographic (EEG) measurement of brain-wave activity, which determines brain dominance or hemisphericity (Rowe & Waters, 1992). The HBDI questionnaire assesses which quadrant of the brain is most active--the cerebral left, limbic left, cerebral right, or limbic right. Recent advances in the understanding of brain function and hemispheric specialization have made it possible to measure thinking style preferences of individuals and make generalizations about thinking styles preferences of the occupational group from which they come.

The HBDI was used to ascertain the thinking style preferences of school district superintendents and chief executive officers. Coulson and Strickland (1981) stated, "one way to predict how educational questions will be answered is to look at the thinking style preferences of superintendents of schools" (p. 163). Their study found that when measuring the thinking style preferences of school superintendents and thinking style preferences of company CEO's several distinctions can be made.

To begin, "chief executive officers have a higher average right hemispheric dominance score than left. The opposite is true for the superintendents. Their average left score is 116 while

their right is 87.04” (p.166-167). In this study, the chief executive officers were best characterized as preferring right mode thinking over left while the opposite was true for the superintendents. These are very interesting findings when one can assume that by definition of the actual job, it is expected that these two occupational choices fall under these distinctions. “Several reasons may explain why superintendents’ thinking style preferences do not match more closely those of chief executive officers. One is that superintendents work under the direction of school boards reflecting a conservative political climate, much of a superintendent’s time is spent responding to criticism and defending programs”(p 171). The left-brain or analytical brain functions at its best in these situations. On the other hand, chief executive officers daily responsibilities and decision-making may encourage the use more right brain or intuitive brain functions, which permit more innovative solutions to problems and many times they are rewarded for this “out of the box” thinking.

Sternberg (1988) also evaluated thinking styles and suggested a theory of mental self-government. Mental self-government theory establishes a connection with daily activities and management tasks and discusses 13 thinking styles along five different dimensions. The theory describes legislative, executive, judicial, hierarchal, oligarchic, monarchic, anarchic, global, local, internal, external, liberal, and conservative mental styles (Balkis & Isiker 2005, p. 284-285).

Another study focusing its attention to determining thinking styles was conducted by Lavack (1991). This study explored cerebral hemispherecity, college major and occupational choices. Lavack used 275 undergraduate students majoring in humanities, social and natural sciences. Each subject completed several thinking style instruments. The Human Information Processing Survey, the Tactual Performance Test and the Wechsler Adult Intelligence Scale-Revised. According to Lavack (1991) “object assembly scores for humanities subjects and right hemispheric preferences were correlated +89, suggesting that these disciplines depend on a more

diffuse, metaphorical, and perhaps divergent thinking style” (p. 220). In contrast says Lavack, “natural science students appear to prefer a more integrated or left mode of intellectual functioning, a style evident for the social sciences as well” (p220). In his conclusion, Lavack found the demands of an occupation as well as a college major necessitates a left, right, or integrated cognitive style, but emphasis remains centered on left in most educational and industrial organizations.

Balkis and Isiker (2005) said, “Understanding thinking styles is a good indication of how we prefer to use the cognitive abilities we possess” (p. 86) and Perry (1970, 1981) studied thinking styles as well but focused more on cognitive styles and constructed a theory that is aimed at tracing the development of ways of reasoning among university students. Cognitive style may be generally defined as the way in which humans process information. Perry's theory consists of nine positions and delineates the steps through which students develop from being dualistic and concrete, to being more contingent and relativistic, and then to being more committed. Because some of the adjacent positions are similar, Perry placed the nine positions in three sequential categories: dualism, relativism, and commitment (Zhang, 2002).

If it is true that different occupations or an individual's hierarchal positioning demands certain thinking styles or preferences then the results of this study will help in understanding if similar thinking styles exist among those in leadership positions or more specifically, if similar styles exist in the way in which leaders go about solving problems.

The Implications of Style in Organizations

This study made the assumption that if a predominant problem solving style exists among leaders then insights into how leaders attempt to solve problems can be attained. As this line of research is unique in nature and previous literature specific to this topic is unavailable, implications from similar studies provide an awareness of differences in style and type and also provide direction for future investigations.

Understanding, measuring, and utilizing an individual's personality type or style information may pose several implications. To begin, it is important to differentiate between abilities and preferences. A person's ability defines the capacity he or she has to complete a task (physical or non-physical) and a preference or style may be considered a person's preferred means of completing a task. According to The American Heritage Dictionary (2001), style is defined as "individuality in one's taste," or "the way in which something is said, done, expressed, or performed" (p. 817). One may have the ability to do something and prefer to do it in a specific manner. These differences should be considered before results are used to influence business and academic decisions. When comparing intelligence with thinking style, Tullet (1996) made a clear distinction, "knowledge of a person's intelligence or ability tells us nothing about his or her thinking style, nor vice versa." In another attempt to advise when differentiating style from type, Hellreigel and Slocum (1975) suggested, "differences in individual styles should not be synonymous with differences in personality types" (p. 29). Furthermore, Puccio (1999) stressed this type of self-awareness by stating, "From an applied perspective, the goal is to help people become aware of their problem solving preferences so they can better understand their strengths and weaknesses when solving problems creatively. This knowledge may help people to more

skillfully solve open-ended problems by recognizing their natural tendencies and to use Creative Problem Solving strategies to strengthen less developed skills” (p. 172). Buffington, Jablow, and Martin (2002) examined team dynamics and cognitive style. Their investigation strengthened the belief that applying cognitive style theory to better understand personal dynamics of individual when working in teams is “appropriate and useful” (p. 32). They concluded that conveying an appreciation of different problem solving strategies led their study’s participants to “powerful insights in their thinking” (p. 32).

When comparing problem solving and fit within an organization, Summers, Sweeney, and Wolk (2000) claim, “matching an individual’s problem solving style to his or her functional role may help minimize role stress and its attendant dysfunctional effects in public accounting” (p. 1). Similarly, Chan (1996) studied employment fit and the cognitive misfit, which “refers to the degree of mismatch between an individual’s cognitive style of problem solving and the style demands of the work context” (p. 194). According to Chan, “the degree of cognitive misfit was positively associated with turnover probability (p. 203)”

Finally, utilizing this type of information can also aid in identifying obstacles to implementing change. For example, finding a large proportion of Kirton’s adaptor style in their study of accounting educator’s problem solving style, Wolk, Schmidt and Sweeney (1997) claimed the level of change within current accounting curriculums needed would be difficult to attain as “the predominance of the adaptive style may constrain the agenda of change being called for within the academic accounting community” (p. 479)

Gaining an understanding of various thinking styles and problem solving preferences was a critical part of this study. As there is an abundance of research related to these topics and finding typologies or examinations that attempt to assess one’s style are easily attainable, one should be

aware of the implications. It has been said that preferences are only one's preferred methods of executing a task it does not provide insight into ability; which is one's capacity or capability to complete a task. This study examined the problem solving preferences of individuals within one organizational hierarchy and assessed leadership preferences, not leadership abilities.

Creativity and Creative Problem Solving

This study explored how senior managers go about solving problems and identified whether similarities exist in their problem solving style. The study suggested that if a similar style exists among leaders then insight may be gained into understanding more about the way in which leaders solve problems. This next section provides an introduction into Creativity and the Creative Problem Solving process.

Problem solving and its dimensions is another area of research that intrigues many researchers and has existed for years. Bate (1984), Fee (2001), Shull and Anthony (1978), Herbig and Jacobs (1995) and others have examined many facets of problem solving. From defining stages and phases of problem solving (Treffinger, Isaksen, Firestein, & Dorval, 1994) to mapping managerial problem solving styles (Hellriegel & Slocum, 1975) researchers have attempted to learn as much as they can about this ability and its various processes.

Early research into creative problem solving was performed by Alex Osborn. Osborn was an advertising executive and founder of the Creative Education Foundation. In his 1963 version of *Applied Imagination* Osborn discussed the process behind the mystery of creative problem solving. "The creative problem solving process ideally comprises these procedures; (1) fact-finding; (2) idea-finding; and (3) solution-finding" (p. 86).

Following Osborn as President of the Creative Education Foundation was another highly creative individual, Sidney Parnes. Parnes continued investigation into Creative Problem Solving and developed a five (or six) stage model of this process. Treffinger, Isaksen, and Firestein (1982) and Treffinger, Isaksen, and Dorval (1994) refined Parnes' model and according to Davis (1999) "split six steps of the process into three components" (p. 119). The components and their respective phases are; "exploring the challenge," which includes identifying a goal, wish, or challenge, gathering data around it, and finally clarifying the problem. The next component is "generating ideas." This is done by utilizing the only step in this phase of the process; employing generative thought to your challenge. The last component is "prepare for action." This is when the problem solver selects and strengthens his or her solutions and formulates a plan for action.

Other models of creative problem solving exist and more recently, Puccio, Murdock, and Mance (2007) have expanded on earlier models to develop the Thinking Skills Model of creative problem solving. This current model includes three primary stages (clarification, transformation, and implementation) and six process steps (exploring the vision, formulating challenges, exploring ideas, formulating solutions, exploring acceptance, and formulating a plan). Similar to other representations of problem solving processes, the Thinking Skills Model provides within its six process steps opportunities for divergent and convergent thought (two concrete rules for creative problem solving). One difference found in Puccio et. al. (2007) model among others is its very last executive phase, called "assessing the situation" (p. 38). According to Puccio et. al. (2007) "assessing the situation involves the use of metacognitive thought" (p. 38). The unique final step in the Thinking Skills Model explains how individuals must "monitor and control his or her own cognitive processes (p.38)" to move through or ahead the CPS stages and processes. Earlier research has identified similar stages and processes to the problem solving process (Treffinger,

Isaksen, Firestein, & Dorval, (1994), Treffinger, Isaksen, and Dorval 1994, Osborn (1963), however, the identification and understanding of individuals' metacognitive processes has not been found elsewhere in this literature review.

Studies exploring the effects of training of problem solving have been performed as well (Wheeler 2001, Parnes, 1972) and report interesting results. For example, in the 1972 Parnes Creative Studies Project, he states. "We now have convincing data showing that creativity-development programs work" (p. 157) and Wheeler (2001) found that individuals, more specifically, ideators in his study may be able to better develop their decision making processes by learning CPS tools.

There are variations of creative problem solving, each with distinct parts to the process and it has also been found that individuals may be able to learn and improve their own styles, thereby improving their decision making abilities. If individuals in leadership positions can become aware of their own styles and improve upon them better business decisions may be made which may lead to more efficient, organized, compassionate, and profitable firms. This study examined an individual's creative solving preference and how FourSight helps reveal interactions between their preference and the Treffinger, et. al. (1994) creative problem solving model.

FourSight

This study investigated the problem solving preferences of individual in leadership positions by utilizing a creativity style inventory called *FourSight*, created by Dr. Gerard Puccio. *FourSight* was developed to assess people's preferences within the CPS process and has been used in business, education, and industry. "With more than ten years of field-testing and research, this

simple, powerful tool measures one's preferences for different parts of breakthrough thinking or innovative thinking" (Puccio, 2002 p. 3). *FourSight* reveals what types of thinking an individual is naturally drawn to and in what area one may be shortchanging. According to Puccio (2002), the instrument is designed to "help individuals and teams better understand how they approach solving problems through creative thinking" (p. 1). As indicated by *FourSight*, there are four faces of breakthrough thinking; the Clarifier, the Ideator, the Developer, the Implementer. Each of these style preferences will be described in further detail.

Clarifier – these types like to explore challenge and opportunity, examine details, want a clear understanding of an issue, and may suffer from "analysis paralysis."

Ideator – these types like to look at the big picture, stretch their imaginations, take an intuitive approach to innovation, and may overlook details.

Developer – Developers enjoy putting together workable solutions, like to compare competing solutions, enjoy planning steps to implement and idea, and may get stuck id trying to develop the "perfect solution."

Implementer – Implementers like to see things happen, enjoy seeing ideas come to fruition, they "just do it, and may leap into action too quickly. (6-7)

It should be made clear that while people may be most comfortable working or learning using their preferred styles or in their preferred mode, it is not a sign or determinant of someone's ability. Puccio (2002) found, "A high preference simply suggests that this preference is a part of a process where you feel most comfortable and energized." (p. 4).

“Initial evidence shows *FourSight* to be both a reliable (consistency) and valid (authenticity) measure. Factor analysis of the items shows strong internal consistencies within its four scales (Clarifier, Ideator, Developer, and Implementer)” (Mann, 2003). Correlation studies with four other highly regarded psychological measures have yielded evidence that supports *FourSight*'s concurrent validity.

FourSight Research

Since its development in the late 1990's, research supporting the reliability and validity of Puccio's *FourSight* has been investigated and the instrument has been a part of several Master of Science theses. Research at the State University of New York-College at Buffalo has been conducted by Rife (2001), Wheeler (2001), and Mann (2003).

Rife (2001) extended the investigation of the Buffalo Creative Process Inventory's (BCPI, currently known as *FourSight*) validity and “explored the personality composition of the four preferences measured by the BCPI” (p. 7). Trying to unpack the makeup of a person's preferences and gain a deeper understanding of the personality traits associated with Clarifier, Ideator, Developer, and Implementer, Rife (2001) correlated the Buffalo Creative Process Inventory (former name for *FourSight*) with the Adjective Checklist. The study yielded 49 significant correlations between the two measures. Some of the most interesting correlations were among 5 ACL dimensions. According to Rife (2001), “it makes sense that the Creative Personality, Self Confidence, Succorance, Favorable, and Achievement all relate to each of the four preferences. It implies that the more someone sees themselves as these four preferences, the more likely they are to report themselves as a Creative person, Self Confident, one who is not succorant, who sees

themselves in a favorable light, and is achievement oriented.” (p. 42). Rife found these results are “exciting and begin to show evidence for the validity of the BCPI” (p. 47).

In 2001 Wheeler examined the “relationship between the people’s style and the degree to which they enjoyed learning the various components, stages, and tools of the CPS process” (p. 9). Although this study was conducted to investigate the impact of Creative Problem Solving training through the analysis of individual differences, FourSight was used to measure one’s cognitive style preference as it was in this study. Results of Wheeler (2001) identified correlations between FourSight preferences and phases of the CPS process and tools utilized in CPS. For example, according to Wheeler, “high ideators saw future value in using the CPS tool ‘Praise First (PPCO)/ALUo/LCOB’. These high ideators may believe that by understanding how to use the CPS tool ‘Praise First PPCO)/ALUo/LCOB’ they will not rush into trying so many ideas at once” (p. 73). If an individual can learn how to make better decisions by being trained in CPS and by learning CPS tools and if it is hypothesized that problem solving is a core component of leadership individuals in leadership positions may increase their effectiveness by learning their own individual preference(s), the CPS process, and CPS tools.

Finally, most similar to the current study, Mann (2003) administered FourSight to a sample of educational administrators, primary, and secondary level teachers of all subjects. This study investigated the cognitive style preferences of administrators and teachers and identified whether similarities or differences existed when compared across and within subject areas. Mann’s results indicated the overall highest score for the full sample group was Clarifier with over forty percent (40%) of the full sample population exhibiting a Clarifier preference. In addition, the findings indicated that over eighty-one (81%) subject area groups were also identified as high Clarifiers. An observation one may make from Mann’s study is that he investigated the *FourSight* preferences of

leaders within education; teachers are classroom leaders, and administrators are school leaders. In Mann's study, the Administrator group was represented by ten individuals. According to his results, there was no single preference among these educational leaders, however, 40% of the sample did report a Clarifier preference. Additionally, the mean score of 40 may signify a higher than average clarifier preference for these five individuals. As shown in table 1, a review of the administrator group to the other participant groups was also performed and found several groups with overwhelmingly large percentages also reporting a preference toward clarification.

Group Name	Clarifier Score (percentage of overall group)
Art/Music	25%
Business/Technology	38%
English	31.6%
Foreign Language	37.5%
Health/Physical Education	85.7%
Mathematics	61.1%
Science	46.7%
Social Studies	47.7%
Special Education	58.8%
Elementary Education	40%

Table 1: Clarifier Preference, participant group (Mann 2003)

Furthermore, the mean score of 40.00 for Mann's administrators is only the fourth lowest Clarifier mean with Health/Physical education, Art/Music, and Mathematics reporting mean Clarifier scores of 42.00, 40.81, and 40.44 respectively.

The current study is similar in intent as leadership preferences measured by *FourSight* are also explored. If Mann (2003) can be used as a benchmark for leader problem solving preferences, the results of this study should show a correlation and a majority of Clarifier preferences will be uncovered.

Summary

In order to appreciate insights gained from this research, one must first understand thinking styles. With an understanding of thinking styles one should then evaluate results from studies where thinking styles have been measured, and finally, the implications of style within an organizational context should be discussed. As this study is unique in that problem-solving styles of leaders within one organization are investigated, this chapter provided a review of related literature and an introduction to *FourSight* and its supporting literature.

Chapter Three

Methodology

Introduction

The purpose of this section is to describe in detail how the study was conducted. Details about the acquisition of participants, survey distribution, administration, data collection, and *FourSight* debriefing information are described.

Sample

All participants for this study were employed by a local operations unit of a global financial services firm. This fortune 500-company employs over 30,000 people globally and at the time of the study was a United States Securities and Exchange Commission publicly traded company on the New York Stock Exchange. The participants' level within the organizational hierarchy varied. For example, subjects were represented from four levels of the organization's hierarchy; entry level employees, first and second level managers, and senior level executives. Table 2 below illustrates demographic information for the sample groups.

Group	Number of Participants	Gender Breakdown	Average Age
Senior Management	27	18 male : 9 female	41.6
First/Second Level Management	30	9 male : 21 female	38
Entry Level/Non Management	16	6 male : 10 female	37

Table 2: Demographics, Sample Groups

Procedures

Before initiating the study, this researcher secured permission from the Research Foundation of the attending college to conduct this type of research. Next, the researcher prepared a proposal to the local business unit of an international financial services firm. The proposal was submitted to the site director (appendix A). After the review and acceptance of the proposal, the site head forwarded the proposal to the next level of management. After review and acceptance of the proposal by executive management and the human resources department, this researcher offered, through email and verbal communication, an invitation to participate to all company employees. Subsequently, the 100 research participants from four employment levels within the organization's hierarchy volunteered for the study. Then, via interoffice mail, this researcher distributed a copy of the *FourSight* instrument to the participants. The participants from the first three levels and a portion of the highest level within the hierarchy were chosen from the local site. Additional senior level management was chosen from a regional office located in the state of Delaware. Participants were asked to complete the *FourSight* survey. Then all materials were returned to the researcher via inter-office mail. There are three participant groups (figure 1) each with thirty members; one representative of executive management (Director, Senior Vice President, Department Manager), one representative of middle management (Section Manager, Assistant Vice President), and one representative entry-level employment (Workflow, Senior Specialist, computer operators/processors).

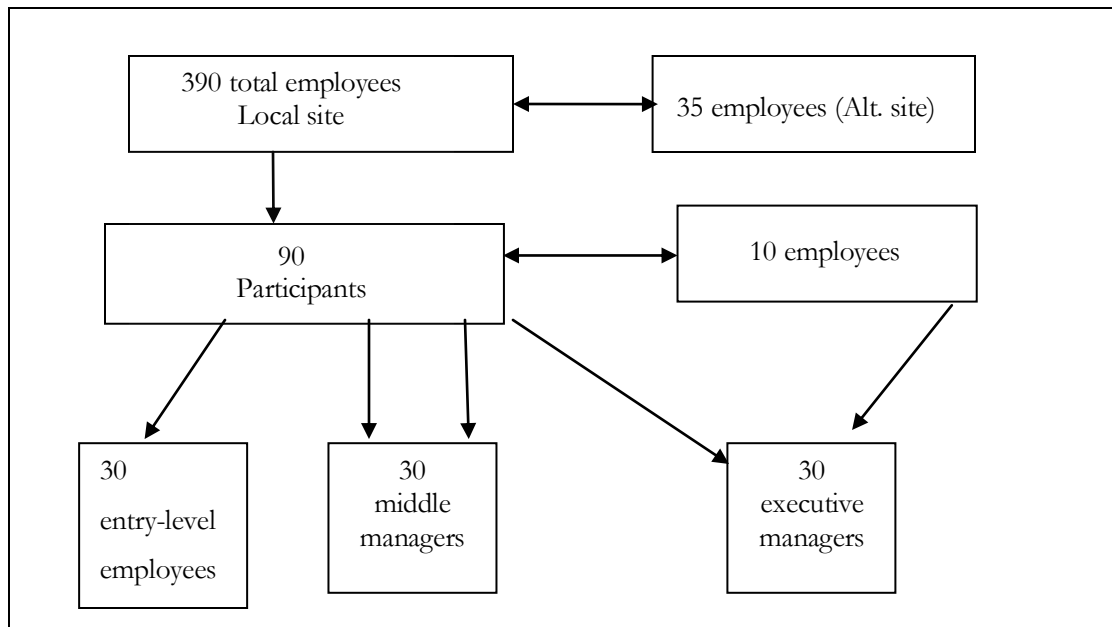


Figure 1

After scoring the *FourSight* questionnaire, the researcher scheduled a time to offer a thirty minute debrief (via conference calls or in person classroom setting) of the results to all participants.

Instrumentation

A creativity style measure, known as *FourSight* (appendix B), was used in this study. As stated, *FourSight* was developed by Dr. Gerard Puccio. In the early 1990's Puccio began to investigate the correlation between individual behavior and creative solving problem preference. The instrument has been widely used to assess one's creative thinking style. *FourSight* measures innovative or breakthrough thinking. There are four thinking styles described in *FourSight*; (a) Clarifier, (b) Ideator, (c) Developer, and (d) Implementer. Using Cronbach's alpha, this version of *FourSight* measured high internal consistency of the four scales, with each scale's alpha coefficient

exceeding .70. *FourSight* is a thirty-seven question battery with 9 items per scale. The first question is not scored. The instrument is a pen and paper instrument and is scored manually.

FourSight been compared with four other highly reputed psychological measures; (a) the Myers-Briggs Type Indicator (MBTI), (b) the Kirton Adaption-Innovation Scale (KAI), (c) Basadur's Creative Problem Solving Inventory (CPSI), and (d) the Adjective Checklist (ACL). According to Puccio (2002), "FourSight shows significant correlation with four highly reputed psychological measures, giving evidence of its validity" (p. 36).

Summary

This chapter provided a description of the processes and procedures required to complete this research study. All necessary college approvals, corporate proposals, and sample instruments utilized are referred to and discussed. Additionally, these documents are provided in the respective appendices.

Presentation and Analysis of Data

Introduction

This section presents the findings and analyzes the data gathered from the study. The descriptive data and significant differences are presented with general observations and interpretation of the findings. The chapter concludes with an overall summary.

Descriptive Statistics

Table 3 presents the descriptive statistics for the four Foursight preferences among all groups, individual group and total mean scores, group size, and standard deviations. It is interesting to note that for three of the four Foursight preferences (Clarifier, Ideator, and Developer) mean scores followed the same order as the employment hierarchy with entry level employees scoring the least highest and middle management and executive management scoring the second and first highest respectively. For the fourth preference (Implementer) it is interesting that the executive group mean score was lowest of all groups including having a score lower than all groups' overall mean score. The analysis in table 3 also identifies a significant difference among groups for the Ideator preference which is further illustrated in tables 9 and 10.

FourSight Preference	N	Mean	Std. Deviation
Organizational Hierarchy			
Clarifier			
Senior Management	27	36.555	4.492
Mid Management	30	34.500	5.250
Entry Level	16	33.500	5.573
Total	73	35.041	5.135
Ideator			
Senior Management	27	33.596	5.603
Mid Management	30	30.166	6.649
Entry Level	16	27.937	5.904
Total	73	30.945	6.426
Develeper			
Senior Management	27	33.814	4.376
Mid Management	30	33.400	4.343
Entry Level	16	32.750	3.991
Total	73	33.411	4.242
Implementer			
Senior Management	27	33.592	3.522
Mid Management	30	35.066	4.193
Entry Level	16	34.312	4.527
Total	73	34.356	4.032

Table 3: Descriptive Statistics for FourSight across All Levels

Using Cronbach's Alpha as the measure for internal consistency of all of the Foursight skills, reliability analysis was conducted and tables 4 through 7 represent summaries for each FourSight preference. Unlike past research which has shown alpha coefficient above the minimum, in this study, two the four scales measured above the desired .70 coefficient. The scales for Clarifier and Ideator reported coefficients of .80 and .84, respectively. The scales for Developer and Implementer were .64 and .66, respectively.

FourSight Preference	Mean	Std. Deviation	N
Clarifier			
1	4.027	.9783	72
2	3.972	.9782	72
3	4.166	.888	72
4	4.013	.863	72
5	3.527	.903	72
6	3.402	1.002	72
7	3.986	.813	72
8	4.111	.881	72
9	3.916	.884	72

Table 4: Cronbach Alpha Analysis for Clarifier Scale/Alpha = .80

FourSight Preference	Mean	Std. Deviation	N
Ideator			
1	3.625	1.118	72
2	3.597	1.121	72
3	3.708	.970	72
4	3.819	.893	72
5	2.986	1.119	72
6	2.930	1.356	72
7	3.638	1.213	72
8	4.027	1.006	72
9	3.750	.817	72

Table 5: Cronbach Alpha Analysis for Ideator Scale/Alpha = .84

FourSight Preference	Mean	Std. Deviation	N
Developer			
1	3.671	.943	72
2	3.726	.989	72
3	3.767	1.020	72
4	4.013	.857	72
5	3.520	.899	72
6	3.438	1.06	72
7	4.054	.779	72
8	3.767	.825	72
9	3.452	.898	72

Table 6: Cronbach Alpha Analysis for Developer Scale/Alpha = .64

FourSight Preference	Mean	Std. Deviation	N
Implementer			
1	3.9167	.85168	72
2	3.6111	1.15741	72
3	4.3889	.74220	72
4	3.9861	.88003	72
5	3.8889	.89687	72
6	3.7361	.90372	72
7	4.0833	.78274	72
8	4.2083	.74941	72
9	2.5278	.83872	72

Table 7: Cronbach Alpha Analysis for Implementer Scale/Alpha = .66

As shown in Table 7 above, the scale for Implementer returned a coefficient of .66, considered to be less than desired; however, as illustrated in table 8 below, if Question 37, the last item on the FourSight inventory, were removed the coefficient for the Implementer preference

would change to .734 which is above the minimum .70. This does not exist for any other single item analyzed in this study and does raise questions about Question 37 itself and/or its placement as the last item in the FourSight measure.

Item Number	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Variation	Cronbach's Alpha if Item Deleted
37	31.8194	17.305	-.219	.734

Table 8: Item-Total Statistics - Implementer

One way analyses of variance were also run to test for significant differences on Foursight preferences for all groups and can be found in table 9 below. The mean score among the three groups (executive/senior management n=27), middle management (n=30), and entry level employee/non management (n=16) were tested to see if there were differences. There was one significant difference found among groups in the Ideator preference and table 10 illustrates the Post Hoc assessment of which groups demonstrated differences.

Groups	Sum of Squares	df	Mean Square	F	Sig
Clarifier					
Between Groups	108.710	2	54.355	2.125	.127
Within Groups	1790.167	70	25.574		
Total	1898.877	7			
Ideator					
Between Groups	352.158	2	176.079	4,701	.012
Within Groups	1284.274	70	37.452		
Total	1295.671	7			
Developer					
Between Groups	11.397	2	5.699	.311	.734
Within Groups	1284.274	70	18.347		
Total	1295.671	7			
Implementer					
Between Groups	30.917	2	15.459	.949	.392
Within Groups	1139.823	70	16.283		
Total	1170.740	7			

Table 9: Analysis of Variance (ANOVA) among all three groups

Table 10 represents the Post Hoc Assessments of differences by group and as noted above this study found a significant difference among the groups surveyed within the Ideator preference. The most significant difference, .013, was found between the senior management group and the entry level group. There was also a difference of .093 found between the senior management group and the middle management group.

Dependent Variable	(I) Grp Code	(J) Grp Code	Mean Difference (I-J)	Std. Error	Sig.
Clarifier	Exec	Mid	2.05556	1.34151	.282
		Entry	3.05556	1.59548	.142
Clarifier	Mid	Exec	-2.0556	1.34151	.282
		Entry	1.00000	1.56551	.799
Clarifier	Entry	Exec	-3.05556	1.59548	.142
		Mid	1.000000	1.56661	.799
Ideator	Exec	Mid	3.42593	1.62342	.095
		Entry	5.65509	1.93076	.013
Ideator	Mid	Exec	-3.42593	1.62342	.095
		Entry	2.22917	1.89450	.471
Ideator	Entry	Exec	-5.65509	1.93076	.013
		Mid	-2.22917	1.89450	.471
Developer	Exec	Mid	.41481	1.13625	.929
		Entry	1.06481	1.35136	.712
Developer	Mid	Exec	-.41481	1.13625	.929
		Entry	.65000	1.32598	.876
Developer	Entry	Exec	-1.06481	1.35136	.712
		Mid	-.65000	1.32598	.876
Implementer	Exec	Mid	-1.47407	1.07045	.358
		Entry	-.71991	1.27310	.839
Implementer	Mid	Exec	1.47407	1.07045	.358
		Entry	.75417	1.24919	.819
Implementer	Entry	Exec	.71991	1.27310	.839
		Mid	-.75417	1.24919	.819

Table 10: Post Hoc Assessment of Differences Among Groups

Summary

This chapter presented the results of the data obtained during the study and identified notable findings. Significant differences were found among all three groups for one of the FourSight skills, Ideation, with the most significant difference existing between senior management and entry level employees. There was also a difference between senior management and middle management and although not as high as that between senior management to entry level, the data does support the hypothesis that creative problem solving skills are a trait held by leaders and in this case, for

ideation, a marked difference toward that preference among those within an organizational hierarchy.

Chapter 5

Conclusions, Recommendations, and Implications

Introduction

The purpose of this chapter is to present overall conclusions of this study as well as recommendations for future research. The guiding question of this thesis as identified in Chapter 1 is addressed. This chapter concludes with an overall summary.

Conclusions

The purpose of this study was to conduct further research into the identification of individual preferences for aspects of the creative process among those in leadership positions. With this in mind, the results were exciting and showed support for this study and others which investigate whether creativity and creative problem solving are required personality traits for successful leaders.

With the results in mind the following section answers the research question presented in Chapter 1.

Is there a unique problem solving style that is prevalent among leaders?

Yes, in this specific organization a preference toward ideation is prevalent among the leadership team. Ideators are individuals who like to generate broad ideas and concepts, are most comfortable understanding the big picture and stretching their imagination. They are flexible thinkers, see many possible solutions, and are drawn to abstract and global issues. Having

professional relationships with many of the survey participants, these results are aligned with the author's personal experiences and opinions.

The groups who participated in this study were current or former employees of Operational Units for a major Financial Services firm and encounter challenges such as increasing efficiency, reducing expenditures, meeting federal and corporate regulations and reporting requirements, and thinking globally on a daily basis. The stress level is considered high among the teams and leaders require creative problem solving skills among many other traits, skills, and abilities. As a former employee of the organization and a middle management study participant, the author has witnessed the problem solving behaviors of many of the study participants and in addition to demonstrating high ideator scores on FourSight, the author's personal experiences of Brainstorming sessions and strategy meetings involving employees from all levels of the employment hierarchy support the main finding of this study.

With trillions of dollars transacted and processed daily by the groups who participated in this study the author agrees that employees at all levels of the organization require creative skills because creative solutions do provide new ways to solve old problems. The members of this senior management group are tasked with generating new ideas and they must have the ability to envision multiple solutions to challenges as the work environment requires flexibility. Intricate relationships between financial products, back office processing, and technology restraints are just a few of the challenges faced by this senior management team. As found in the study, the senior managers of this organization have a preference towards ideation which in the author's opinion assisted them in providing new ideas for the critical challenges they faced. Providing multiple ideas to lower levels of management who evidenced higher preferences in clarification and development, though not

statistically significantly so, also demonstrates an interesting distribution of creative problem solving preferences among those in this organization.

From a business perspective, money may be saved, products may be improved, and operational processes may be enhanced to function more seamless by finding new and creative solutions to existing problems. By identifying individual preferences within the creative process and by understanding the nature of leadership and the skills required for success organizations may be better suited to locate appropriately qualified individuals to lead them.

Recommendations

This study identified one significant difference in creative problem solving styles among those in leadership positions and is aligned with other hypotheses investigating creative problem solving styles and leadership (Buttner, et. al. 1999, Coulson & Strickland 1983, . Izgar, 2008, Mann 2003, Mosley, et. al. 1991, Mumford, et. al. 2000) in that problem solving preferences were identified, more specifically, one individual preference existed among the senior management team. Additionally, similar to other research in the leadership field, (Heijltjes 2007, Hellriegel & Slocum 1975, Herbig & Jacobs 1996, Kosicek 2008, Mankins & Steele 2006, Marshall 2008) this study recognized that problem solving is a key component of leadership and can be enhanced. Future studies involving senior managers in other organizations may provide further insight into the distribution of creative problem solving preferences among those in leadership positions. Similar findings would supplement the theory that leadership does require creative skills and abilities. Furthermore, studies investigating the collection, utilization, and maintenance of this data may also be deemed appropriate. As discussed previously, if traits for successful leadership are

defined, individuals have a valuable tool for self discovery and personal development and organizations have a valuable tool for employment recruiting and professional development. More studies analyzing the creative problem solving preferences of leaders in the same organization throughout multiple locations would also provide additional data and may possibly identify a trend throughout an entire organization not only a subset or regional location. Such future studies may wish to replace or modify the statement associated with question 37 on *FourSight* as this item showed weaker reliability.

Finally, longitudinal studies involving individuals throughout a career span would also provide interesting results. Questions such as; “Do individuals have one single, consistent creative problem solving preference throughout their professional career or is there a shift as one progresses through an employment hierarchy?”, or “Do individuals demonstrate one single, consistent creative problem solving preference throughout their professional career or is there a shift as one digresses through an employment hierarchy?” may be answered. Such longitudinal studies would also be useful in determining whether individuals are selected, in part, for leadership positions due to their Ideator preference or if after selection individuals naturally develop this preference in response to the tasks associated with leadership positions.

Implications

The results of this study had both theoretical and applied impact in terms of implications. From a theoretical side, it provided further insight into the preferences and creative behavior found among those in leadership positions, thereby furthering the contention that leadership involves creative thinking, especially the use of imagination and ideation. From an applied perspective,

studies attempting to gain an understanding of the traits required for leadership open the door for a multitude of applications for the data.

Professional organizations may use the data to; increase their overall productivity, ensure a better match for a person-environment fit, understand their employees better, offer specialized or concentrated professional development training, and for team formation, performance, and dynamics. Individuals may use the data to understand themselves better, find areas of improvement, and learn to communicate and work more productively with others.

Summary

This chapter provided the overall conclusions to the research as well as addressed the guiding thesis question. Specifically, this chapter provided an interpretation of the results and a description of recommendations for future research. Theoretical and applied implications of the study concluded the chapter.

References

- Balkis, M. & Isiker, G.B. (2005). The relationship between thinking styles and personality types. *Social Behavior and Personality* 33(3), 283-294.
- Banerjee, P. (2004). Making better business decisions: understanding critical thinking and problem solving skills. a book review. *IIMB Management Review* 16(2) 0.
- Boer,A.L., Steyn, T. (1999). Thinking style preferences of underprepared first year students in the Natural Sciences. *South African Journal of Ethnology* 22(3) 97-103.
- Briggs-Myers I. & Cook–Briggs K. (1998). *Introduction to type*. Palo Alto, CA: CPP, Inc.
- Buffington, K.W., Jablokow, K.W., & Martin, K.A. (2002) Project team dynamics, and cognitive style. *Engineering Management Journal* 14(3), 25-33.
- Burstiner, I. (2001). Evaluation of a mini-workshop in “creative leadership” for educational administrators. *Education* 93(1), 47-50.
- Buttner, E. H., Gryskiewicz, N., Hidore, S.C. (1999). The relationship between styles of creativity and managerial skills assessment. *British Journal of Management* (10), 228-238.
- Cabral, G. & Joyce, M. H., III., (1991). Managers and psychological type in an industrial setting: sex differences and similarities, managerial level, and age. *Journal of Psychological Type*, 21, 40- 46.

- Carr, M. (2006). How managers and non-managers differ in their mbti personality type. *People Management, 12(9)*, 48-48.
- Chan, D. (1996). Cognitive misfit of problem-solving style at work: a facet of person-organization fit. *Organizational Behavior and Human Decision Process, 68(3)*, 194-207.
- Coulson, L. & Strickland, A., (1983). The minds at the top: An analysis of the thinking style preferences of superintendents of schools and chief executive officers. *Journal of Creative Behavior, 17(3)*, 163-174.
- Davis, G.A. (1999). *Creativity is forever (fourth ed.)*. Dubuque, IA: Kendall Hunt
- Evans, A.L. & Evans, V. (2002). Leadership workshop. *Education 123(1)*, 18-30.
- Fox, J. M., & Fox, R.L. (2000). *Exploring the nature of creativity*. Dubuque, IA: Kendall Hunt
- Ganster, D.C. (2005). Executive job demands: suggestions from a stress and decision making perspective. *Academy of Management Review 30(3)*, 492-502.
- Gustafson, S. B. & Mumford, M.D. (1995). [Personal style and person-environment fit: a pattern approach](#). *Journal of Vocational Behavior, 46(2)* 163-88.
- Harris, G. (2003). I was born to be a ceo. *BizEd March/April 2003*, 54-55.
- Heijltjes, M. (2007). [Learning to Lead--Responsibly](#). *BizEd, 6(6)*, 32-37.
- Hellriegel, D. & Slocum, J.W. (1975). Managerial problem-solving styles. *Training & Development Journal, 29(3)*, 29-36.

- Herbig, P. & Jacobs, L. (1996). Creative problem-solving styles in the USA and Japan. *International Marketing Review*, 13(2), 63-71.
- Hoy, F. & Hellreigel, D. (1982). The kilmann and herden model of organizational effectiveness criteria for small business managers. *Academy of Management Journal* 25(2), 308-322.
- Izgar, H. (2008). Headteachers' leadership behavior and problem solving skills: a comparative study. *Social Behavior & Personality*, 36(4), 535-548.
- Kirton, M.J. (1987). Kirton adaption-innovation inventory manual (2nd ed.) Hatfield, UK: Occupational Research Center.
- Kosicek, P.M. (2008). [An essay on the teaching of leadership to undergraduates in business schools](#). *Education, Knowledge & Economy*, 2(1), 67-73.
- Lavack, J. F. (1991). Cerebral hemisphericity, college major and occupational choices. *Journal of Creative Behavior*, 25(3), 218-222.
- Maier, N.R.F., & Sashkin, M. (1971). Specific leadership behaviors that promote problem solving. *Personnel Psychology* 24, 35-44.
- Mankins, M.C. & Steele, R. (2006). Stop making plans and start making decision, *Harvard Business Review*, 84(1), 76-84.
- Mann, M.C. (2003). *Identifying the creative problem solving preferences of secondary educators and administrators*. . Unpublished master's thesis, State University of New York College at Buffalo, Buffalo, New York.

Marshall, D. (2008). Creating new leaders, *Leadership Excellence* 25(10), 10-12

Mosley, D.C., O'Brien, F.P. , & Pietri, P.H.(1991). [Problem solving styles determine manager's approach to making decisions](#). *Industrial Management*, 33(5) 4-9.

Mumford, M.D., O'Connor, J., Clifton, T.C., Connelly, M.S., & Zaccaro, S.J. (1993).

Background data constructs as predictors of leadership behavior. *Human Performance* 6(2), 151-195.

Mumford, M.D., Zaccaro, S.J., Connely, M.S., Marks, M.A. & Gilbert, J.A. (2000). Assessment of leader problem-solving capabilities. *Leadership Quarterly*, 11(1), 37-64.

Osborn, A. (1963). *Applied imagination*. New York: Charles Scriber's Sons.

Parnes, Sidney (1971). The creative studies project. As in *Frontiers of Creativity research* Isaksen 1987 156-187.

Perry, W. G. (1970). *Forms of intellectual and ethical development in the college years: A scheme*. New York: Holt, Rinehart and Winston.

Perry, W. G. (1981). Cognitive and ethical growth: The making of meaning. In A. Chickering (Ed.), *The modern American college*. San Francisco: Jossey-Bass.

Puccio, G. (2002). *Your thinking profile*. Evanston, IL: Thinc Communications.

Puccio, G. (2002). *FourSight tech manual*. Evanston, IL: Thinc Communications.

Puccio, G. (1999). Creative problem solving preferences: their identification and implications. *Creativity and Innovation Management* 8(3), 171-178.

- Puccio, G.J., Murdock, M.C., & Mance, M. (2007). *Creative Leadership: Skills that Drive Change*. Thousand Oaks, CA: Sage Publishing.
- Rhodes, M. (1961). An analysis of creativity. As in *Frontiers of Creativity research* Isaksen 1987 216-222.
- Rife, S. L. (2001). *Exploring the personality composition of the four preferences measured by the Buffalo Creative Process Inventory*. Unpublished master's thesis, State University of New York College at Buffalo, Buffalo, New York.
- Roush, P.E. & Atwater, L. (1992). Using the mbti to understand transformational leadership and self-perception accuracy. *Military Psychology* 4(1), 17-34.
- Safi, A. & Burrell, D.N. (2007) Developing advanced decision making skills in international leaders and managers. *Vikalpa* (32(3), 1-8.
- Shull, F. & Anthony, W.P. (1978). Do black and white supervisory problem solving styles differ? *Personnel Psychology*, 31, 761-781.
- Simonton, D.K. (1988). [Quality and purpose, quantity and chance](#). *Creativity Research Journal*, 1 68-74.
- Summers, S.L., Sweeney, J.T., Wolk, C.M. (2000). Problem-solving style and fit in consulting and auditing. *Journal of Information Systems* 14(1), 1-15.
- Sternberg, R.J. (1988). [Mental self-government: a theory of intellectual styles and their development](#). *Human Development*, 31(4), 197-221.

The American Heritage Dictionary (4th ed.). (2001). New York: Dell.

Torrance, E.P., & Torrance, J. P. (1978). [Developing creativity instructional materials according to the Osborn-Parnes creative problem solving model.](#) *Creative Child and Adult Quarterly*, 3(2) 80-90.

Treffinger, D.J., Isaksen, S.G., & Firestien, R.L. (1982). *Handbook of creative learning*.
Williamsville, NY: Center for Creative Learning.

Tullet, A.D. (1996). The thinking style of managers of multiple projects: implications for problem solving when managing change. *International Journal of Management* 14(5), 281-287.

Wheeler, R. A. (2001). *Improving the understanding of creative problem solving training through an examination of individual differences*. Unpublished master's thesis, State University of New York College at Buffalo, Buffalo, New York.

Wolk, C, Schmidt, T, & Sweeney, J. (1997). Accounting educators' problem solving style and their pedagogical perceptions and preferences. *Journal of Accounting Education* 15(4), 469-483.

Zhang, L.F. (2002). [Thinking styles and cognitive development.](#) *Journal of Genetic Psychology* 163(2), 178-195.

Concept Paper

<p>Theme: Understanding Problem-Solving Style Preferences in an Organizational Hierarchy</p> <p>Initiative: Analyzing the Distribution of <i>FourSight</i> Scores within Employment Levels of an Organization</p>

Thesis Title: The Relationship between FourSight Profiles and Employee Placement in the Hierarchy of an Organization.

Rationale and Questions:

In order to effect change and innovation, a business must understand the personality types, traits, and, in some cases, problem solving styles of its management and staff. Businesses have utilized this type of personality style information for years and for many different purposes. For example, within an organization, a human resource department will employ the use of personality measures to assist in hiring decisions; project teams use similar instruments to build groups, allowing the ability to capitalize on individual talents or areas of expertise. In addition, senior level management may use these measures to decide the leadership potential of an individual manager or to design a leadership model. If this personality style data is accurate, the advantages to the business are enormous. By administering *FourSight*, a creativity style measure, this study will explore the distribution of problem solving preferences within a company's hierarchy. More specifically, the study will ask the question "What is the distribution of *FourSight* Profiles among employees in different levels of the organization's hierarchy?"

A major additional question that will drive this thesis is:

- Will the creative problem solving preferences of employees, as measured by *FourSight*, vary according to level within an organization (e.g., entry level, mid-level management, and executives)? In particular, will a unique profile emerge among those in leadership positions?

Statement of Significance:

Although a search for literature explicitly related to problem solving preference and an employee's location within an organizational hierarchy eluded this investigator, research that can be considered relative to this topic has been performed in areas of organizational structure, group dynamics, leadership, organizational psychology, and other social sciences. More so, the role of measuring personality type is not new to the business world and much literature can be found that examined relationships between personality type and a myriad of other variables. For example, Schott (1992) studied [Abraham Maslow, humanistic psychology, and organization leadership](#), Miller and Wells (2001) discussed personality type and occupational environment, and Eagly (1969) researched leadership style and role differentiation.

There are several reasons why the research question posed by this study makes a significant contribution to the field of creativity. First, as it would appear that no previous study has investigated this question, it fills a gap in the literature. Second, and more importantly, this study will add to the existing research performed by Mumford and his colleagues (2000) in which they claim that for leaders to be successful they must use creative problem solving to address complex organizational problems. This study sets out to better understand the creative problem-solving preferences of employees by investigating whether a unique profile emerges among those in leadership positions. If a unique profile exists among leaders, then new insights may be gained relative to how leaders prefer to approach problems that require creative thinking.

Description of the Method or Process:

For the study, this researcher will secure permission from the research foundation of the college to conduct this type of research. Next, the researcher will prepare a formal proposal to the local business unit of an international financial services firm. The proposal will be submitted to the site head. After the review and acceptance of the proposal, the site head will forward the proposal to the next level of management. After review and acceptance of the proposal by executive management and the human resources department, this researcher will offer, through email and verbal communication, an invitation to participate to all company employees. Subsequently, the 100 research participants will be picked for the study. Then, via interoffice mail, this researcher will distribute the human subjects form and a copy of the *FourSight* instrument to the participants. The participants from the first three levels and a portion of the highest level within the hierarchy will be chosen from the local site. Additional senior level management will be chosen from a regional office located in the state of Delaware. Participants will be asked to complete the *FourSight* survey and the human subjects form at the same time. Then all materials will be returned to the researcher via inter-office mail. There will be four participant groups, each with

twenty-five members; one representative of executive management (Directors, SVP's, DM's), one representative of middle management (Section Managers, AVP's), one representative of lower management (Workflows, Senior Specialists), and one representative entry-level employment (computer operators/processors).

Once the participants have successfully completed the *FourSight* questionnaire, the researcher will collect (via interoffice mail), assess, and schedule a time to offer a thirty minute debrief (via conference calls or in person classroom setting) of the results to all participants. Finally, using one-way analysis of variance, the data will be tested for statistical differences among the three groups of employees.

Personal Learning Goals:

- Learn and become more familiar with *FourSight*.
- To understand the relationship (or not) between my research and its results.
- To become familiar and comfortable with survey administration and debriefing.
- To learn and utilize statistical formulae.
- To become an expert in the area of , problem solving styles, organizational psychology, and leadership research.

Outcomes:

- Three executive summaries will be completed for the ICSC Web Site.
- One annotation of my thesis for Creativity Based Information Research database (CBIR).
- A completed thesis write-up will be presented.
- Additional investigation into the validity of the *FourSight* measure as a profiling assessment will be presented.
- Potential submission of study to academic journal in field of creativity, innovation, management, or business.

Timeline:

October 2004

- Begin literature search
- Review previous theses related to *FourSight*
- Establish solid work/school balance

November 2004

- Have concept paper approved
- Continue collecting and reviewing the literature surrounding thesis topic
- Begin proposal for Citigroup site head
- Sign up for Spring classes
- Maintain work/school balance

December 2004

- Begin writing thesis Chapters I and II (Introduction and Literature Review)
- Follow up on Business' approvals
- Begin to accumulate human subject forms
- Maintain school work balance

January 2005

- Begin writing thesis Chapters I and II (Introduction and Literature Review)
- Follow up on Business' approvals
- Submit thesis packet to Graduate Office
- Schedule testing date
- Submit Chapters I and II of Thesis for approval/guidance
- Maintain school work balance

February 2005

- Begin CRS 635
- Review Chapters I and II of thesis
- Administer *FourSight*
- Debrief/review *FourSight* with Participants
- Begin to analyze data
- Continue writing/submit thesis (Chapter III)
- Maintain school work balance

March 2005

- Review Chapter III
- Begin Chapters IV and V of thesis
- Maintain school work balance

April 2005

- Submit Chapter Four and Five of thesis for approval/guidance
- Complete thesis revisions, submit for approval
- Maintain school work balance

May 2005

- Submit final draft of thesis for approval
- Attend Master's Graduation Ceremony
- Have thesis bound
- Celebrate

Principal Investigators:

Dr. Gerard Puccio, Faculty Thesis Advisor

Heath H Frisch, Master's Candidate

Related Literature:

Abdel-Halim, A. A. (1983). [Power equalization, participative decision-making, and individual differences.](#) *Human Relations*, 36(8), 683-705.

- Basudur, M., Graen, G. & Wakabayashi, M. (1990). Identifying individual differences in creative problem solving style. *Journal of Creative Behavior*, 24, 111-131.
- Cranti, J. M., & Bateman, T. S. (2000). [Charismatic leadership viewed from above: the impact of proactive personality.](#) *Journal of Organizational Behavior*, 21(1), 63-76.
- De Cremer, D. (2003). How self-conception may lead to inequality. *Group & Organization Management*, 28(2), 282-203.
- Eagly, A. H (1970). Leadership style and role differentiation as determinants of group effectiveness. *Journal of Personality*, 38(4) 509-535.
- Fleishman, E.A., Harding, F.D., Jacobs, T.O., Mumford, M. D., & Zaccaro, S.J. (2000). [Leadership skills for a changing world: solving complex social problems.](#) *Leadership Quarterly*, 11(1), 11-26.
- Hogarth, R. M. (1993). [Accounting for decisions and decisions for accounting](#) *Accounting, Organizations & Society*, 18(5), 407-425.
- Kirton, M. (1980). Adaptors and innovators in organizations. *Human Relations*, 33(4), 213-225.
- Lang, J. R., Dittrich, J. E., & White, S.E. (1978). [Managerial problem solving models: a review and a proposal.](#) *Academy of Management Review*, 3(4), 854-867.
- Leonard, N. H., Scholl, R. W., & Kowalski, K B. (1999). [Information processing style and decision making.](#) *Journal of Organizational Behavior*, 20(3), 407-421.
- Mann, M.C. (2003). *Identifying the creative problem solving preferences of secondary educators and administrators.* Unpublished master's thesis, State University of New York College at Buffalo, Buffalo, New York.

- Miller, M. J., & Wells, D. (2001). Why are the three letter bar codes of a barber and sheriff identical? understanding and interpreting occupational environments. *Journal of Employment Counseling*, 38(1), 10-14.
- Nauta, A., De Dreu., C., & Van der Vaart, T. (2002). [Social value orientation, organizational goal concerns and interdepartmental problem-solving behavior.](#) *Journal of Organizational Behavior*, 23(2), 199-134.
- Owen, J. M., & Lambert, F. C. (1998). [Evaluation and the information needs of organizational leaders.](#) *American Journal of Evaluation*, 19(3), 355-366.
- Puccio, G. J. (2001). *Buffalo Creative Process Inventory: Technical Manual*. Evanston, IL: Think Communication.
- [Rahim, A.](#) (1979). The management of intraorganizational conflicts: a laboratory study with organization design. *Management International Review*, 19(1), 97-107.
- Rieple, A. (2004). [Understanding why your new design ideas get blocked.](#) *Design Management Journal*, 15(1), 36-43.
- Rife, S. L. (2001). *Exploring the personality composition of the four preferences measured by the Buffalo Creative Process Inventory*. Unpublished master's thesis, State University of New York College at Buffalo, Buffalo, New York.
- Roberts, H. E., Foti, R. J. (1998). Evaluating the interaction between self-leadership and work structure in predicting job satisfaction. *Journal of Business & Psychology*, 12(3), 257-268.
- Shannon, J., & Schreiber, B. (1999). Leading from any position: an enneagram workshop preparing leaders for the 21st century. *Serials Librarian* 36(1), p5-14.

- Schott, R. L. (1992). [Abraham maslow, humanistic psychology, and organization leadership: a jungian perspective.](#) *Journal of Humanistic Psychology*, 32(1), 106-121.
- Schuring, R. W., Harbers, C., Kruiswijk, M., Rijnders, S., & Boer, H. (2003). The problem of using hierarchy for implementing organisational innovation. *International Journal of Technology Management*, 26(8), 903-918.
- Wheeler, R. A. (2001). *Improving the understanding of creative problem solving training through an examination of individual differences.* Unpublished master's thesis, State University of New York College at Buffalo, Buffalo, New York.
- Whitley, R. (2003). [The institutional structuring of organizational capabilities: the role of authority sharing and organizational careers.](#) *Organization Studies (Sage Publications Inc.)*, 24(5), 667-695.

